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INSTITUTE OF TROPICAL MEDICINE ANTWERP

FINAL EVALUATION FA4 – COUNTRY PROGRAMMES

Final Report
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ABBREVIATIONS

AMR	Antimicrobial Resistance
ARES	Academy for Research and higher Education, Belgium
BMGF	Bill and Melinda Gates Foundation
BR	Brucellosis
BTB	Bovine Tuberculosis
CAMES	African and Malagasy Council for Higher Education
CDC	Centres for Disease Control and Prevention (USA)
CEA-PCMT or CEA	African Centre of Excellence for the Prevention and Control of Transmissible Diseases, Guinea
CNFRS Maferinyah	National Centre for Training and Research in Rural Health of Maferinyah, Guinea
CNHU	National University Hospital Centre, Guinea
CNM	National Centre for Parasitology, Entomology and Malaria Control, Cambodia
CONCYTEC	National Council for Science, Technology and Technological Innovation, Peru
CRSK	Kimpese Health Research Centre, DRC
CRUN	Clinical Research Unit of Nanoro, Burkina Faso
CSAR	Research and Learning Center for Health, DRC
DGD	Directorate-general Development Cooperation and Humanitarian Aid
DNDI	The Drugs for Neglected Diseases Initiative, DRC
DRC	Democratic Republic of Congo
DVTD	Department of Veterinary Tropical Diseases, South Africa
EDCTP	European and Developing Countries Clinical Trials Partnership
ESP	Public Health-University of Lubumbashi, DRC
FA3	Framework Agreement
FMG	Medical Fraternity of Guinea
GAO	Grant Administration Office, Benin
GCMHS	Gondar College of Medical and Health Sciences, Ethiopia
HAT	Human African Trypanosomiasis
HCV	Hepatitis C Virus
HDSS	Health and Demographic Surveillance System
HEI	Higher Education Institute
HES4SD	Higher Education and Science for Sustainable Development
HIV	Human Immunodeficiency Virus

HPSR	Health Policy and Systems Research
HTLV-1	Human T-cell leukaemia virus type 1
IME	Hospital Medical and Biochemical Institute, DRC
IMTAvH	Instituto de Medicina Tropical "Alexander von Humboldt", Peru
INHEM	National Institute of Hygiene, Epidemiology and Microbiology, Cuba
INRB	National Institute of Biomedical research, DRC
IPH	National Institute of Public Health
IPK	Institute of Tropical Medicine 'Pedro Kouri', Cuba
IRSS	Institut de Recherche en Sciences de la Santé, Burkina Faso
ISO	International Organization for Standardization
ITM	Institute of Tropical Medicine Antwerp
JSF	Joint Strategic Framework
LD	Louvain Coopération au Développement
LRM	National Mycobacteriological Reference Laboratory, Benin
MCEIT	Maestria en Control de Enfermedades Infecciosas y Tropicales, Peru
MINSAP	Ministry of Public Health
MoH	Ministry of Health
MPHP	Ministry of Public Health & National Public Health Programs
NAMRU-6	Naval Medical Research Unit Six
NCD	Non-communicable diseases
NCHADS	National Centre for HIV/AIDS, Dermatology and STD Control, Cambodia
NIMPE	National Institute of Malariology, Parasitology and Entomology, Vietnam
NIPH	National Institute of Public Health
NTD	Neglected Tropical Disease
OC	Outcome
OP	Output
PCR	Polymerase Chain Reaction
PNLTHA	National Programme for the Fight against Human African Trypanosomiasis, DRC
PROA	Antimicrobial Optimization Programme, Peru
RL	Reference Laboratory
SHCH	Sihanouk Hospital Centre of Hope, Cambodia
SOPH	School of Public Health, South Africa
STI	Sexually Transmitted Infections
TAH	Tropical Animal Health

TB	Tuberculosis
ToC	Theory of Change
UCL	Catholic University of Louvain (Belgium)
UNAP	National University of the Peruvian Amazon, Peru
UoG	University of Gondar, Ethiopia
UP	University of Pretoria, South Africa
UPCH	Universidad Peruana Cayetano Heredia, Peru
UWC	University of the Western Cape, South Africa
VLIR-UOS	Flemish Interuniversities Council - University Development Co-operation
WHO	World Health Organisation
WHO-TDR	World Health Organization's Special Programme for Research and Training in Tropical Diseases

Executive Summary

I. Evaluation Background and Design

Syspons GmbH was commissioned by the Institute of Tropical Medicine (ITM) to carry out the final evaluation of the "FA4 country programmes". The FA4 programme was effective from 2017 to 2021 and encompassed the introduction of country-specific Joint Strategic Frameworks to encourage synergies between Belgian development cooperation actors on site. ITM's ten FA4 country programmes contributed to these JSFs. The outcomes were implemented with one or more national partner institutes and focused on capacity strengthening.

The evaluation is situated on two levels, firstly on the level of the ten country outcomes and secondly on an aggregated FA4 level. The evaluation serves two purposes. First, the evaluation aims at learning how to improve future interventions along the evaluation criteria of relevance, effectiveness, impact, sustainability, efficiency and the coordination within the country-specific JSF. Second, the evaluation is intended to render accountability to the funding institution DGD about the achievement of objectives.

The evaluation was conducted between December 2021 and June 2022. Its design is based on a contribution analysis. This is an analytical approach to assessing the effects of projects or programmes at the outcome and impact levels. It aims to measure a programme's contribution to intended impacts and analyses the extent to which the observed (positive and negative) changes can be traced back to the programme (such as ITM's FA4 country programmes). The basis of the contribution analysis is the in the inception phase developed aggregated-level Theory-of-Change, in which the causal relationships between inputs, outputs, outcomes and impacts are visualised. To test this Theory-of-Change existing (e.g. self-assessments, programme-internal documents) and new data from various sources (interviews, online survey) were collected to trace contributions and better understand the performance story of the programme. This procedure makes it possible to assess whether or not the country programmes (possibly in combination with other factors) have brought about the intended changes at the institutional and programme level or not. To this end, the evaluation draws from a rich database that was established through quantitative and qualitative data collection activities. This includes overall an online survey, involving 28 key knowledge holders from the partner institutes and ten case studies incorporating overall 110 in-depth interviews with stakeholders from the ten country programmes.

II. Key Results

The evaluation confirmed that the country programmes under FA4 were highly needs-oriented and thus relevant on the institutional as well as country-level. In particular, the evaluation reveals, that the individual interventions responded completely to the **partner institutes' needs** for strengthened financial and institutional capacities, and largely to their need for human resources strengthening. In terms of **financial strengthening**, the evaluation found that ITM has provided sufficient support to the partner institutions to afford high-quality research and well-trained staff. Furthermore, ITM's support also enabled technology transfer, and with this also satisfied their need for more **institutional strengthening**. Besides, ITM provided support to enhance existing structures or establish new structures, such as lab management positions. The evaluation shows that in the country programmes a need for more **human resources strengthening remains**, as the retention of trained staff remained a problem for most partners. At the **country-level**, the evaluation confirmed the country programmes' relevance, as they were found to enable the partner institutions to conduct high-quality research that served in all countries either directly or indirectly as basis for the establishment of new or enhancement of already existing guidelines and policies on public health.

With respect to their effectiveness, the evaluation showed that all in the ToC included capacities[1] of the partner institutions were strengthened by ITM's interventions. This trend was evident at the aggregated level and confirmed by the **disaggregation of data by institution type[2]**. However, the **disaggregation by country programme** shows a more mixed picture, which also generally reflects the positive trend at the aggregated level but not in detail as it reveals various country-specific differences. In particular, the extent to which each capacity was strengthened as well as the capacity baselines varied within each partner institute and among the country programmes. The evaluation identified two reasons for the more heterogenous results at country programme level: firstly the diminishing marginal utility of interventions with increasing capacity baselines and secondly the prioritisation of specific capacities, especially research and human capacities, in consultation with the individual partners. With regards to influential factors, the evaluation determined ITM's flexibility, high responsiveness and the trusting relationship at eye-level between ITM and the partner institutions as **key success factors** for the programmes' effectiveness and the COVID-19 pandemic as the key **inhibiting factor**. Furthermore, the evaluation found that the **transversal topics of gender and environment** did not receive much attention throughout the country programmes and - with few exceptions - no formalized measures to promote gender equity and/or environmental protection were established by the partners.

Concerning the criterion of impact, the evaluation shows, that institutional and country-level impact as well as the preconditions for a global-level impact were established. Due to the interventions partner institutes were able to enhance the conducted research and with that generate innovations and new knowledge. The strengthening of research capacities (further) validated the partner institutes' role as pioneers in their respective research community and on the national level, creating farther institutional impact. Moreover, national policies on public health were enhanced, directly or indirectly based on the findings of the state-of-the-art research of the partner institutes, leading to a country-level impact of all country programmes. One promoting factor for the extent of political influence identified in the evaluation is the already existing connections from the partner institutes to political stakeholders. The analyses show that partner institutions that were connected on an institutional level with political institutions or partner institutes that had individual staff/researchers being well connected with political actors, showed a greater relational capacity and also greater extent to which their research influenced policy-making processes in the respective countries.

The evaluation assessed that the implementation of country programmes was overall conducted in an efficient manner. In this regard, the evaluation shows that the financial, technological and professional resources provided by the ITM were sufficient to reach the country programmes' outputs and outcomes. The evaluation found that even though most country programmes were able to deliver their expected results on time, the **timely delivery** was a challenge for the majority of them due to the COVID-19 pandemic. The extent of the delays and impact of the pandemic, however, varied between country programmes. The evaluation points to two aspects that were decisive for the extent of the individual country programmes' coping. Firstly, it had an impact on whether activities could be held online or had to be held on site. The analysis suggests, that educational and training activities often proved to be feasible online, whereas research activities specifically in the field, often had to be postponed and could be continued only after the lockdowns had ended. Secondly, the analyses found that the expansion of the technological infrastructure in the aspect of online teaching and exchange as well as the national expansion of internet access was essential for holding online formats. Here, too, the technological conditions in the respective countries were different, leading to different ways of dealing with pandemic-related difficulties in the holding of activities. The evaluation identified specifically the ITM's flexibility in the funding (re-)allocation and its support of the partner in the transition to online formats as **success factors for the implementation efficiency** of the ten country programmes.

With regards to sustainability, the evaluation found that preconditions were fully established in the social and institutional dimension, whereas preconditions were only partially established for the financial and technical dimension. Concerning **social sustainability**, the evaluation suggests that preconditions are established as

[1] Educational, technological, institutional, relational, human and research capacities
[2] Higher education institutions vs. National Health Institutions

partner institutions had ownership over the programmes' components, that were implemented at all stages. This was expressed in the fact that mainly researchers from the partner institutes were in charge of carrying out their research activities and reported to have had the discretion over the use of the by ITM provided resources. Furthermore, ITM's capacity strengthening approach has succeeded in building up expertise in the fields of research conduction, clinical practice and research management within the partner institutions. Thus, human capacities of the partner institutions were sufficiently strengthened to also being capable of taking the ownership of state-of-the-art research. Besides the trainings for staff and researchers, ITM also provided support for the partner institutions to establish new or enhance existing research and lab management structures to further manifest the institutions' ownership. The analysis of the case study data shows that in the country programme, where such structures have been newly established or enhanced, the structures are also likely to be sustained and thus also providing the preconditions for **institutional sustainability** of the interventions' outcomes. Moreover, preconditions were established by the strengthening of the partner institute's relational capacities, more specifically through supporting the formation of a sustained collaboration between the partner institutes and other research organisations, political actors, as well as also partly other donor organisations. Regarding the establishment of preconditions for **financial sustainability** in the scope of FA4, the interventions were partially successful: Even though the country programmes were able to increase the ability of the partner institutes to attract further funding through their enhanced professional capacities and reputation, the evaluation showed that the majority of partner institutes remains dependent on ITM's funding to continue the FA4 linked research projects. The evaluation determined one influencing factor for the extent to which external funding could be acquired by the partner institutions, namely the provision of grant application training by ITM. With reference to the **technical dimension of sustainability** the evaluation found that the technological infrastructure at the partner institutes was enhanced, and staff received training on how to use new tools and materials, contributing positively to the establishment of preconditions. However, the interventions were not able to close the generational knowledge gap as the retention of research and clinical staff remained a problem in the majority of partner institutes. Thus, the evaluation assesses the precondition for technical sustainability to be partly established.

The evaluation reflected that collaborations of the partner institutes within the JSFs were predominantly of complementary nature, whereas collaborations outside the JSF showed also synergies. The evaluation found that the extent to which the collaborations between the partner institutes and other Belgian development actors were established varied among the country programmes and depended on already existing cooperation structures within the JSF. Collaborations and synergies with actors outside the JSF and within the health sector were common, and cited as having positive effects on the capacities of the partners.

III. Recommendations

Based on the findings of the analyses and the assessment by the evaluation team, the following six recommendations for future FA programmes of ITM are derived. A more detailed description of each recommendation can be found in chapter 6.

1. **ITM should maintain its participative approach** in further intervention designs under the following FAs. Accordingly, it should **involve key stakeholders from the beginning** to enable a highly needs-oriented intervention design and execution.
2. **ITM should continue with their holistic approach to capacity development**, which supports strengthening all relevant organizational capacities.
3. In order to promote a positive development of the transversal topics gender and environment, **ITM should engage these topics strategically and create guidelines for the interventions**.
4. To further expand the country level impact of the interventions, **ITM should promote applicability for policy-makers at all stages of the research process.**
5. **ITM should include sustainability targets into its project designs and actively promote sustainability** throughout the whole intervention process of implementation.
6. To achieve more synergies at output and outcome level, **the JSFs need to incorporate this target at the strategic, project/intervention and process implementation levels and be regularly updated.**

Introduction

The Institute of Tropical Medicine (ITM) has commissioned Syspons to conduct the *Final Evaluation of the Framework Agreement 4 (FA4) (2017-2021)*. This evaluation is grounded in two rationales: First, this evaluation comes at a strategic time for ITM, at the end of the 2017-2021 framework agreement (FA4) and anticipating the operationalization of the new five-year framework programme (FA5). Although the strategic orientation of FA5 has already been decided upon in July 2021, the next framework contract will officially be launched in 2022 and will benefit from evidence on the performance of the FA4, including examples of good practices and success stories. Second, ITM has been giving increasing attention to developing its monitoring and evaluation culture through conducting external impact evaluations. As such, the results of this evaluation will also be used to support these efforts by identifying key lessons with regards to monitoring and evaluation.

The evaluation should serve a **formative as well as a summative purpose**. Regarding the latter, the **evaluation's objective** is to provide accountability towards the donor, the Directorate General for Development Cooperation (DGD), as to whether the 10 outcomes at country level were achieved (or not) with the funds allocated. The accountability factor influences the scope of the evaluation, given that it is mandatory for all DGD funded actors to assess all OECD/DAC criteria in their final evaluation. This makes it a broad evaluation, even though efforts were made to go more in-depth per country. The evaluation also includes the identification of the key factors facilitating and/or constraining the achievement of the planned outcomes. In addition, the evaluation is expected to capture impactful success stories that can serve as the basis for external communication. With regards to the formative objective, the evaluation contributes to the learning trajectory at ITM through providing an account of what practices work well (or not) to achieve the expected outcomes for ITM's future interventions. To this end, the evaluation aims to draw key lessons on the implementation of the FA4, as well as on the M&E set-up and programme design in place. These insights will be used in the evaluation to produce recommendations for ongoing and future ITM interventions, as well as long-term strategies and programmes.

This evaluation was conducted between December 2021 and May 2022. This final report gives insights into the evaluation object, the evaluation methods, and presents the analysis, the conclusions and the recommendations. The report is structured as follows:

- **Chapter 2** contains an in-depth understanding of the evaluation object (ITM FA4, 2017-2021) and provides a brief overview of ITM. Moreover, it includes a description of the retro-actively mapped Theory of Change (ToC) and the underlying impact hypotheses.
- **Chapter 3** includes the evaluation design and methods. This encompasses the theoretical background, notably Peter Morgan's 5C model on capacity development. Further, it outlines the evaluation focus regarding the questions and topics of the evaluation, the evaluation strategy, and the methodological approach, including its limitations.
- **Chapter 4** presents the analysis per programme for the ten countries in which ITM conducted the interventions.
- **Chapter 5** displays the evaluation results along the evaluation criteria relevance, effectiveness, impact, sustainability, efficiency, and complementarity and synergies.
- **Chapter 6** provides a summary of the evaluation results on the programme level.
- **Chapter 7** outlines the conclusions as well as recommendations.

The **Annex** contains a detailed description of the evaluation design and methods, the evaluation matrix, as well as the ToC per Outcome for the ten countries ITM conducted the interventions in. Moreover, it includes the capacity development. Furthermore, following parts are included as separate files: (1) the evaluation matrix (assessment grid) framing the evaluation, outlining the evaluation questions, indicators, and appropriate data collection techniques; (2) the data collection instruments, i.e., a questionnaire for the online survey, standardized interview guides for the case studies, and an assessment grid for the analysis of self-assessments.

1 Framework Agreement 4 at a Glance

To better understand the evaluation object, namely the ITM Framework Agreement 4 (2017-2021), we contextualise it historically and in the organisational structure of ITM. To this end, this chapter describes the institutional and programme background of the research, educational and developmental activities of ITM by providing an overview of the institute, its core objectives, and its mission as well as the organisational and finance structure. Furthermore, we outline the Framework Agreements 3, 4 and 5 with the Directorate-general Development Cooperation and Humanitarian Aid (DGD) to embed the developmental activities in the context of ITM's role in the Belgian development cooperation.

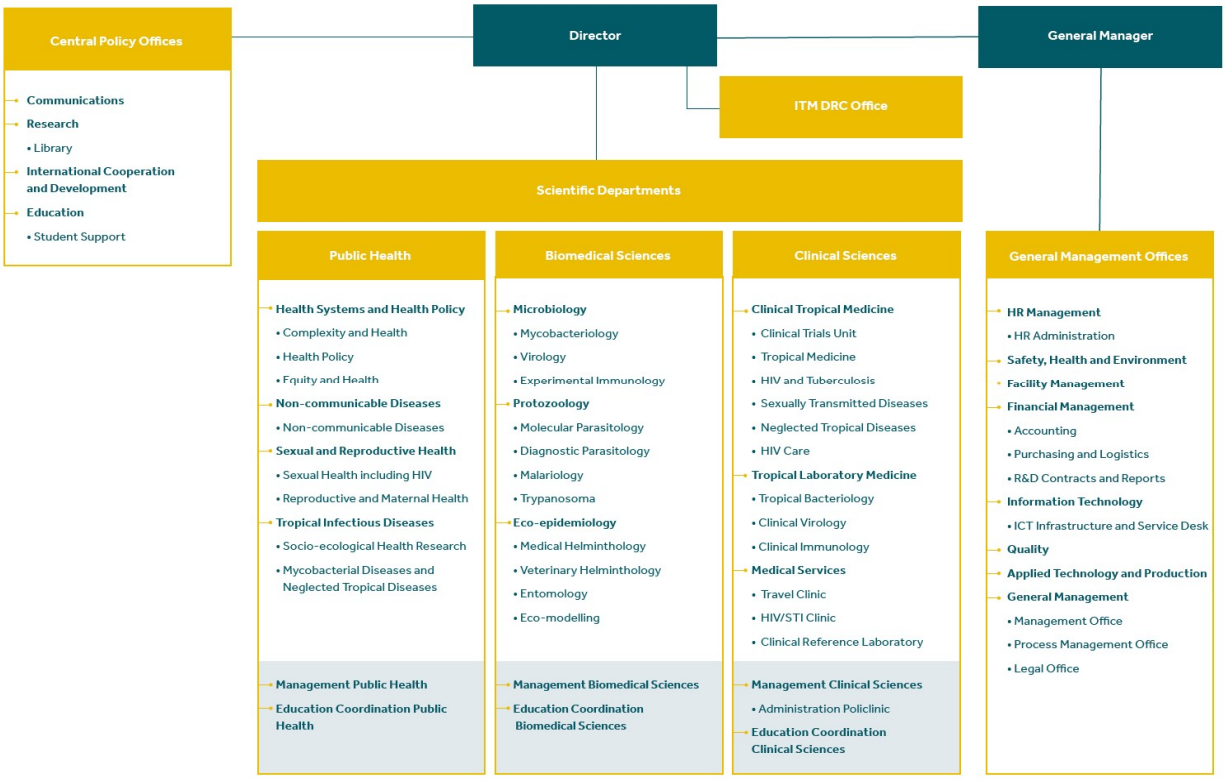
1.1 Institutional and Programme Background

The Institute of Tropical Medicine (ITM) was established in Belgium as a training institute in 1906. Its current **vision** is to enhance global health through fostering scientific progress as a motor of societal development.[3] ITM is recognized by decree as an independent institution of public utility with the mandate to carry out all initiatives and activities to achieve its intended purpose. The core mission of the institute is to conduct and promote scientific research, professional and academic education as well as scientific and community services in the field of tropical diseases and global healthcare with a special focus to cooperation with partners from low and middle-income countries.[4] Thus, the main areas of activity are based on the three different pillars of research, education, and service delivery. The pillar of service delivery entails international development cooperation through institutional and individual capacity strengthening, and ITMs clinic that provides medical services to departing and returning travellers. Hereby, the institutional cooperation represents the nexus between research and educational activities and the international development cooperation, thus between the three pillars.

ITM's core activities are organised in three different **scientific departments**, namely the Department of Biomedical Sciences, the Department of Clinical Sciences, and the Department of Public Health (see Figure 1).[5] Each of the scientific departments is involved in the three different pillars of the academic triad outlined above. Additionally, four separate policy offices for research, education, communication, and development cooperation are directly linked to the director of ITM and the Management Commission to offer support and further development of their respective area of expertise.[6]

[3] Institute of Tropical Medicine, 'About Us', accessed 07 February 2022, https://www.itg.be/E/about-us.
[4] Institute of Tropical Medicine, 'Statutes', accessed 07 February 2022, https://www.itg.be/e/statutes.
[5] Institute of Tropical Medicine, 'ITM Organigram', accessed 07 February 2022, https://2018.itg.be/organigram/
[6] Institute of Tropical Medicine, 'ITM Institutional Policy Plan 2020-2024. "Global Science for a Healthier World"', 2020, 8.

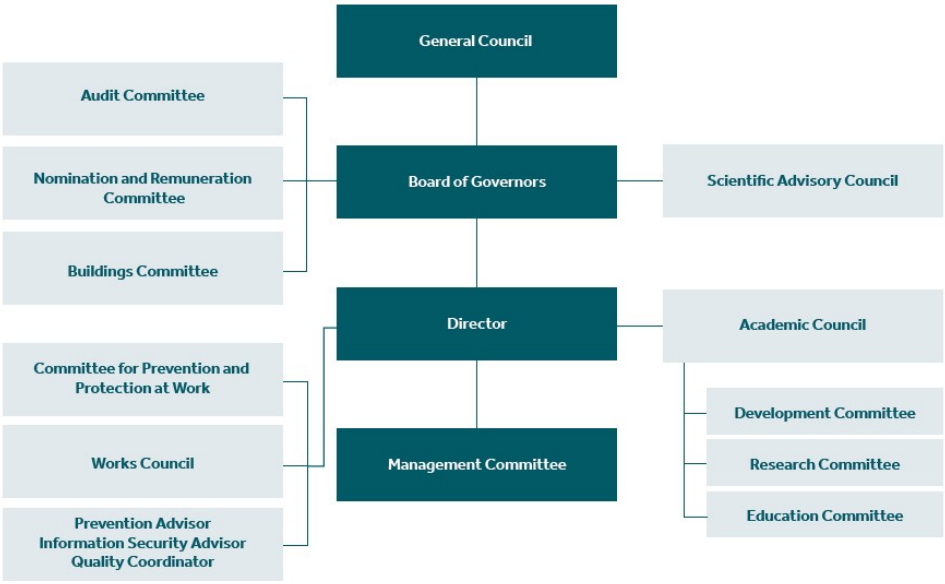
Figure 1: Organizational Structure of ITM. (Source: Institute of Tropical Medicine[7])



The **governance structure** of ITM is composed of three different bodies, namely the General Council, the Board of Governors, and the Management Committee (see Figure 2). First, the General Council is responsible for ensuring the accordance of ITM's policy, administration, and management with its purpose, identity, and integrity.[8] It further provides strategic advice, elects members of the Board of Governors, and evaluates the performance of the latter. Its members are elected individuals from specific governmental, educational, and ITM organisational bodies. Second, the Board of Governors monitors the overall management performance of the institute and works as an independent decision-making body by providing strategic direction in the day-to-day management. Its members are elected by the General Council and have a four-year renewable mandate. Third, the Management Commission directly supports the Director of ITM in the day-to-day management and comprises the Director, the General Manager, and the heads and administrators of the three scientific departments.

[7] Institute of Tropical Medicine, 'ITM Organigram'., Document provided by the ITM Steering Committee.
[8] Institute of Tropical Medicine, 'ITM Annual Report 2019. Gloabl Science for Health Worldwide', 2019, https://2019.itg.be/wp-content/uploads/2020/04/ITM_Jaarverslag_2019.pdf.

Figure 2: Governance structure of ITM. (Source: Institute of Tropical Medicine[9])



To implement its activities, ITM has several **management agreements** with various Flemish and federal ministries. The core funding comes from the Ministry of Education,[10] while additional programmatic funding comes from the Ministry of Science and Innovation, the Belgian and/or Flemish Ministries of Public Health, the Flemish Department of Chancellery and Foreign Affairs and the Ministry of Foreign Affairs, specifically from DGD. Together, these agreements amount to approximately 55% of ITM's total revenue.[11] External competitive grants, medical services, and own income like the student tuition and registration fees form the rest of the total revenue.

ITM's activities within the area of development cooperation are mainly funded through **Framework Agreements (FA) with the DGD**. Since this **evaluation focuses on the FA4 (2017-2021),** also the preceding FA3 (2008-2016) and succeeding FA5 (2022-2026) are of specific interest. The **overall objective of FAs** generally is "to strengthen the rational basis and the country ownership of health care systems and policies in developing countries, in order to improve the health status of the populations and thereby to contribute to the reduction of poverty and inequity[12]." FAs support ITM in expanding and continuing international scientific and educational cooperation on health and fostering knowledge exchange by strengthening North-South partnerships. Leaders, scientists, and experts in the partner institutions as well as health professionals and policy makers are the direct target groups, while communities and individuals are meant to benefit from improved practices and policies. A major part of the DGD funding is spent on **the capacity strengthening country programmes**, while the **scholarship and training components** form the second largest part of the total DGD funding. As the latter were subject to a previous evaluation conducted in 2020/21, they will not again be considered under this evaluation. Instead, the focus of the current evaluation is on capacity building in the country programmes (see also Chapter 3).

The FA4 programme, which is the subject of this evaluation, was the first programme to be developed and implemented under the new Belgian law on development cooperation (2016). This new legislation included the development of a Joint Strategic Framework (JSF) for each country of intervention. These JSFs had as objective to encourage synergies between Belgian actors, and to increase the impact of the Belgian development cooperation in each country by requiring Belgian actors of the non-governmental cooperation to work together towards commonly defined strategic objectives. As such, all ten ITM country programmes, and the three programmes making up ITMs

[9] Institute of Tropical Medicine, 'ITM Organigram'., Document provided by the ITM Steering Committee.
[10] The yearly funding from the Ministry of Education is around EUR 11 Mio.
[11] Institute of Tropical Medicine, 'ITM Institutional Policy Plan 2020-2024. "Global Science for a Healthier World"', 7.
[12] Institute of Tropical Medicine, '"Switching the Poles". FA3-III (2008-2013). Volume 1 A - Programme Level', 2007, 25.

'Belgian programme' (Policy Support, Alumni and Scholarships, and World Citizenship Education, which are the subject of a separate evaluation), contribute to the respective JSFs for the countries in which they were implemented. The country programmes were implemented with one or more national partner institutions in the corresponding countries and focused on capacity strengthening.

Until the preceding Framework Agreement - FA3 -, DGD required a comprehensive programme at the level of the non-governmental actor to which each country project contributed. This logic was left behind at the start of FA4, when DGD required outcomes per country which contribute to the strategic goals of the respective country-level JSFs. DGD no longer asked for an overarching strategy at the level of the institutes. In the new FA5, the overarching level has been brought back to a certain extent by integrating a rather similar ToC for all outcomes. In particular, ITM opted to concentrate its activities in one thematic JSF instead of joining various geographic JSFs like in FA4. Together with VLIR-UOS and ARES, ITM developed the new thematic JSF Higher Education and Science for Sustainable Development (HES4SD) which allows for more flexibility, more optimal synergies between higher education and science institutes as well as a more easy access to these institutes and their expertise.

1.2 Theory of Change

To understand and visualise the objectives of the ITM FA4 (2017-2021) programme at the level of the institution and how they are supposed to be achieved, a Theory of Change (ToC) was developed in the inception phase of this evaluation. It was important to create such a ToC at the FA4-programme- level, as one focus of the evaluation was to gain a holistic insight into the programmatic approach behind FA4, and for this a basis had to be created that did not exist before.

The **FA4-programme-level ToC** visualises the intended impacts and outcomes of ITM's capacity strengthening activities at the FA4-programme-level and shows the underlying impact hypotheses by connecting the impacts and outcomes to inputs, activities, and outputs. To develop such an overarching FA4-programme-level ToC, the ten country-programme-level ToCs designed by ITM were considered. The draft version of the FA4-programme level ToC was then presented and discussed in a participatory workshop with ITM and representatives of the partner institutions from each partner country. In the following, the final FA4-ToC is briefly described.

Overall, the FA4-programme aims in the long-term to contribute to **improving health worldwide**, especially in the selected ten partner countries. To achieve this **impact**, ITM addresses the three pillars, namely research, education, and service delivery (institutional and individual capacity strengthening, ITM clinic). In the realm of its capacity strengthening, ITM aims to achieve four intermediate impacts. Firstly, strengthened research processes and structures as well as research networks are intended to contribute to **high-quality research and innovation on public health, biomedical sciences, and clinical sciences**. Secondly, the described strengthened research and relational capacities of the partner institutes are supposed to lead to **improved knowledge and insights** in the mentioned fields. Thirdly, through the improvement of human capacities, educational programmes, institutional processes, and technical infrastructure, as well as the strengthening of the research capacity and networks, ITM aims to **strengthen the partner institutes' professional capacities**.[13] Fourthly, the enhancement of the partner institutes' active influence on local or national policy-making processes aims at **contributing to evidence-based policies in the partner countries to improve health.**

To achieve these impacts, ITM pursues seven objectives on the **outcome** level.[14] It is important to state that there is strong interdependence between the outcomes. This means that the achievement of one outcome (e.g., strengthening research capacities) depends on and at the same time influences the achievements of other outcomes (e.g.

[13] Based on the ToC the outcomes 1 to 6 contribute to professional capacity development.

[14] In the country-programme-specific documents the term *outcome* is used to illustrate the overall objective of the country programmes in the framework agreement level ToC the term *outcome* refers to the achieved short-term and medium-term effects of the framework agreement level activities.

development of human capacities). In the FA4-programme-level ToC, the connections between **outputs** (hereinafter OP) and outcomes (hereinafter OC) explain how the outcomes are achieved in the project. The following impact hypotheses lay out these connections.

Outcome 1 - Research Capacity: Partner Institutions implement strengthened research processes and structures.

> *Hypothesis OP1-OC1*[15]*:* If high-quality research publications are published by the members of the partner institutes, this means that the research capacity of the partner institutes is strengthened.
> *Hypothesis OP2-OC1:* If opportunities for connection and new research arise, this means partner institutions are able to implement strengthened research processes and structures.
> *Hypothesis OP3-OC1:* If knowledge and insights in specific topics is generated, this means partner institutions are able to implement strengthened research processes and structures.

Outcome 1 refers to the research capacity of the partner institutions. The strengthening of research processes and structures includes three aspects, namely (1) high-quality publications are issued by the members of the partner institutions, (2) new opportunities for connection and research arise due to the strengthened capacity, and (3) the generation of knowledge and insights in the specializes topics of the partner institutes. This outcome is particularly crucial to innovate on local and national practices (Impact 1) and the acquisition of new knowledge (Impact 2).

Outcome 2 - Human Capacity: Partner institutes use improved human capacities; staff and students add value in their organisations

> *Hypothesis OP4-OC2:* If staff and students gain thematic and methodological capacities in the areas of public health, biomedical sciences, social sciences, or clinical sciences, then partner institutions improve their human capacities.
> *Hypothesis OP5-OC2:* If newly developed and improved curricula, Master and PhD programmes and joint degrees are introduced, then partner institutes improve their human capacities.
> *Hypothesis OP6-OC2:* If educational quality management is introduced and improved, then the human capacities of the partner institutes improve.
> *Hypothesis OC3*-OC2: If partner institutes improve their educational programmes, then the partner institutes are likely to also strengthen their human capacities.

According to Outcome 2, ITM intends for the partner institutions' staff and students to further develop their individual knowledge capacities. This entails thematic and methodological capacities in the fields of public health, biomedical or clinical sciences, and social sciences. Specifically for higher education institutions this also includes the development of new and the improvement of already existing degree programmes and curricula. In the context of the higher education institutions, Outcome 2 also entails the introduction of a new or improvement of an already existing educational quality management.

Outcome 3 - Educational Capacity: Partner institutes implement improved educational programmes.

> *Hypothesis OP4-OC3:* If staff and PhD students gain thematic and methodological capacities in the areas of public health, biomedical sciences, then partner institutes implement improved educational programmes.
> *Hypothesis OP5-OC3:* If newly developed and improved curricula, Master and PhD programmes and joint degrees are introduced, then partner institutes implement improved educational programmes.
> *Hypothesis OP6-OC3:* If educational quality management is introduced and improved, then partner institutes implement improved educational programmes

[15] The names of the hypotheses refer to the numbering of outputs and outcomes in the theory of change, Accordingly, Hypothesis OP1-OC1 refers to the connection between output 1 and outcome 1.

Hypothesis OP7-OC3: If infrastructure (e.g. diagnostics and surveillance tools) is introduced and improved, then partner institutes implement improved educational programmes.
Hypothesis OP8-OC3: If processes (e.g. quality management systems), platforms and methodologies are developed, introduced, and improved, then partner institutes implement improved educational programmes.
Hypothesis OP9-OC3: If collaboration between institutions within the partnership is strengthened (within the country outcome, between the country outcomes and within the Joint Strategic Framework), then partner institutes implement improved educational programmes.
Hypothesis OC2-OC3: If partner institutes' human capacities are strengthened, then the partner institutes are likely to improve their educational programmes.

Outcome 3 refers to the educational capacity of the partner institutions, thus the implementation of improved educational programmes. Due to this, the six hypotheses are primarily applicable to partner institutions in the field of higher education. Outcome 3 was included as a result of the ToC workshop in January 2022 at the request of various country programme representatives.

This illustrates again the interdependence between the outcomes: as Outputs 4, 5 and 6 are viewed as improving the human capacities, they at the same time improve the educational capacity of the partner institutions through better trained staff and students, improved and newly developed curricula and degree programmes, and an educational quality management. However, educational capacities seem to need more outputs to be further developed, namely OP7, OP8, and OP9 that influence the educational capacity directly. Furthermore, an improved infrastructure entailing state-of-the-art equipment, but also new processes, platforms, and methodologies based on coaching and monitoring visits conducted by the ITM will contribute to the improvement of the educational services offered by the higher education partner institutions. Furthermore, the collaboration between the partner institutions within and outside the respective country programmes and JSFs strengthen the educational capacity through the exchange of knowledge.

Outcome 4 - Institutional capacity: Partner institutes apply improved institutional processes and structures.

Hypothesis OP7-OC4: If infrastructure (e.g. diagnostics and surveillance tools) is introduced and improved, then partner institutes apply improved institutional processes and structures.
Hypothesis OP8-OC4: If processes (e.g. quality management systems), platforms and methodologies are developed, introduced, and improved, then partner institutes apply improved institutional processes and structures.

Through its provision of technical and methodological support for the improvement of existing and the creation of new technical infrastructure, quality management systems, platforms, and methodologies, ITM aims to strengthen the institutional capacity of the partner institutions. This application of improved institutional processes and structures then leads to an overall strengthened professional capacity of the partner institutions.[16]

Outcome 5 - Technological capacity: Partner institutes implement improved technological infrastructure.

Hypothesis OP7-OC5: If infrastructure (e.g. diagnostics and surveillance tools) is introduced and improved, then partner institutes implement / use improved technical infrastructure.

[16] When we talk about the institutional capacity, we refer to *processes* and *structures* of the partner institutes as organisations. With *institutional processes* we make a reference to processes implementing and executing certain actions within the institutions and how these look like. With *institutional structure* we refer to the actors and departments being involved in these processes.

Outcome 5 focuses on the strengthening of the technological capacity of the partner institutes through the introduction or improvement of technical equipment. The technological capacity is crucial for the strengthening of the overall professional capacity (impact 4).

Outcome 6 - Relational capacity: Partner institutes are engaged in local/national/regional/international networks to create synergies

> *Hypothesis OP9-OC6:* If collaboration between institutions within the partnership is strengthened (within the country outcome, between the country outcomes and within the JSF), then partner institutes are engaged in local / national / regional / international networks to create synergies.
> *Hypothesis OP10-OC6:* If new contacts and information flows with external actors, e.g. political actors, international organisations and the press are created, then partner institutes are engaged in local / national / regional / international networks to create synergies.

Outcome 6 refers to the strengthening of the relational capacity with regards to actors within the overall partnership, i.e. stakeholders of the respective country programme, of other country programmes, or of other programmes within the JSF, and outside of it. Through the strengthened relational capacity synergies are to be achieved, which in turn enhances the professional capacity of the partner institutes (impact 4).

Outcome 7 - Relational capacity: Partner institutes actively influence local or national policy-making processes.

> *Hypothesis OP10-OC7:* If new contacts and information flows with external actors, e.g. political actors, international organisations and the press are created, then partner institutes actively influence local or national policy-making processes.

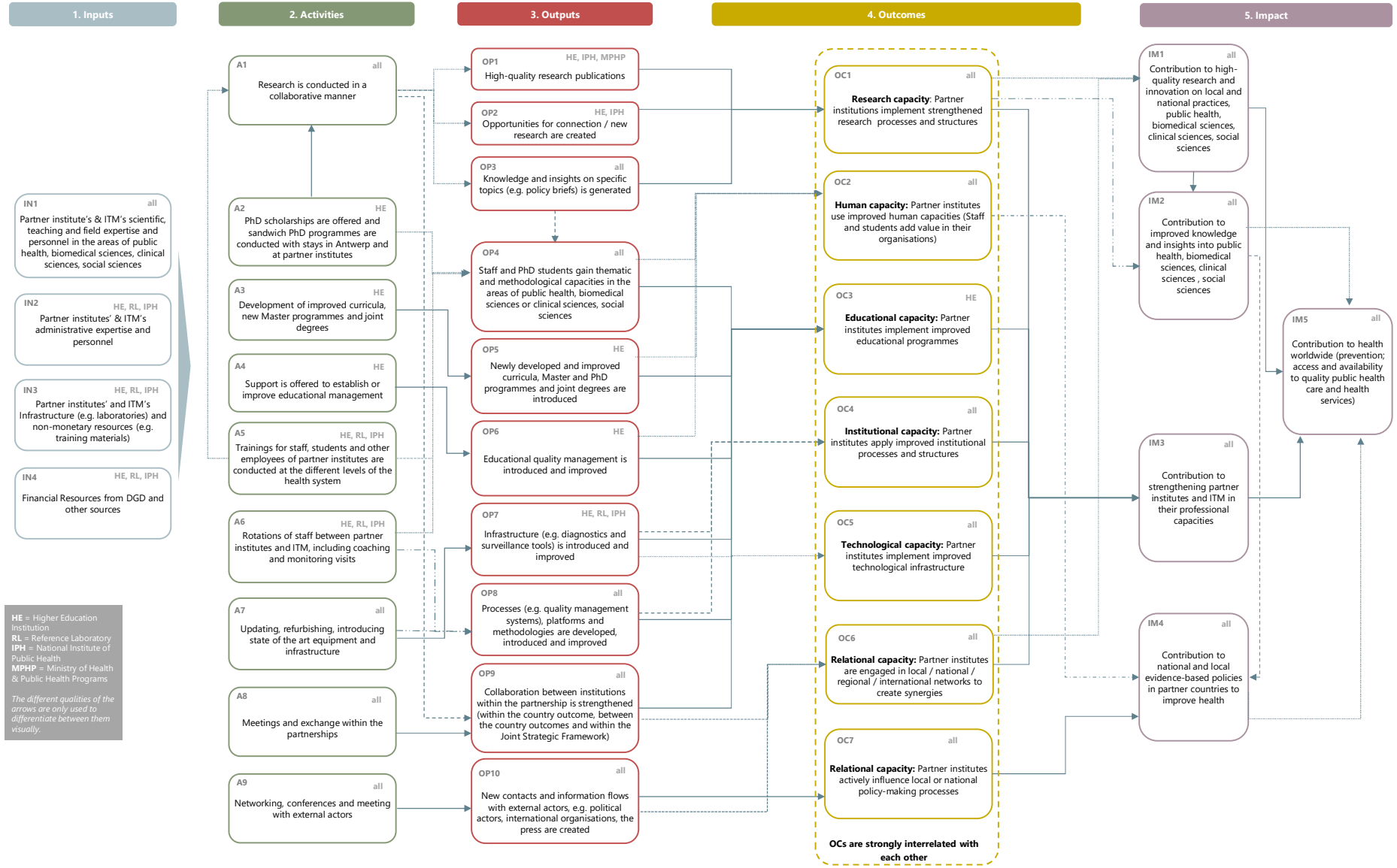
Finally, Outcome 7 describes the relational capacity with regards to the influence of the partner institutions on the local or national policy-making process. Here, the FA4-programme-level ToC describes that the establishment of new or intensification of already existing connection and information flows between the partner institutes and external actors, such as political actors, international organisations, or representatives of the press, strengthens the partner institutes' active influence on local or national policy-making processes. In the scope of these hypotheses networking events, conferences and meetings with external actors are crucial activities.

On the level of **activities**, ITM offers PhD scholarships and sandwich PhD programmes with stays in Antwerp and at partner institutes, provides technical and methodological support for the improvement of existing and the creation of new educational services, technical equipment, quality assurance and management systems, conducts monitoring visits as well as trainings and coaching for the partner institutions' staff and students and the joint conduct of research. Further, ITM promotes the collaboration of the partner institutes with project-internal and project-external actors by organizing exchange formats, networking events, and conferences.

The necessary **inputs** for these activities are provided by the ITM (expertise, personnel, and infrastructure), as well as by DGD (financial resources).

The FA4-programme-level ToC is visualised in Figure 3 below.

Figure 3: Programme-level Theory of Change.



2 Methods

2.1 Evaluation Focus

The final evaluation of ITM Framework Agreement 4 (2017-2021) programme was situated at two levels: the project/outcome level and the overarching programme (FA4) level.

- The **country programme/outcome level**, in the context of this evaluation, was understood as the level of the beneficiaries of ITM activities at country level, meaning the **partner institutions and their individual staff**. Partner organisations are key in contributing to the vision of ITM to improve health research and education capacities in low- and middle-income settings, and as such generating better quality of, and access to health care for populations. In addition, the country programmes aim at contributing to the goals stated in the country-specific JSF. To these ends, the partners are strengthened in their professional capacities to contribute to scientific and public discourse and practice relevant to their respective contexts. Each country-level intervention is guided by the achievement of the expected outcome, which are to be understood as the specific objective of a project, while the outputs will be considered as results.
- At the **programme (FA4) level**, we understood that the aggregation of the ten respective outcome interventions amount to the Framework Agreement 4 for the period 2017-2021. Furthermore, FA4 included three other outcomes for Belgium that are not in the focus of this evaluation.

Consequently, the evaluation approach covered two levels of analysis:

- At country **programme/outcome level**, the country-specific outcomes were assessed. Thereby, we drew on the overarching theory of change but considered the unique causal chain path (expecting that each country programme addresses only some of the possible objectives and related causal paths from the ToC) for each of the country interventions. The evaluation conducted an in-depth analysis of each of the 10 country-level outcome interventions along this causal chain. This allowed the evaluation to examine whether the goals were achieved (or not) as well as to identify the key success or constraint factors that contributed (or not) to their realisation. In addition, the 5C Model by Peter Morgan was used to inform ITM about which capabilities have been developed in which specific context (or not) and what are the enabling and hindering factors that have influenced these findings.
- At the **programme (FA4) level**, we aggregated – based on data from the country-level interventions – the strength of the causal chains to framework agreement/programme level. This analysis is based on the reconstruction of an overarching theory of change to understand to what extent those links exist, and on data collected on the performance of the of country programmes. The analysis of capabilities along the 5C Model also gives the opportunity to have an overall vision on which capacities are best developed and where capacity development activities are not reaching the objectives.

As per the ToRs, the evaluation of the country programmes and, at aggregated level, the FA4, was based on the OECD-DAC criteria, taking into account additional transversal themes like gender, environment, and coordination within the country-specific Joint Strategic Frameworks (JSF). The criterium coherence was not taken into account as such, as it was not yet part of the set of DAC criteria at the on-set of the programme.

2.2 Methodological Steps and Data Collection

The evaluation was started with a kick-off workshop between Syspons and the evaluation's Steering Committee[17] in December 2021. At the workshop, the proposal for the evaluation was discussed and a mutual understanding

[17] Members of the evaluation's Steering Committee were Jan Coenen (Head International Cooperation & development office), Cedric Bohi (Policy Advisor, International Cooperation and Development), Veerle Vanlerberghe (Promotor DRC and member of Commission DevCO) and Dra. Dionicia Gamboa Vilela (Institute of Tropical Medicine Alexander von Humboldt, partner representative).

regarding the objectives and expectations of the evaluation were developed. After the workshop an ethics proposal was drafted by Syspons laying out the strategy for the entire evaluation process, including a self-assessment and strategies to address any risks. Here specifically the following aspects of ethics and integrity were identified as important during the data collection: informed consent[18], data minimisation[19] and data protection[20]. The ethics proposal was submitted to the IRB on 09 February 2022.

As a next step, Syspons conducted a **desk review and preliminary analysis of ITM strategic and country documents and data**. This review was designed to help Syspons gain an understanding of the structures processes and objec-tives of ITM in the context of the FA4 and its country-level objectives. Thus, this document analysis included strategic documents, like the FA4 programme document; the ITM policy plan 'Global Science for a Healthier World' (2020- 2024) and the previous evaluation of FA3. In addition, the review also covered the specific documents of the country-level outcomes and the performance data for each of the countries, and the respective Theories of Change. The desk review also served to uncover and compile the key lessons learnt already identified in ITM documents. This allowed us to understand which data already exists and which questions can be answered from this data. In addition, the analysis of the annual narrative reports on performance in each county provided some insights for the preparation of the case studies (i. e. Data Collection Phase) and the questions to be developed for the interviews.
Simultaneously, we conducted **nine exploratory interviews** with relevant stakeholders. These included members of the ITM Evaluation Steering Committee, representatives of DGD and partner institutes (notably from Peru), as well as staff members of the ITM development and communications offices. The interviews firstly aimed at deepening Sys-pons' understanding of the structures (including the Joint Strategic Frameworks), objectives, relevance, and effectiveness of ITM at country and programme level. They also addressed interview partners' understanding of the underlying impact hypotheses, both at country level and one at programme level (see Chapter 2). Finally, the involvement of different stakeholders at this early point of the evaluation was seen as a quality assurance measure since expectations or fears regarding the evaluation could be captured, ensuring that the evaluation (results) will be useful to them for the follow-up programme (FA5).

Based on the gathered information in the previous steps, Syspons drafted an **overarching ToC** at programme level (Framework Agreement). This Theory of Change was discussed and further developed in a joint workshop on 19th January 2022. In the workshop, several representatives from ITM participated, including the evaluation's Steering Committee and ITM country programme promoters, as well as partner institutes' promotors and collaborators. The inputs and discussions were included in a revised Theory of Change, which was open to another round of comments from the workshop participants. Based on this feedback, the Theory of Change was finalised as presented in Section 2.2.. Building on the knowledge and insights gathered in the previous steps, Syspons developed an **evaluation matrix**, giving an overview of the analytical aspects, evaluation questions, indicators and descriptors and the relevant data collection techniques for each evaluation question (see Appendix). In addition, the evaluation design was further developed (see Annex 8.1.2).

At the end of the inception phase, the **inception report** was drafted. This report was discussed with the evaluation's Steering Committee in a joint workshop on 16th February 2022 revised afterwards. After the finalisation of the inception phase, quantitative and qualitative data was collected. For this, we designed and implemented the online survey of partner institutes' representatives for the former and semi-structured interview guides for the latter.

The population for the survey consisted of 28 participants. These participants were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. It was originally planned that two to

[18] Personal data was processed in the online surveys as well as the qualitative data collection. Therefore, we informed each participant in advance about the scope and purpose of data collection and analysis as well as their rights. We got informed consent from each person before collecting further personal information from them.
[19] We only collected data that we have identified as necessary and relevant information to the evaluation. Where possible, we used data from the annual narrative reports to complement the survey data.
[20] In terms of data protection, we comply with the EU General Data Protection Regulation. We have several technical and organizational measures in place to safeguard the rights of the evaluation participants. First, we at Syspons have a designated data protection officer (Oliver Scheller) whom we will consult in each phase of the evaluation. Second, we have established several forms of data control, including access control, admission control, data entry control, data forwarding control, and availability control. All of our measures to ensure data protection are described in detail in our data protection framework.

three of key knowledge holders per partner institution would take part in the online survey and, following this principle, a total of 35 knowledge holders were invited. The reason such a limited number of stakeholders was invited to participate in the quantitative data collection, was that persons filling the questionnaire needed to have the oversight of all activities implemented in their respective institutes, so they could adequately assess the effect of the intervention on all capacities. Stakeholders who would have only a partial view of the intervention were excluded, as they would not be able to offer a holistic take on the capacity strengthening efforts. The actual amount of participants varied strongly among country outcomes (see Table 1) and also institution types (see Table 2). Nevertheless, representatives of all country programmes participated in the online survey, offering significant insights.

Table 1: Distribution of online survey participants according to country outcome and partner institutions

Country Outcome	Amount of Participants according to partner institute
Benin	LRM: 2
Burkina Faso	CRUN: 2
Cambodia	CNM: 2; NCHADS: 1, NIPH: 3, SCCH: 2
Cuba	INHEM: 1, IPK: 1
DRC	ESP: 0, CRS: 1, PNLTHA: 1 , INRB: 0
Ethiopia	GCMHS at UoG: 3
Guinea	CNFRSSR Maferinyah: 3
Peru	UPCH: 2
South Africa	DVTD: 2, SOPH: 1
Vietnam	NIMPE: 3
Overall	**28**

Table 2: Distribution of online survey participants according to institution type

Institution Type	Amount of participants able to evaluate capacity baseline and capacities after intervention	Amount of participants able to evaluate only capacities after intervention
Higher Education Institutions	7	1
National Institutes of Public Health	15	2
Reference Laboratories	1	1
MoH/ National Health Programmes	1	
Overall	**24**	**4**

For the **qualitative data collection**, ten **country case studies** were conducted to triangulate findings from the surveys, and to offer an in-depth qualitative analysis of ITM's capacity strengthening interventions. In all case studies 7 to 12 individual or group interviews were conducted. Participants were close stakeholders of the respective country programmes, including involved personnel from side of ITM and the partner institution, directors of the partner institutions, direct and indirect beneficiaries at the partner institutions, alumni that left the partner institutions, other Belgian actors within the respective JSFs and other international NGOs as well as external stakeholders, such as policymakers. In Table 3 the amount of conducted interviews per country case study is shown. One local expert in the field of public health per case study supported the evaluation team in conducting the interviews and in setting the findings in the national context.

Table 3: Amount of stakeholders having been interviewed within the case studies according to country programme.

Country Programme	ITM country promoters	Partner institutes' programme coordinators	Involved personnel (ITM)	Involved personnel (partner institutes)	Beneficiaries/alumni	Local authorities	Other donors	External stakeholders	Overall amount of conducted interviews
Benin	1	1	1	3	1	0	0	0	**7**
Burkina Faso	2	1	1	2	4	0	0	0	**10**
Cambodia	0	0	0	4	2	2	1	3	**12**
Cuba	1	0	0	8	2	0	0	0	**12**
DRC	4	3	2	2	3	0	0	2	**16**
Ethiopia	0	3	0	5	2	0	1	0	**11**
Guinea	1	1	1	2	3	1	0	1	**10**
Peru	1	0	0	5	5	1	0	0	**12**
South Africa	0	2	0	2	2	2	0	3	**11**
Vietnam	0	2	0	4	3	1	0	0	**10**
Overall	**10**	**13**	**5**	**37**	**27**	**7**	**2**	**9**	110

To carry out the case studies, we used standardised procedure and a coherent analytical evaluation system. The rationale behind this was to ensure that data collection is of high quality independently from the country, case, and consultant that is carrying it out. To this end, we developed a portfolio containing the information needed to implement the case studies. Syspons included the following standardised documents: a short profile of the partner institution, the evaluation matrix, relevant insight and preliminary results from the analysis of self-assessments, the annual narrative reports and other relevant documents (e.g., on lessons learned), interview guides, a template for documentation, and a template for the country programme reports. Moreover, all consultants of Syspons came together in an **internal preparation and training workshop** on 24th February 2022. Here the consultants familiarized themselves with all relevant topics (e.g., objectives, methodologies, challenges, constraints, expectations, etc.). Furthermore, we made sure that learning takes place and was shared between the evaluation experts of the evaluation team through **feedback loops.** For this, we established an online Microsoft-Teams-Channel in which learning, questions etc. were shared during the implementation. This approach helped to maintain a high data collection quality while raising awareness on topics (e.g., challenges, solutions) that could be improved on the go.

In the next phase of the evaluation, the **data analysis phase**, the results of all data collection were summarised and analysed. The **quantitative data analysis** entailed a descriptive analysis of the survey results, analysing the responses on an aggregated, FA4-programme level and divided country programme and institution type. Additionally, the results for the aggregated level were compared to quantitative findings from the 5C perspective.

The **qualitative data was recorded and analysed** in a synthesis grid, which recorded each interview categorised by country and partner institution. This enabled the data analysis along different criteria, for example by institution type or by country programme. To synthesise and triangulate this data, Syspons conducted an **internal workshop** for data synthesis and triangulation with the evaluation team. This workshop served as an opportunity for all involved consultants to discuss and triangulate the results from the different data collection methods. As a result, Syspons developed preliminary answers to the evaluation questions.

To ensure that ITM gets useful input for its activities under FA5 and future Framework Agreements, we conducted a **presentation of the preliminary results** and findings as well as (possible) improvement areas. In the workshop, to which ITM staff and partners participated, first insights into the evaluation results and preliminary recommendations were presented and discussed. The workshop was conducted on May 18th, 2022.

Based on the feedback from the validation workshop participants, the present **final report** was written. The report, and especially the recommendations, were sent to the Steering Committee in May 2022. Once the steering committee had provided written feedback, the report was finalised. Lastly, the findings from this evaluation were presented in June 2022 in the scope of a meeting that was open to all FA4 stakeholders.

2.3 Methodological Limitations

When designing evaluations, we try to answer the evaluation questions, while weighing different constraints, for example of practical feasibility, ethics, or finance. As such, the evaluation design above is limited in some regard, namely the challenge of attributing effects to the intervention, to operationalising effects appropriately as well as concerning the chosen data collection methods and the remote case study design.

First, we combined the 5C model with the programme Theory of Change to operationalise and measure institutional capacity development. However, this approach did not come without challenges: as the 5C model was introduced retrospectively, the country programmes did not foresee their intervention being assessed against this model and hence did not conceptualise it accordingly. This also meant that the baseline values were "reconstructed" and therefore more prone to errors. We responded to this challenge by allowing survey participants to respond only to those aspects (e.g., items in the survey) that were relevant to the outcome they were involved in.

Second, as one key data collection instrument was a survey of partner institutions' representatives, much of the evaluation was based on self-assessments of their partner institutes' capacity development and collaboration with ITM. To address the potential subjectivity of this data, we triangulated it with qualitative data sources. For instance, in the case studies, external stakeholders such a policymakers and other Belgian development actors were interviewed to get a more holistic impression of the institutions' development.

Third, the results from the online questionnaire analysis cannot be seen as representative due to their quantitative character. Thus, the representativeness of the results is not due to the fact that as many stakeholders as possible were interviewed, but that some key knowledge holders were interviewed who had a deep overall view of the respective intervention. The selection of key knowledge holders was the responsibility of the ITM programme coordinators and partner institutes' promoters, which created the possibility of selection bias, which was limited by the qualitative case study and the associated validation of the survey results. In addition, this approach also led to not all respondents being able to give their view on the partner institutions' capacity development before and after the intervention. As can be seen in the Table 2 in chapter 3.2,four respondents started at a later stage in the programme. This means they could not give a view of the situation prior to the intervention. Hence, their responses only give an estimation of the current capacity, and not of its development over time and in this cases a pre-post comparison is not possible. In this context survey results concerning the country programme in Guinea are specifically limited in their provision of insights as none of the Guinean participants was able to evaluate capacities before the intervention.

3 Analysis per Outcome

As described in Chapter 3.1 the evaluation consisted of two parts. This subchapter provides the evaluation at country programme/outcome level along the OECD DAC criteria relevance, effectiveness, impact, implementations efficiency and sustainability as well as the achieved synergies and complementarity within and outside the respective country outcomes. To this end, each subchapter is dedicated to one country outcome, referring to findings from the online survey and interviews conducted within the case studies as well as a programme document analysis.

3.1 Benin

3.1.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[21] in which two stakeholders of the programme took part;
- Information obtained in seven semi-structured interviews with various stakeholders (involved ITM personnel, involved staff at the partner institutions, alumni of teaching programmes).

In Benin, ITM has collaborated with the Laboratoire de Référence des Mycobactéries (LRM). The activities conducted at the LRM also reinforce the work on antibiotic resistance at the Centre National Hospitalier Universitaire (CNHU). The LRM is the national reference laboratory working on mycobacteriology and is therefore responsible for 92 health facilities spread across the country. The work of the LRM is thus closely linked to the National Tuberculosis Control

[21] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

Programme (NTP) and more largely to the national public health system and policy makers. ITM's country programme in Benin is focused on two areas of work, namely (i) improving health services, and (ii) research and knowledge management.

The improvement of health services at LRM under the FA4 is focused on the quality of diagnostics and appropriate follow-up/intervention. The programme therefore targeted the obtainment of the ISO15189 accreditation and the World Health Organisation (WHO) status as an active Supranational Reference Laboratory (OP5). Tuberculosis (TB) continues to be the infectious disease that causes most of the deaths worldwide after COVID-19, with young children at risk of severe forms such as TB meningitis. Through the ISO accreditation, the LRM is expected to improve the situation of the health facilities to correctly diagnose and contain infectious diseases. The reinforcement of the research and knowledge management consists in building the capacities of the LRM staff on TB research, routine testing and management (OP1); on improving the safety of the working environment (OP2), and on improving the technological infrastructures of the LRM (digital connection with other regional reference laboratories and the NTP (OP4); supporting the grant administration office (GAO) to become operational (OP3); and in supporting the CNHU to become proficient in the containment of (non-mycobacterial) antibiotic resistance, covering quality assured microbiological surveillance, antibiotic stewardship and infection control with networking to district hospitals (OP6).

According to project documents, the overall objective of the programme in Benin was the institutional strengthening of the LRM for quality services and the improvement of the quality of health care at national and regional level, on mycobacteria, and other clinical bacteria. Ultimately, the two goals should lead to an improvement of health of the people in Benin. The total funding volume was 1,317,500 Euro.

While the country programme objective highlights institutional capacity as the principal capacity to be strengthened, it focused on five capacities in total. This is shown in the Theory of Change of the whole FA4 programme. The highlighted parts are the impact pathways relevant in Benin (see Annex 8.3.1). The five capacities focused on in the country programme can be found at the outcome level: Research capacities (OC1), human capacities (OC2), institutional capacities (OC4), technological capacities (OC5), and relational capacities (OC6). The key impact pathways that are set to lead to strengthening these five capacities are the following:

1. *Strengthening research capacities:* through the collaboration with the ITM supervisors, the programme aimed to improve research processes and structures through offering opportunities for new and relevant research as well as the generation of knowledge on tuberculosis research. These results were set out to be achieved by promoting research collaborations between researchers within LRM and ITM. Furthermore, research projects were funded in both their operational costs (e.g. lab consumables) and staff costs by providing PhD scholarships.
2. *Strengthening human capacities:* Human capacities at LRM were expected to be developed to add value in LRM. In Benin, the FA4 programme aimed to strengthen human capacities by promoting staff and PhD students at LRM (output) through the provision of PhD scholarships, sandwich PhD programmes, trainings to gain thematic and methodological capacities in mycobacteriology, and field visits from ITM staff.
3. *Strengthening institutional capacities:* This was supported by the development and the improvement of processes, platforms and methodologies. At LRM, the programme focused on improving the quality assurance system, i.e. the choice of the required lab test, the right application of the procedure, and the final accurate result are key aspects. In addition, the grants and administration office were also supported.
4. *Strengthening technological capacities:* At LRM, the infrastructure of the laboratory was improved to comply with the international norm necessary for the ISO1589 accreditation and supranational laboratory status by the WHO, and the installation of software for TB test results management in intermediate labs was supported.
5. *Strengthening relational capacities*: Through the establishment of new contacts and partnerships with external actors, ITM was expected to improve the links with national, regional, and international networks with a view to create synergies. The programme supported the LRM's ability to acquire and manage new

partnerships through the support to the grant and administrative office. This was expected to facilitate connections with other projects for the implementation of common research projects, among others.

3.1.2 Key Results

3.1.2.1 Relevance

At the level of the country, the FA4 programme was highly relevant as it addressed major public health challenges in Benin. The logic of how the programme set out to achieve impact in public health, is the following: By strengthening the capacities of the research institute in the country, the programme addresses the need to understand diseases and health behaviour that pose major public health challenges better. This can in turn inform policy and therefore guide policymaking in public health, leading to better health outcomes among the population in the long term. The interviewees from different stakeholder groups and target groups involved in the programme coincide that the different areas in the programme design were highly relevant to the existing priorities and needs in the country and by the partner institute. Benin is co-endemic for three mycobacterial diseases: Buruli ulcer, tuberculosis, and leprosy. By supporting the LRM, the programme is contributing to the fight against these public health issues. In particular, the programme has focused on improving the quality of the diagnosis of tuberculosis. The relevance of the programme was further reinforced by selecting the LRM as a partner institute since it holds the status of Reference Laboratory in Benin and is therefore responsible for the supervision of microscopy for tuberculosis diagnostics in 92 hospitals in Benin. The FA4 support was therefore particularly relevant to contribute to national policies in public health. At the level of the partner institutions, the programme was relevant by addressing some core needs including the need for funding to invest in infrastructure which needed to be updated to (i) take on its role as National Reference Laboratory responsible for supervising the health facilities in Benin; and (ii) to meet the international laboratory standards required for the WHO recognition as a Supranational Reference Laboratory. The programme has also answered the need to train highly qualified staff in the institutes themselves, improving the institute's ability to improve the quality of services, and strengthening the capacities of the partner institute and health facilities across the country.

3.1.2.2 Effectiveness

The FA4 Benin country programme can largely be said to have been effective in reaching its capacity-strengthening objectives. According to the project documents and the interview partners, all the objectives aimed at by the FA4 programme were achieved with regards to capacity strengthening. The most important results achieved were the recognition of the LRM as a Supranational Reference Laboratory by the WHO which strengthened research, technological, institutional, and relational capacities, as well as the PhD programmes and the broad range of trainings that reinforced the human capacities in the institution. The survey results also confirm these trends with the greatest positive change observed in human capacities and technological capacities.

Firstly, according to documents and interviews, the data indicates that the main results with regard to research capacities have been achieved. In particular, the LRM is recognized by the WHO as an active Supranational Reference Laboratory. Moreover, the WHO recognizes the LRM as an exceptionally strong tuberculosis laboratory in West-Africa, where it is the only Supranational Reference Laboratory in the region. The programme contributed by investing in infrastructures in the lab to manipulate dangerous germs like the tuberculosis bacilli. The LRM is now classified as a Class 3 laboratory, which stands out in Benin. According to the interview partners, ITM further supported training staff on biosafety and quality assurance systems, and by sending experts to accompany the LRM to prepare for the classification as a Class 3 laboratory. This, in turn, is a precondition for LRM to conduct high quality research that can compete in the international research landscape.

Secondly, as a result of the FA4, the human capacities were strengthened. According to the interview partners, the staff is now more knowledgeable for TB research and routine testing and management (*capability to act and commit & capability to adapt and self-renew*). According to the programme documents, all planned trainings were carried out on a variety of aspects including specific methodologies, thematically, and management skills. The staff was also trained on drafting research projects and has improved its capacity to take the lead in the development of new research projects, according to interviewees. In addition, as stated in the project documents and interviews, the PhD student successfully defended her thesis dealing with the improvement of the diagnosis tools and bio-digital aspects, which was the specific goal of FA4.

Thirdly, the data from the interviews and project documents indicate that the FA4 strengthened LRM's institutional capacities. This was achieved in three ways. First, a reason was the promotion of a safe working environment at LRM, with the IATA/ADR certificates and the audit for the ISO 15189 accreditation obtained (*capability to adapt and self-renew)*. Second, interview partners also indicated that ITM supported the reinforcement of the management skills through the development of IT connectivity solutions with regional reference laboratories and the National TB Programme. This objective aimed at implementing a software (DataToCare) allowing the LRM to centralise the results of the GeneXpert MTB/RIF test implemented across the 30 health facilities in Benin (*capability to adapt and self-renew*). Thirdly, the interview partners confirmed that ITM further supported the training of staff on bio-safety and quality assurance systems, and by sending experts to accompany the LRM to prepare for the bio-safety and quality assurance steps. Lastly, in the context of the development of management skills at LRM, ITM also supported the institution with the reinforcement of the grant administration office (GAO). In this context, the interview partners revealed that the support of ITM to train the staff in financial management was successful since it resulted in obtaining several grants for collaborative projects, including the European & Developing Countries Clinical Trials Partnership (EDCTP) (DIAMA project), the Global Fund as well as the RAFAScreen project, and the SHoRRT project (*capability to relate to other actors)*.

Fourthly, the interview partners uniformly state that the programme strengthened technological capacities, and it did so along two significant results. Firstly, the LRM laboratory got supranational status (as presented above). Secondly, the interview partners indicate that ITM supported the generalisation of the use of a blood culture at the CNHU by reducing its costs by four (*capability to relate to other actors*). ITM supported this by providing laboratory consumables to the CNHU, which enables CNHU to avoid shortages of the consumables needed for clinical bacteriology diagnosis. Subsequently, the CNHU was able to improve access of this test to patients in Cotonou and beyond.. According to interview partners, this resulted in contributing to the efforts in improving hospital hygiene (i.e. during a nosocomial flare, the blood test was able to identify the source and to eliminate it). The interview partners raise that thanks to the pre-existing relationship between LRM and CNHU, the director of the LRM was able to extend the application of the blood test to the network of hospitals in Benin. This objective was considered by the interview partners to contribute to the activities carried out by the LRM in its role as National TB reference supporting health facilities in Benin (*capability to adapt and self-renew*).

Lastly, although the results of the survey show that the relational capacity of the partner institution has lowered between the start and the end of the programme, the documents and interview partners indicate that FA4 contributed to improve the relational capacities of the LRM. The newly acquired status of the LRM means that it provides support to 23 labs in West African countries in terms of trainings and deployment of expert to support their role as TB labs in their respective countries. In addition, the support of ITM in terms of the reinforcement of the GAO contributes to acquiring new project and develop collaborative research projects, hence to developing the *capability to relate to other actors*.

Among the key factors facilitating the success in reaching these results, several were mentioned by the interview partners. First, the interview partners underline that the LRM has a highly capable leader who demonstrates great vision, advances the collaboration, and proves to make good management decisions. Second, the quality of the collaboration between ITM and the LRM was perceived by the interview partners to have contributed to the successful results of the programme, whether it be in terms of good communication, responsiveness or by establishing

a climate of trust. Thirdly, the way the trainings were conducted was considered by interview partners a key facilitating factor. The deployment of ITM experts on-site as opposed to remotely provided a more effective support to LRM staff.

However, there were other factors identified by the interview partners that hindered the advances of the programmes. This includes firstly the COVID-19 pandemic that caused delays in the delivery of lab consumables and in the timeframe to acquire the audit accreditation, a key to obtain the ISO15189 accreditation. While being outside of the influence of ITM, it must be noted that without the delay, the accreditation would have led to a higher impact in the support as they would have been able to provide more support to other labs in the region.

Concerning the transversal topic of gender, the programme did not adopt a specific gender mainstreaming approach although there are examples of good practices. As presented in the documents, the programme selected a female PhD student to support. Although the documents indicate that the PhD student is a "role model for other female scientist", the qualitative data could not clearly identify specific measures that would have contributed to promoting the student as a role model. Nevertheless, it should be noted that the format as a sandwich PhD was recognized by the interview partners to be an added value for the PhD student to maintain the balance between family and work. Concerning the transversal topic of the environment, many interview partners suggest that although this was not a focus of the country programme at hand, this is nonetheless a cornerstone in the sector in which the programme takes place. By focusing on the support to the treatment of highly contagious diseases, ITM activities have tackled the management of lab waste.

3.1.2.3 Impact

Through the capacity strengthening approach, the FA4 programme has had and is expected to have impacts at several levels, namely at the level of the institution, at the country level in Benin, and at the regional (and international) level. Three significant impacts, emphasised in many interviews, are worth highlighting.

Firstly, the interview partners indicate that the programme has generally achieved impact by contributing to high-quality research, generating relevant public health knowledge around tuberculosis with the support of ITM to the PhD scholarship and to support the GAO to develop common research projects, together with other actors (i.e. EDCTP). These projects have contributed to gaining further knowledge in the diagnosis and treatment of the disease.

Secondly, with regards to the second level of impact and the contribution to national and local evidence-based policies in partner countries to improve health, a significant contribution of the programme was the reinforcement of the role of the LRM as a national reference laboratory. By supporting the improvement of human, research, and relational capacities (on methodological, technical and management skills) as well as technological capacities (infrastructures and software), the interview partners state that this contributes to the supervision role of the LRM of the 92 health facilities across the country. This increases the accessibility of the data and offers the opportunity to use them faster. The programme also supported the general use of the blood culture at a lower price in these structures. Further, the interview partners highlight that together with measures to sensitize the medical staff on the use of this blood culture, this contributes to increasing access to this test to the population in Benin. In addition, the results obtained at the LRM have shown some potential to be leveraged at the national level. This is particularly due to the specific role of the LRM Director, who is also the Director of the National Programme against Tuberculosis, what in turn reinforces the collaboration between the two entities. In that sense, the interview partners report that the LRM has served as a driving force for the National Programme both in terms of approach and vision. As a result, the National Programme services are moving towards a quality approach by drawing on the experience of the LRM. According to the data from interview partner, the LRM has used its experience with the ITM support to support the National Programme in organizing monthly meeting, annual assessment of activities, drafting of documents to move towards ISO accreditation.

Thirdly, with regards to the next level of impact and the contribution of the programme to health worldwide (prevention; access and availability to quality public health care and health services), the most significant result obtained by the project that can plausibly contribute to this objective, is the attribution of the Supranational Laboratory status of the LRM as it contributes to scaling-up the results obtained at the LRM to the rest of the African network. For instance, the interview partners indicate that with the supervision of 23 labs across Central and Western Africa, LRM supports them in the strengthening of human capacities that were also developed with the support of ITM (for instance on new techniques) and supporting the network in pursuing the objective of obtaining the accreditation as a reference lab.

Success Story: Closer research institutes and national programmes across the African continent

In Benin, ITM contributed to bringing the results of the ITM collaboration with LRM to the governmental National Tuberculosis Programme (NTP). The LRM has served as a driving and accompanying force for the NTP to adopt a quality approach by drawing on the experience of the LRM with ITM (monthly meeting, annual assessment of activities, drafting of documents to move towards ISO accreditation). The local coordinator of the FA4 is now aiming at supporting the heads of other NTP in the WHO West and Central African network on tuberculosis, to reinforce the visibility of the NTPs and bringing together the NTPs and the TB labs in the countries represented in the WHO network. By sharing the Benin experience, this is expected to follow the same dynamic initiated in Benin, putting the TB labs in a traction role towards the NTPs, aiming at reaching similar results as in Benin.

3.1.2.4 Efficiency

The allocation of funding both within and across different parts of the country programme was generally seen to be cost-effective by many interview partners, despite some delays.

Some key factors contributing to the efficiency of the programme, were highlighted by the interview partners. First, the selection of the LRM as an already strong partner contributed to the efficiency of the programme. The interview partners indicated that the LRM has already been relatively efficient and the network has been well managed. Secondly, the programme operated on a trust-basis, with the LRM being in the driving seat of the collaboration and ITM supporting by facilitating the application of the procedures and advising the partner on the allocation of the budget to remain within the cap while maintaining the planned activities. Another aspect raised by the interview partners was the separation of administrative and technical tasks introduced by the FA4 programme. While at the beginning, the lab technicians covered both technical and administrative responsibilities, these two fields are now separated, which is considered to have increased the effectiveness and efficiency of the programme. In addition, ITM provided trainings to financial staff at LRM in order to increase their understanding of the ITM procedures and to facilitate the financial steering of the programme, according to interview partners. Along the same line, the interview partners recognize that the procedures were also considered to be more flexible compared to other partners. For instance, when the goals were achieved in the digital component, the decision was taken to include the training on IATA. This flexibility was also a key contributor to creating synergies with other common projects led by LRM (see also 2.6 below).

3.1.2.5 Sustainability

According to the collected data, several components are perceived to have been sustainable, with some potential for improvement. By building up expertise within the partner institutions and collaborating in joint projects, partner institutions are able to attract external funding (financial sustainability), train future researchers themselves (technical and institutional sustainability) and hold local ownership (social sustainability).

Regarding financial sustainability at LRM, the core logic of the country programme is to promote the institute's ability to attract external finance by strengthening the GAO, as well as their research profile and the expertise of staff. According to the interview partners, the LRM has a greater capacity to seek funding, thanks to the reinforcement of the grant and administrative office, which received, amongst others, trainings on financial management. This was illustrated in the LRM obtaining several grants (see 2.2 above). Another aspect favourable to the financial sustainability of the results of the programme, according to interview partners resides in the political will in Benin. In 2022, the state has planned to procure medications and reactive agents from the state budget equivalent to 90 million FCFA (about 137,000 Euros).

With regards to the technological sustainability, the interview partners consider that this aspect shows encouraging signs that the investment in infrastructures will be sustainable. Although the equipment is specific to mycobacteriology, the interview partners underline that the LRM is now part of several networks which will continue to use the equipment. It remains essential that the lab staff continues to receive training on the use and maintenance of the equipment, not only on the existing one but also develop their skills with regards to new technological advances in the field.

In terms of social sustainability, the interview partners state that the results are also well appropriated in the institution. For this aspect, the interview partners highlight again that the leadership of the director is essential in constituting a solid basis of highly qualified staff around him to continue driving the institution forward.

Lastly, the institutional sustainability of the programme is also strong according to the interview partners, in part thanks to reinforced human capacities in the institution, especially in technical, methodological and management skills and the accreditation processes that were translated into formalized practices in the partner institutions. This was the case for the quality assurances processes and audit practices which are conducted independently by the partner institution, according to the interview partners. One risk raised by the interview partners with regards to institutional sustainability is the retention of the trained staff. For instance, the PhD student trained in the context of the FA4 could not remain employed at the LRM. Nevertheless, future opportunities of employment are actively sought in the field of informatics (especially considering the focus of her thesis on bio-digital aspects).

3.1.2.6 Complementarity and synergy

According to project documents, synergies and complementarity were sought with other actors of Belgian civil society in the context of the Joint Strategic Frameworks (JSFs). Synergies with other non-governmental cooperation actors (MEMISA and Medics without vacation) are proceeding as planned although the interview partners identify a potential for greater collaborations with Belgian actors.

Beyond the framework of the JSFs, the interview partners point to multiple collaboration existing in the context of the FA4 programme, most notably with the CNHU as well as with other projects, such as the Global Fund and EDCTP DIAMA project amongst other. The interview partners consider that the DGD funding (implemented through the ITM programme), is perceived to increase the potential for collaborations and the coherence among the different partnerships at the partner institutions. The interview partners refer to DGD funding as the cement in the partner institution. For instance, the interview partner indicate the PhD candidate supported by ITM also contributed to research/data sets for the DIAMA project, which contributed to obtaining the WHO endorsement of the evaluated diagnostic assays.

In addition, the interview partners highlight that upon obtaining the recognition as a Supranational Reference Laboratory, the LRM has entered a consortium with the Supranational Reference Laboratories in Antwerp and Milan. In collaboration with these laboratories, the LRM supports reference laboratories in West and Central Africa. LRM also coordinates an EDCTP research project involving nine African countries with ITM and the University of Liverpool. There is a network of exchange of project opportunities in which LRM is involved. Furthermore, one interview partner

highlighted a potential opportunity to further create synergies and collaboration by focusing on the One Health approach, thereby encouraging multi-disciplinary collaborations (between human health, animal health and environment, for instance). The adoption of this approach would contribute to finding new partners to collaborate with in different fields.

3.2 Burkina Faso

3.2.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[22] in which two stakeholders of the programme took part;
- Information obtained in ten semi-structured interviews with various stakeholders (involved ITM personnel, involved staff at the partner institutions, alumni of teaching programmes).

In Burkina Faso, ITM has collaborated with two partner institutions: the Clinical Research Unit of Nanoro (CRUN) and Centre Muraz. CRUN and Centre Muraz are both centres for health research that work together with local hospitals, institutes, national control programmes, the Ministry of Health and other policymakers. ITM's country programme in Burkina Faso is organised in four components: (i) the malaria component; (ii) the microbiology component; (iii) the social sciences component; and (iv) the sexual and reproductive health component. The malaria component directly funds research and trains researchers in this area to contribute to the fight against the disease. The microbiology supports research in this field with a particular focus on microbiological surveillance and antibiotic resistance that has increasingly become a problem not only in Burkina Faso but around the world. The social science component addresses the fact that – especially in rural areas – a host of reasons beyond purely medical ones affect why people seek out healthcare or not (as a number of interview partners point out) and supports research of these to ultimately improve community health. Finally, the sexual and reproductive health addresses limited access to healthcare for vulnerable populations in this area such as female sex workers.

The former three components are carried out with CRUN and constitute the larger part of funding and activities carried out. The last component is implemented with Centre Muraz and is relatively independent from the other three according to interviews with various stakeholders. According to project documents, the overall objective of the programme in Burkina Faso was to strengthen the research capacity in the resource limited setting of Burkina Faso. The total funding volume was 1,742,500 Euro.

While the country programme objective highlights research capacity as the principal capacity to be strengthened, the country programme focused on five capacities in total. This is shown in the Theory of Change of the whole FA4 programme. The highlighted parts are the impact pathways relevant in Burkina Faso (see Annex 8.3.2).[23] The five capacities focused on in the country programme can be found at the outcome level: Research capacities (OC1),

[22] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

[23] It is important to note that FA4's country programme in Burkina Faso is not a full reflection of the partner institutions' activities and objectives in general. Those are much broader and include activities and their results shown but not highlighted in the Theory of Change attached (e.g. networking with external actors and policy outreach at CRUN). The highlighted parts only refer to the impact pathways under FA4, not the partner institutions in general and were therefore subject of this evaluation.

human capacities (OC2), educational capacities (OC3), institutional capacities (OC4), and technological capacities (OC5). The key impact pathways that are set to lead to strengthening these five capacities are the following:

1. *Strengthening research capacities (only applies to CRUN):* The programme aimed to improve research processes and structures through high-quality publications, opportunities for new and relevant research as well as the generation of knowledge on components (i)-(iii) of the programme (outputs). These outputs were set out to be achieved by promoting research collaborations between researchers within CRUN and between CRUN and ITM researchers. Furthermore, research projects across components (for example on social factors underlying antimicrobial resistance) were funded in both their operational cost (e.g. lab consumables) and the PhD researcher staff cost by providing PhD scholarships.
2. *Strengthening human capacities (only applies to CRUN):* Human capacities at CRUN mainly encompass the expertise and ability of researchers to conduct high-quality research. In Burkina Faso, the FA4 programme aimed to strengthen human capacities by promoting staff and PhD students at CRUN (output) through the provision of PhD scholarships, sandwich PhD programmes, trainings, and rotation visits by ITM staff.
3. *Strengthening educational capacities (only applies to CRUN):* This involves the education of PhD students at CRUN and can therefore be understood as directly contributing to strengthened research capacity in the country programme of Burkina Faso. The education of PhD students was set out to be improved in two main ways. First, PhD students' competences were aimed to be enhanced (output) through sandwich PhD programmes that facilitate close exchange with researchers at ITM as well as trainings and rotation visits by ITM. Second, PhD students were supposed to have access to improved laboratory infrastructure (output) which was set out to be achieved by refurbishing and introducing new laboratory equipment.
4. *Strengthening institutional capacities:* Both at CRUN and Centre Muraz, institutional capacities to be strengthened included institutional structures and resources. The objective can be understood as facilitating an improvement of research capacities and should not be seen as an independent objective. Institutional capacities were set out to be strengthened by providing new infrastructure and establishing or maintaining data systems (outputs). At Centre Muraz, new infrastructure involved the maintenance and upgrade of two clinics to provide cervical cancer screening. At CRUN, this involved the promotion of a new social sciences research strand, planned to be achieved by funding and supporting a PhD student in this area. In terms of data systems, the programme set out to improve data collection systems at Centre Muraz and maintain the Health and Demographic Surveillance System (HDSS) at CRUN by providing funding.
5. *Strengthening technological capacities:* In Burkina Faso's partner institutes, technological capacities aimed at in this programme relate to hard technological infrastructure to carry out health monitoring and research. Both at CRUN and Centre Muraz, this was set out to be improved through technologically upgraded laboratories (outputs). Core activities that set out to achieve this were the provision of technical equipment such as machines for testing procedures, surveillance tools, screening devices, etc.

At the heart of the capacity building approach lies the idea that strengthened capacities within the partner institutions are inherently conducive to long-run impact and sustainability since people trained, structures established, and material infrastructure acquired stay within the institutes. This allows them to carry results forward. At the level of (long-run) impact, the country programme set out to contribute to high-quality research, knowledge generation, strengthened professional capacities and health policies in the country.

3.2.2 Key Results

3.2.2.1 Relevance

At the level of the country, the FA4 programme was highly relevant as it addressed major public health challenges in Burkina Faso. The logic of how the programme set out to achieve impact in public health, in particular with CRUN, is the following. By strengthening the capacities of research institutes, it addresses the need to better understand diseases and health behaviour that pose major public health challenges. This can in turn inform policy and guide health policymaking, leading to better health outcomes among the population in the long run. The four components of the programme were well designed as they all addressed important public health challenges according to various stakeholders interviewed. For example, malaria is still one of the leading sources of death in Burkina Faso. By funding research and training researchers working in this field, the programme enhanced the understanding of the disease and how to deal with it which can be used to guide health policy in the fight against malaria.

At the level of the partner institutions, the programme was relevant because it addressed some of the core needs. However, it could have been more relevant if it had addressed a broader set of institutional needs as the interviews reveal. Core needs addressed include the need for research funding and the need for highly qualified staff to produce high quality research and to improve the institution's ability to attract external funding. The focus of staff training was put on PhD students through the provision of PhD scholarships and training opportunities at CRUN. Beyond that, however, the need for funding for laboratory technicians was initially not addressed. According to various interview partners, this had implications for the use of PhD researchers' resources who were forced to carry out routine laboratory work that could have been carried out by laboratory technicians. As a result, they ended up with limited time to advance their own research. Funding for laboratory technicians only became part of the programme in the later years.

3.2.2.2 Effectiveness

According to project documents, the online survey and many interview partners, the most important outcomes of the country programme in Burkina Faso were strengthened research and human capacities at CRUN. Overall, these outcomes can be said to be largely reached. This is both manifested in the achievement of most indicators for the country programme (as documented in monitoring tables and the self-assessment) as well as some key results achieved in this area testified by many interview partners. In particular, three of the most important results are the following. First, one of three PhD students supported with a scholarship has defended their thesis in 2018 and the other two are at an advanced stage. Throughout the process, they have built up significant expertise and skills and been involved in important research projects within the institute according to several interview partners (*capability to act and commit*). Second, many research projects have been initiated at CRUN with support from the programme that have already or are expected to generate public health knowledge. The projects have involved PhD researchers and other staff at the institute and many draw on laboratory equipment funded by or the HDSS data source maintained in part by the country programme (*capability to act and commit, capability to generate development results*). Third, the social science component of the programme involving funding of a PhD student in social sciences and support of research that relates to social factors surrounding antimicrobial resistance and health seeking behaviour has significantly contributed to building a social sciences strand of research within the institute. Many interview partners agree that this has led to two important results. First, it has encouraged more collaboration of researchers across disciplines as social sciences and natural sciences work together to explore important issues of public and community health (*capability to achieve coherence*). Second, the research projects are particularly relevant to address challenges in community health as there are often other factors than medical ones explaining the health seeking behaviour of communities. Interview partners suggest that important insights for policymaking around community health can be generated from this research (*capability to generate development results*).

Among the key factors facilitating the success in reaching these results, two stood out in several interviews. First, ITM and CRUN have a very long-standing relationship with collaborations since 2008 that benefits from close relationships between researchers. Second, CRUN has a highly capable leader who demonstrates great vision, advances the collaboration and research, and proves to be an excellent manager.

In spite of these successes, the programme fell short of achieving its objectives in strengthening research and human capacities in two notable ways according to project documents, self-assessment results and information obtained in interviews. First, an antibiotic stewardship committee could not be established despite the public health challenge the antimicrobial resistance poses in Burkina Faso and across the globe (*capability to generate development results*). A key reason for this shortcoming seems to be a lack of clinicians cooperating with the research centre. Some interview partners suggest that a project design involving incentives to clinicians to cooperate with the centre could help achieve this in the future since clinicians do not respond to the research centre directly and are thus not always willing to cooperate in an environment with many other pressing clinical demands on their time. Second, PhD students often had to engage in routine laboratory technicians' or administrative work such as procurement of laboratory consumables as mentioned before. This came at the expense of time spent on advancing research projects which would have strengthened research capacities at CRUN further. It also resulted in delays in their PhD progress (see chapter on Efficiency below). A key reason, as several interview partners raised, is a lack of qualified staff carrying out the above-mentioned tasks in terms of availability as well as capability. In particular, existing laboratory technicians have not always been able to work properly with (new) technical equipment and data systems.

Considering institutional and technological capacities, the objectives were achieved both at CRUN and at Centre Muraz. Project documents, self-assessment results, the online survey, and interview information all confirm that cervical cancer screening at two clinics was successfully established and data systems and laboratory upgrades have taken place. New resources and equipment are not only in place but also used for research projects (*capability to act and commit, capability to generate development results*). As outlined above, these capacities are not important objectives itself but rather facilitate strengthened research capacities by enabling the implementation of high-quality research projects.

In a similar vein, enhanced educational capacities focus on the education of PhD students at CRUN and are therefore more of a facilitating outcome to achieve strengthened research capacity. While the COVID-19 pandemic had a significant effect on the number of planned exchanges for PhD candidates with some moving online and some cancelled, many interview partners suggest that the PhD education was mostly successfully enhanced through exchanges, trainings and rotation visits that still took place. This has led to the qualification of high calibre researchers at CRUN (*capability to act and commit*).

Concerning the transversal topic of gender, project documents reveal that the share of female staff involved in research projects at CRUN is above the national standard of 30%. Several interview partners and the self-assessment mention that increasing the share of female researchers is a continuing priority, but some reasons are outside of the institute's control such as a lack of female applications. An internal reason that leaves room for improvement in future programming is awareness of flexibility with PhD funding. With childcare duties still associated strongly with women in Burkina Faso, some interview partners pointed out that more flexible funding allowing for interruptions and longer funding periods in total would be helpful (*capability to generate development results*). While this issue was addressed during the implementation period, it seems that female PhD candidates were not aware.
Concerning the transversal topic of the environment, many interview partners suggest that this was not a focus of the country programme at hand. While an incinerator for proper waste management was purchased within the programme, concerns raised include that this may not satisfy sufficient standards for environmental cleanliness.

3.2.2.3 Impact

The programme has generally achieved impact by contributing to high-quality research, by generating relevant public health knowledge, and by strengthening the partner institutes in their professional capacities according to interview information and relevant publications resulting in part from the programme. The extent to which impact is achieved differs to some degree by component. One of the most significant impacts of the programme is the contribution to health research within the malaria component at CRUN (see Success Story below). Malaria research produced, among others, by an FA4 supported PhD candidate has played a substantial role in paving the way for a new malaria vaccine (*capability to generate development results*).

Success Story: Towards a Malaria Vaccine

Malaria research constitutes a strong and globally well-known strand of CRUN's research programme. Within the country programme's malaria component, a PhD student received a scholarship. His research on malaria resulted in a publication (first authored by him) in *The Lancet*, a high impact medical journal, that demonstrates the efficacy of a malaria vaccine candidate in a phase 2b trial. This study is pivotal in the development of a new malaria vaccine that could save the lives of thousands in Burkina Faso alone.

While other components have not (yet) brought about such a significant impact, an impact on health policy making, in particular on community health, can be expected in the near future given the relevant research that is currently worked on and the expertise by researchers that has been built up through the programme. While impact can be expected, a notable concern has been raised by interview partners that limits the potential impact of the programme. The programme's focus in strengthening human capacities might have been too narrow on PhD students. The transition from a PhD student to an expert post-doctoral researcher who has both the responsibility to carry out high-quality research and takes on broader responsibilities (e.g. management) within the partner institution poses a challenge (*capability to act and commit, capability to adapt and self-renew*). Future programming could also target post-doctoral researchers to facilitate this transition.

3.2.2.4 Efficiency

Within the different components, the programme has been mostly efficient and delivered on time with some potential for improvement lying in more diversified funding and closer monitoring. Across components, interview partners had differing views and some suggested that efficiency gains would have lied in allocating funding differently.

Regarding the allocation of resources within components, there was generally a strong sense by various interview partners that a lot could be achieved with little means in the country programme. A key reason mentioned often are the long-standing relationships between the institutes and researchers that allowed them to build on existing collaborations and work together smoothly. However, a concern raised by interviewees is some lack of accountability and monitoring. Close monitoring was inhibited to some extent by the COVID-19 pandemic which meant that fewer in-person visits with monitoring elements could be carried out, in particular at Centre Muraz. The interviews suggest that staff sometimes had little idea where money ended up, even in their components of the programme, and some activities may have been funded that have no clear direct link to activities in the original project planning.

In terms of timely delivery within components, self-assessment results, project documents, and information from the interviews suggest that most activities were implemented within envisaged timeframes at Centre Muraz and CRUN. There were some delays in the microbiology component at CRUN and in the progress of PhD students. Some reasons for this were external, as some interview partners suggest, such as an unexpectedly low number of hospital patients for a PhD research project in the microbiology component to advance. Adjustments taken led to delays. Other reasons were internal with potential lessons for future programming. Two stand out that were raised by several interview partners. One is the lack of qualified staff carrying out routine laboratory technicians' or administrative work as outlined above. Separate funding for lab technicians or administrative staff or provisions for training

existing staff to carry out these tasks would arguably have been less costly than having resources of PhD researchers going into these tasks. The second is a potential lack of resources for close supervision by some PhD supervisors based at ITM. Little contact and hard reachability implied that some PhD students had difficulties regularly interacting with their supervisors and therefore advancing their research at the desired speed.

Regarding the allocation of funding across components, some interview partners suggested that more funding could have been (re-)allocated to better performing components. There was a sense that more focus might have been a more efficient choice with more effective components funded more comprehensively (to cover, for example, for more research as well as lab technicians) and other components implemented at a smaller scale.

3.2.2.5 Sustainability

Sustainability is generally found to be strong in all dimensions with only minor potential for improvement. Project documents, self-assessment results and information from the interviews reveal that the capacity building approach of the programme has worked well. By building up expertise within the partner institutions and collaborating in joint projects, partner institutions are able to attract external funding (financial sustainability), train future researchers themselves (technical and institutional sustainability) and hold local ownership (social sustainability).

Regarding financial sustainability at CRUN, the core logic of the country programme is to promote the institute's ability to attract external finance by strengthening their research profile and the expertise of staff. The fact that, according to an interview source, the share of funding coming from ITM went from 80% to 10% between the beginning of their collaboration and now is testament to the success of this approach.

Technical and institutional sustainability is also strong in most aspects, but the qualified use of equipment deserves attention for future programming. In terms of institutional structures, CRUN can draw on a broad network of international partners and has been established as the Centre-West regional directorate of IRSS, the leading national public health institute. Regarding the further development of research expertise, there is broad consensus among interview partners that the capacity building approach has worked. Researchers who have built up their expertise with support from the FA4 programme and have stayed within CRUN are now able to train new staff. Finally, concerning technical infrastructure, equipment and data systems were generally delivered within existing structures of both CRUN and Centre Muraz and are operational. At Centre Muraz, staff has competently been able to use these. At CRUN, the concern was raised that lab technicians have not always had the capacity to use them. This did not only have implications for the use of resources of PhD researchers as outlined above but also puts technical sustainability at risk. Following suggestions made above, support for lab technicians as an element of the programme would have addressed such issues of technical sustainability as well.

Regarding social sustainability, local ownership is generally strong. According to the self-assessment results, both partner institutes have ownership over the components of the programme implemented with them. Researchers at CRUN are mainly in charge of carrying out their research activities and largely have the discretion over the use of their resources according to interview partners. In a similar way, staff at Centre Muraz carried out programme activities with their own staff and at their own discretion. Many research projects are realised in collaborations and interview partners both at CRUN and ITM reported a sense of co-ownership and co-operation at eye level.

3.2.2.6 Complementarity and synergy

Project documents and self-assessment results attest that the programme clearly contributes to goals 3 and 4 of the Joint Strategic Framework (JSF) on an improved health situation and access to knowledge in the country[24] and is thus aligned with Belgian development cooperation in the country at large. While a few synergies within the JSF were realised, most cooperation took place with players outside of Belgian development cooperation.
In the academic realm, the programme has had links with the Catholic University of Louvain (UCL) in Belgium, from which CRUN regularly has interns working on their research and where a former Master student at CRUN supported by the FA4 programme now completes his PhD. Furthermore, synergies with the Belgian Academy for Research and Higher Education (ARES) were realised. According to project documents and interviewees, left-over budget from ARES could be used to replace blood cultures for microbiological surveillance in 2018 and some students at CRUN were supported by ARES.

In terms of other partners within Belgian development cooperation, no synergies were reported. Some interviewees mentioned that this sometimes felt a little forced and no obvious synergies were reachable with other organisations who worked on very different issues. By contrast, CRUN has many international partners outside of the JSF and collaborations for research projects associated with the FA4 programme exist with universities and research institutes across the globe. Even within the FA4 programme, a PhD researcher at CRUN has cooperated with ITM partner institutions in Benin and DR Congo.

3.3 Cambodia

3.3.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[25] in which seven stakeholders of the programme took part;
- Information obtained in twelve individual, semi-structured interviews with stakeholders (programme directors, involved staff, beneficiaries at the partner institutions and external stakeholders).

In Cambodia, ITM collaborated with four national public health institutes: the Sihanouk Hospital Centre of Hope (SHCH), the National Centre for Parasitology, Entomology and Malaria Control (CNM), the National Centre for HIV/AIDS, Dermatology and STD Control (NCHADS) and the National Institute of Public Health (NIPH). The country programme's main objective was to strengthen the capacity of these national institutes to generate evidence for managing health problems and strengthening the health system in Cambodia. This was addressed through collaboration with the local partners in four areas: 1) strengthening the management of infectious diseases, 2) adapting a malaria elimination strategy and improving the control of other vector-borne diseases, 3) introducing an elimination strategy of mother-to-child transmission of HIV and syphilis, and 4) carrying out intensive research on health systems and policy and improving governance and knowledge management, as well as providing training for health professionals in public health and research. The first component was largely carried out with SHCH, the second with CNM, the third with NCHADS, and the fourth with NIPH with some collaboration with the other partner

[24] Goal 3 is to „improve the health situation of the population of Burkina Faso, vulnerable groups and women in particular, through a better access to health care and acceptable sanitary conditions." Goal 4 is to "improve the availability and quality of higher education, research and stimulate innovation, taking into account gender and environmental sustainability."

[25] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

institutes. To achieve these ends, the programme focused on different types of trainings and activities to strengthen capacities to conduct clinical, operational, entomological and health systems research. The total funding volume of the Cambodian country programme was 3,952,500 euros.

While the programme objective primarily highlights research capacity strengthening, it focused largely on five capacities with some activities taking place to strengthen an additional two capacities. This is shown in the Theory of Change of the whole FA4 programme. The highlighted parts are the impact pathways relevant in Cambodia (see Annex 8.3.3).[26] The five capacities central to the country programme can be found at the outcome level: Research capacities (OC1), human capacities (OC2), technological capacities (OC5), and relational capacities regarding networks to create synergies (OC6) and policy-making processes (OC7). The programme additionally sought to strengthen educational capacities (OC3) for trainings at all four partner institutions and further develop institutional capacities (OC4) at NIPH. The key impact pathways set to lead to strengthening these capacities are the following:

1. *Strengthening research capacities:* Constituting a central focus of the programme, FA4 aimed to improve research processes and structures through high-quality publications, opportunities for new and relevant research, and the generation of knowledge in all four areas of the programme (outputs). These outputs were to be achieved by promoting research collaborations between researchers within the respective partner institutes and ITM. Additionally, clinical, operational, entomological and health systems research projects were funded in both their operational cost (e.g. lab consumables) and research staff cost (e.g. salaries and scholarships for trainings and PhDs).
2. *Strengthening human capacities:* Human capacities were to be strengthened through trainings, exchange visits by ITM staff, training and PhD scholarships, and a sandwich PhD programme (NIPH). FA4 also aimed to strengthen and retain in-house human capacities at the partner institutes by financially supporting staff specialized in infectious diseases, clinical trials, entomology, epidemiology, and health systems research.
3. *Strengthening educational capacities:* This mainly involves the capacity to train internal staff as well as the target groups of each institute: Health staff at provincial hospitals (SHCH), provincial and district-level staff to conduct monitoring (CNM and NCHADS), and young graduates in public health training, research, and knowledge management (NIPH). This was to be achieved by leveraging the expanded technical expertise at the institutes (*human capacities*). The improvement of laboratory infrastructure at the institutes (diagnostic and surveillance tools) and the support for the School of Public Health at the NIPH were also important elements of these trainings.
4. *Strengthening institutional capacities (only applies to NIPH):* Institutional capacity strengthening at NIPH involved collaboration with ITM to revise leadership and management structures and processes at the institute so that it could manage and implement its research and training activities more efficiently.
5. *Strengthening technological capacities:* This involved technological infrastructure (e.g. hardware) and laboratory capacity to conduct clinical, operational, entomological and health systems research. The programme set out to strengthen this capacity by upgrading laboratory and clinical facilities with technical equipment such as diagnostic and surveillance tools, laboratory information systems, and databases.
6. *Strengthening relational capacities:* Relational capacity was to be strengthened at all institutes through collaborative research and networking with other institutes and health centres (nationally and internationally) in diagnostics, surveillance, monitoring and evaluation, and training activities. Additionally, relational capacity was to be strengthened to help ensure that research findings are translated into policy and practice by consolidating information flows between the institutes and with external actors in public health such as the Ministry of Health (MoH). This focus is most apparent in the partnership with NIPH, and activities aimed at generating and disseminating knowledge and evidence for priority health policy areas.

[26] It is important to note that FA4's country programme in Cambodia is not a full reflection of the partner institutions' activities and objectives in general. Those are much broader and include activities and their results shown but not highlighted in the Theory of Change attached (e.g. support to establish or improve educational management). The highlighted parts only refer to the impact pathways under FA4, not the partner institutions in general and were therefore subject of this evaluation.

At the heart of the capacity building approach lies the idea that strengthened capacities within the partner institutions are inherently conducive to long-run impact and sustainability since people trained, structures established, and material infrastructure acquired stay within the institutes. This allows them to carry results forward. At the level of (long-run) impact, the country programme set out to contribute to high-quality research, knowledge generation, strengthened professional capacities and health policies in the country.

3.3.2 Key Results

3.3.2.1 Relevance

At the country level, the FA4 programme in Cambodia was highly relevant by addressing the need for support in operational research, monitoring and evaluation and improving access to quality health care in key areas. According to country documents, results of self-assessments, and many interviews, the programme was in line with the priorities of health policy makers and researchers and addressed the need for health systems and policy informed by evidence and research. This was to be achieved through 1) contributing to national institutes' capacities to conduct relevant research and 2) strengthening technological, human, and research capacities at provincial and operational district (OD) levels. The research conducted and capacity strengthened through the programme contributed to finding innovative ways to tackle the problem of antibiotic resistance and generated more attention to health problems like non-communicable diseases (NCD)s in patient groups within national HIV, TB, and Malaria programmes. The country programme also showed strengths in adapting to changing needs in the country, for example, by shifting more attention of the malaria component to Dengue control in response to reports by community health workers of a growing need in this area. Additionally, growing awareness of chronic kidney disease in agricultural workers has led to more focus in the programme on this issue and to an exploration of opportunities for synergies with other organisations and agencies in the agricultural sector. Furthermore, the COVID-19 pandemic underlined the relevance of improving capacity to generate evidence for the management of health problems and to strengthen the health system in Cambodia.

Concerning the partner institutions, the programme was relevant in its focus on strengthening technological, human, and research capacity at national institutes. According to self-assessments and many interview partners, this need was addressed through strengthening the partners' capacities to train staff in these areas and by helping them financially to retain their human capacity and technical knowledge. ITM also showed a high degree of responsiveness to the needs of its partners. For example, the programme responded to the demand of NIPH and SHCH to adapt the ITM short course on the containment of antibiotic resistance in hospitals in low-resource settings for training health care professionals throughout Cambodia.

3.3.2.2 Effectiveness

According to project documents and many interview partners, the most important outcomes of the country programme in Cambodia were strengthening research and human capacities, both of which were largely achieved. First, the research capacity outcome was strongly achieved, as reflected by monitoring tables, self-assessment results, and interviews. The targets for research protocols, projects, publications, and grants were mostly achieved or overachieved, with room for improvement mainly in the number of recent research publications and ongoing research grants at CNM. Results for relational capacity strengthening, aimed to bolster research processes and increase the impact of the research on health systems and policy, were also strongly achieved. For example, NIPH activities to organize exchange meetings with policy makers and researchers' fora with participants from relevant institutions far exceeded planned targets (*capability to relate to other actors*). As a result, many research findings have been picked up by national technical working groups, guidelines, and strategies, according to self-assessment and monitoring tables (*capability to generate development results*). For example, the number of national policy briefs,

strategic plans, and guidelines adopted by MoH in the fields of clinical care, malaria control, HIV-AIDS control and health systems exceeded original targets. The second key objective, strengthening human capacities at the partner institutions, was also achieved. According to self-assessment results and many interviewees, a large number of health care workers and researchers at partner institutions were trained in the specific areas of the programme: operational research, clinical management of HCV and HIV, entomological surveillance, and AMR surveillance (*capability to achieve coherence*). Technological capacity strengthening, which supports human capacity development, was also effective, showing the most growth of all the capacities targetted by the programme, according to online survey results.

Among the key factors facilitating success in reaching these results were the flexibility of the programme and the smooth collaboration with ITM. According to most interview partners, the programme and budget were very flexible, meaning that funding and other support could be adapted to project and researchers' needs (*capability to adapt and self-renew*). For most interviewees, the friendliness, close relationships, and mutual understandings with ITM partners set this programme apart from others and contributed to its success (*capability to relate to other actors*).

Despite the general achievement of results, the successes in human capacity building did not carry over effectively to provincial areas (*capability to generate development results*). Monitoring tables indicate that trainings of provincial staff, health workers, and master students under all components of the programme often failed to reach intended targets. This is also reflected in the results of the online survey that position educational capacity, involving the training of external staff and health personnel, as the capacity with the least growth during the programme.

The main inhibiting factor contributing to these shortfalls was the COVID-19 pandemic. According to project documents, self-assessments, and information obtained in interviews, the COVID-19 crisis and the measures to contain the virus hampered research and training activities that required travel at all partner institutions. The COVID-19 pandemic also affected CNM by creating a major challenge for the shipment of mosquito samples, which could be only secured by investing a high number of CNM and ITM staff hours and by closely involving the biosafety consultant of ITM and Belgian authorities. While online trainings and meeting became the norm at all partner institutions, a lot was reportedly missed from the cancelation of the ITM mission to Cambodia in 2020.

Concerning the transversal theme of gender, project documents, self-assessment, and interviews reveal active reporting on gender diversity but a lack of qualitative measures targetting gender-related issues. The partners strive for gender balance within the institutions and in their training programmes. For example, the gender distribution of partner and provincial staff trained by partner institutions is reported in monitoring tables, and while not all diversity-related results were achieved, this does provide some valuable takeaways. For example, while 55% percent of participants in NIPH master's degree programmes in 2020 were female, only 20% of those who had completed the four semesters were female. However, factors that contribute to slower degree completion times among women were not identified in project documents. The lack of awareness of the gender topic in qualitative terms was also reflected in interviews, with interview partners only discussing gender in terms of diversity.

While the topic of the environment is strongly imbedded in the research conducted at the national institutes, it is unclear how it informs institutional processes and structures. According to self-assessments and project documents, environmental concerns are engrained within a variety of research projects and activities, including antimicrobial resistance surveillance, infection control measures, and waste management. Many research projects explored environmental factors contributing to the spread of diseases such as the emergence of hotspots of two mosquito-borne diseases. Despite the integration of environmental themes in research content, most interview partners displayed a lack of awareness of how the the environment relates to the processes and structures of their institutions.

3.3.2.3 Impact

The programme has generally achieved impact by strengthening the professional capacities of the partner institutes and contributing to high-quality research, thereby generating and disseminating relevant public health knowledge and skills among practitioners and policy makers. Much of the research that came out of this programme has been used by health workers and policy makers, shaping national guidelines and strategies and driving impact (*capability relate to other actors, capability to generate development results*).

Each capacity strengthening component of the programme works together to achieve impact. First, training of staff at institutes and in provincial areas increases the capacity for quality lab work and collaborative research (*capability to act and commit*). This includes setting up sentinels and labs to trace spreads of diseases and inform targeted response (e.g. malaria, HIV). For example, lab work and research at SHCH and NCHADS and their collaboration with NIPH has identified people using intravenous drugs as a new group driving the spread of HIV, which has informed guidelines and strategies (*capability to generate development results*). At the same time, support to staff at partner institutions to attend international conferences and to publish research in international journals (e.g. SHCH papers on TB and HIV) allows findings to gain more visibility among a wider audience, creating more potential to inform policy and institutional change (*capability relate to other actors, capability to adapt and self-renew*). This in turn contributes to quality work and valuable findings that increase the reputation of the intuitions, making key stakeholders more receptive to their knowledge contributions. For example, through the programme, SHCH has become a reputable hospital, recognized for providing care to poor patients, contributing valuable research, and developing guidelines on TB, HIV, Diabetes, and Hepatitis for MoH (*capability relate to other actors, capability to generate development results*). Furthermore, through partnership with NIPH and the institute's key position for applying knowledge from research and the field into practice, the programme has increased potential to impact national policy and enact change on a national scale, as demonstrated by NIPH's successful COVID-19 response.

Success story: NIPH's successful national COVID-19 response.

Developing laboratories and sentinels and strengthening institutional, educational, and human capacities at NIPH helped the institute quickly implement the national COVID-19 response and scale it up on the provincial level. NIPH played a central role in Cambodia's response to the COVID-19 pandemic through training health staff in provinces, and carrying out testing, lab work, and contact tracing. The speed and effectiveness of up-scaling on the provincial level marked a change from traditional centralization in Phnom Penh facilities. As a result of NIPH's COVID-19 response NIPH enjoys a strengthened reputation, which already translated into increased funding from the government and a growing number of requests from various departments to support activities.

However, three key challenges in achieving broader impact were identified in interviews. First, the overly centralised design of health system neglects the needs of people with NCDs who must travel far to receive regular treatments. According to several interview partners, the epidemic of NCDs cannot be solved by only focusing on national institutes but requires strong collaboration with NGOs and other development partners to strenthen the chronic care system and improve accessibility of services. Second, it was noted that the high cost of medicine makes simple treatments unaffordable for much of the population. Third, several interview partners underscored unwillingness within the MoH to enact wide-reaching reform as a key challenge impeding impact. According to several interview partners, despite ITM's strategic partnership with NIPH, the subsidiary status of NIPH to MoH means that the institute is restricted to conducting research and trainings that are already in line with priorities of the MoH, which are less inclined towards systemic reform. Several interview partners underscored that focusing more on cross-sector collaborations (e.g. antimicrobial resistance due to pesticide use) with other ministries, such as the Ministry of Agriculture, could help reach stakeholders who are more open and responsive to adopting systemic change.

The main unintended, higher-level effects of the country programme in Cambodia include opportunities generated by the COVID-19 pandemic. For NIPH, the pandemic presented an opportunity to put its strengthened technological, human, and institutional capacities to use in orchestrating national COVID-19 response. According to project documents and several interview partners, NIPH acted quickly and decisively and gained heightened recognition as a result (*capability to act and commit, capability to adapt and self-renew)*.

Success story: Reference Laboratory at SHCH and Informing National Guidelines on TB and AMR.

The programme worked closely with SHCH to strengthen its human, technological, and research capacities and to develop a national TB and AMR surveillance laboratory. With support from ITM and in collaboration with other hospitals and universities, SHCH vastly increased its capacity to conduct blood cultures and has produced numerous publications in international journals and presentations at international conferences. As a result, SHCH has developed a reference laboratory on TB and the hospital's work and its research contributions have become widely recognized by NCHADS, NIPH, and MoH. With strengthened capacities, SHCH now works with NIPH to provide technical support and has played a key role in driving efforts to address AMR and develop national guidelines for TB and HIV, Diabetes, and Hepatitis.

3.3.2.4 Efficiency

The programme was generally efficient in using resources in an economical way, with some potential for improvement. Overall, self-assessment results and information obtained from interviews indicate that the programme made use of small budgets in a targeted way and that most inputs were put into place as planned. According to self-assessments, the costs of capacity building and related research were largely shared between the programme and the government, resulting in a positive cost-benefit ratio. Still, there is potential for improvement in terms of securing access to equipment and consumables. Self-assessment results indicate that current USA foreign policy restricted access to equipment, resulting in up to 80% of equipment and consumables needing to be bought and shipped in from Europe.

The programme was also largely efficient in achieving results in the time envisaged. According to several interview partners, where the COVID-19 pandemic did not cause disruptions, most processes were implemented on time due to the flexibility of funding, the quick responsiveness of ITM, and the close coordination between finance departments. According to project documents, self-assessments, and information obtained from interviews, the COVID-19 pandemic was the main cause for delays of activities. Field work and face-to-face gatherings were put on hold for several months and the international activities planned for 2020 were all cancelled. This reportedly posed challenges for research and training activities and meant that bilateral collaboration required more time and logistical efforts.

3.3.2.5 Sustainability

The programme was largely financially sustainable by contributing to the partners' ability to attract funding from additional resources. Self-assessment results and interviews indicate that through strengthening their professional capacities, the programme helped build recognition for the partner institutes and their role in disease control and operational research. For example, SHCH became a reference hospital and well known in the national programme for its work on TB and HIV, Diabetes, Hepatitis, gaining more recognition from NCHADS and MoH. Some interview partners and results from the self-assessment linked reputational growth to the securement funding from other national and international stakeholders. Additionally, research at institutes proved to be effective in leveraging ITM funding to gain recognition and secure other funding. One interview partner described how NIPH used FA4 funding to set up a team to apply for Belgian and other European grants and to conduct small, strategic research projects to attract funding from new donors. However, according to lessons learnt, the lack of joint field visits during the pandemic, which help generate ideas for research proposals, had a negative effect on securing research grants.

Regarding technical and institutional sustainability, while FA4 contributed to strengthened human capacities at all partners institutions, it has not assured their capacity to continue trainings beyond the timeline of the programme. On the one hand, self-assessment results and interviews show that the partners all have increased capacities to take control of the intervention and continue the results by staff training new staff, working with other institutions, and getting referrals. On the other hand, while the human capacity base is there, it is unlikely to be retained in-house within the institution without ITM funding (SHCH, CNM, and NCHADS), according to some interview partners.

Concerning social sustainability, systems and structures have been in place throughout the programme to help ensure local ownership of the intervention. Results from self-assessments and information obtained from interviews indicate that the ITM programme was very focused on institution's needs and engaged in close dialogue in partner meetings and exchange visits.

3.3.2.6 Complementarity and synergy

The partner institutions contribute overall to the Joint Strategic Framework (JSF) for Cambodia mainly through goal 2, contributing to quality of health and better access for all vulnerable patients, and also parly through goal 6, improving environmental protection and climate change resilience. The partners engaged in synergies with Belgian development actors as planned and explored these opportunities adaptively based on emerging needs. According to self-assessment results and interviews, ITM worked closely with LD as planned to develop synergetic activity on NCDs (e.g. VLIR-UOS collaborating with NIPH). Secondly, the programme successfully explored and developed synergy and complementarity with ARES and VLIR-UOS in research and education (e.g. successful development of a digital library at NIPH in 2020). According to self-assessment results and some interviewees there is also potential for research and cooperation with ARES and VLIR-UOS in the field of agriculture, as NIPH and SHCS seek to address the challenges posed by pesticides use in cooperation in the future. Thirdly, the programme actively sought opportunities for additional synergies with other Belgian actors. According to self-assessment results and information obtained in interviews, new areas for synergy were explored in addressing the intersection of NCDs and mental health, a topic that had been largely neglected in Cambodia, but which is gaining growing attention.

3.4 Cuba

3.4.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[27] in which one stakeholder of the programme took part;
- Information obtained in nine semi-structured individual or group interviews with twelve stakeholders (involved ITM personnel, involved staff at the partner institutions, alumni of educational programmes).

In Cuba, ITM has collaborated with two partner institutions: the Institute of Tropical Medicine 'Pedro Kourí' (IPK) and the National Institute of Hygiene, Epidemiology and Microbiology (INHEM). IPK and INHEM are semi-autonomous institutes for postgraduate training, research and service in tropical medicine that have longstanding collaboration with ITM (since 2003 and 1998 respectively). Both institutes are mandated and partially sponsored by

[27] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

the Cuban government. The programme in Cuba ultimately seeks to contribute "to achieving better population health outcomes and promoting sustainable human development (impact level) by building capacities through collaborative research and action in the field of public health and by putting the Cuban expertise to value at the international level through supporting academic networking" (ITM n.d., p. 1). The total funding volume in Cuba was 2,635,000.00 Euro (1,858,975.00 Euro for IPK and 776,025.00 Euro for INHEM).

The main objective of this country programme was to increase the overall institutional capacity of the two partner institutions IPK and INHEM through capacity strengthening and scientific cooperation. ITM's country programme focussed on the areas of disease control (arbovirosis, tuberculosis, parasite infections, sexually transmitted infections, and chronic non-communicable diseases); health care organisation and mobilized public health and biomedical and clinical science capacities. Moreover, a trilateral collaboration between Cuba, Belgium, and the Democratic Republic Congo (DRC), initially focussing on arbovirosis control, as well as Latin American Networks for chronic non-communicable diseases were part of the programme. The beneficiaries of the programme were the staff of IPK and INHEM, decision makers and other staff from the Ministry of Public Health (MINSAP) and network partners of IPK and INHEM (direct beneficiaries). Indirect beneficiaries were Cuban communities and beneficiaries of the interventions to improve disease control and health service organisation.

While the country programme objective highlights research capacity as the principal capacity to be strengthened, the country programme focused on six capacities in total, namely research capacity (OC1), human capacity (OC2), educational capacity (OC3), institutional capacity (OC4), technological capacity (OC5), and relational capacity to influence policy-making processes (OC6). The ToC depicted in Annex 8.3.4 below shows the relevant inputs, activities, outputs and outcomes for Cuba highlighted. At the heart of the capacity-building approach lies the idea that strengthened capacities within IPK and INHEM contribute to long-term impact and sustainability through educated people, improved structures and material infrastructure staying within the institutes and thus allowing the partner institutes to carry results forward. At the level of impact, the country programme set out to contribute to high-quality research, knowledge generation, strengthened professional capacities and health policies in the country.

These six capacities are depicted on the Theory of Change of the whole FA4 programme, where the relevant inputs, activities, outputs, and outcomes for Cuba have been highlighted (see Annex 8.3.4). The key impact pathways envisioned to strengthen these capacities are the following.

1. *Strengthening research capacity:* The programme aimed to improve the institutional research capacity of IPK and INHEM in the areas of disease control of communicable and non-communicable diseases and health care organisation for integrated chronic care. The means to achieve this were the support for scientists through PhD scholarships, the retention of PhD scholars, the institutionalised support of high-quality scientific publications, promoting research collaborations between IPK, INHEM and ITM researchers and ensuring institutional access to scientific literature.
2. *Strengthening human capacity:* The programme aimed to strengthen human capacities through trainings, workshops, short post-graduate courses to strengthen the ability of researchers to conduct high-quality research.
3. *Strengthening educational capacities:* This involves the PhD programme with both IPK and INHEM and can therefore be understood as directly contributing to strengthened research capacity in the country programme. The PhD programme was set out to be improved in two main ways. First, PhD students' competences were aimed to be enhanced (output) through PhD programmes that facilitate close exchange with researchers at ITM as well as trainings and rotation visits by ITM. Second, PhD students were supposed to have access to improved laboratory infrastructure (output) which was set out to be achieved by refurbishing and introducing new laboratory equipment.
4. *Strengthening institutional capacities:* Both at IPK and INHEM, institutional capacities to be strengthened included institutional structures and resources, as well as international exchanges. The objective can be understood as facilitating an improvement of research capacities and should not be seen as an independent objective. At IPK, part of the enhanced capacity were diagnostic capacities of sexually transmitted infections

(STIs) and AMR (AMR), as well as strengthened capacities for diagnosis and eco-epidemiology of parasitic infections. Similarly at INHEM, the institutional structures and capacities in the realm of non-communicable diseases were strengthened.

5. *Strengthening technological capacities:* Both at IPK and INHEM, technological capacities relate to infrastructure to carry out health monitoring and research, such as laboratory material, surveillance tools, and screening devices.
6. *Strengthening relational capacity:* Both IPK and INHEM targeted to provide evidence for policy formulation for prevention, control, and care of diseases as expert policy advisory to the MINSAP. The evidence to be produced included evidence for a more effective and efficient implementation of arbovirosis (dengue, chikungunya, zika and yellow fever) and non-communicable diseases (diabetes and hypertension) control strategies and strengthening health systems for chronic care as well as new evidence to accelerate progress towards the elimination of tuberculosis, and to support the prevention of parasitic infections.

3.4.2 Key Results

3.4.2.1 Relevance

The programme's activities were highly relevant to the country priorities and challenges, addressing major public health challenges in Cuba, and central to the work of the MINSAP. Some of the main challenges in the country include firstly the areas of epidemic and disease control, for example of the dengue fever, one of the major public health problems, affecting recurringly every province of the country, as well non-communicable diseases, particularly diabetes and hypertension, as secondly since March of 2020 in Cuba the COVID-19 pandemic. Country priorities include improving medical attention, hygiene improvement and disease control, community participation in public health, and the strengthening of structural capacities and human capital, especially among young Cuban people. According to several interview partners, the work of IPK and INHEM was integrated in and complementary to the MINSAP's programmes and implementing the MINSAP's guidelines. In addition, the programme found ways to redirect itself in order to address the important new challenge in the country that arose with the COVID-19 pandemic since March of 2020 in Cuba. Notably, the programme strove to align to the needs of the partner institute and the MINSAP and demonstrated adequate flexibility in adapting to changing circumstances. By flexibly reassigning budget and efforts towards COVID-19-related studies or toward the application of existing research for tackling aspects related to the pandemic, the programme remained highly relevant to country and MINSAP priorities in a time of deep global change.

Regarding the relevance to the partner institutes, the programme addressed core needs, for example the need for funding for scientific research, scientific training to attain highly qualified staff in the institutes themselves, improving the institutes' ability to secure external research grants and publishing articles in high-impact publications, accessing scholarly journals, developing systems to capture and analyse data, aligning with the research priorities of Cuban provinces and strengthening the capacities of laboratories. In the case of INHEM, the programme's activities closely aligned to the institutional priority around non-communicable diseases, as these are the main cause of mortality in Cuba.

3.4.2.2 Effectiveness

According to project documents and interview partners, the FA4 country programme's objectives were overall achieved. Interview partners coincided that the most important results at the outcome level were strengthened research (OC1) and human capacities (OC2) at IPK and INHEM. The most important results at the output level highlighted by interview partners and project documents included the amount and quality of scientific publications, dissemination of studies and the participation in short trainings.

The programme was effective in strengthening research capacities. Project documents show that most of the planned trainings took place, and in some cases the target values were even exceeded. Trainings and exchange workshops on scientific research methods were conducted, specifically in the areas of data management, synthesis of evidence, qualitative research methods, operational issues, analysis, and interpretation of results. According to interview partners, the most important achievements in terms of research capacities were the following: a significant improvement in the capacities for routine data collection and data analysis in the institutes, which in turn contributed to a higher number of scientific articles published in high-impact scientific journals than originally planned, the participation in important international conferences, and the award of the Cuban Academy of Sciences national prize for the results of scientific research for research conducted by IPK on the COVID-19 pandemic. During the COVID-19 pandemic a trade-off took place in terms of effectiveness: while most colleagues faced delays and barriers in their field work due to travel restrictions, for example collecting samples for their studies and providing trainings to health workers for study implementations, they had at the same time more time in their hands for writing their analysis in publications. Related to this, an important lesson learned from the project documents is to strive to prioritise sample collection and field work and develop alternative plans at the very start of the programme in the future.

The programme was also effective in strengthening educational and human capacities. The project documents show that a number of short individual trainings took place in Belgium on the relevant diseases covered in the country programme (STIs, arbovirosis, etc.), as well as on molecular biology, molecular virology, chronic disease interventions and social determinants, to name a few. However, an important gap in effectiveness was that the number of successfully defended PhDs during the period of the FA4 was not achieved as planned. This was delayed by a number of reasons, including the COVID-19 pandemic, and interview partners assure that the PhD candidates in the country are all on an advanced path to be able to defend their dissertations with delay.

In regard to the FA4's effect on local systems and public policy, interview partners raised a few achievements. On the one hand, the improvement in processes and practices within the institutes provided an example for local health systems to model after and contributed to the harmonization of international guidelines in Cuban programmes. On the other hand, the work of the institutes also directly provided strong analysis in data interpretation that was made available to the MINSAP, which contributed to changes in the risk assessment and reassignment of public resources for specific parts of the country.

When asked about the key success factors, several interview partners referred to the longstanding collaboration on equal footing with mutual learning between ITM and the two Cuban institutes as a key success factor, as well as the strong individual commitment of the institutes' researchers. Regarding external factors, some interview partners referred to the communal and advanced public health system in the country, as well as the commitment of local researchers and the participation of local populations in public health. In the context of the COVID-19 pandemic, two success factors were the high flexibility and ability of both institutes and of the collaboration between IPK / INHEM and ITM to pivot and adapt. For example, even though the country faces internet connectivity problems, an interesting opportunity that was taken advantage of in the context of the COVID-19 pandemic is the digitalisation of meetings and educational opportunities and the quick build-up of IT capacities in the teams of both partner institutes. Seeing no other alternative to hold research and coordination meetings and trainings and other courses but to carry them out online, the IPK and INHEM strengthened their technical and human capacities (IT support, equipment) for virtual alternatives that allowed IPK, for example, to offer its course on dengue fever online.

When asked about the key inhibiting factors, it was agreed that the COVID-19 pandemic was the main one during the FA4. It made it impossible to continue field work in the provinces to collect samples, and lowered the availability of reactive substances needed for the programme's activities, for instance.

Concerning the transversal topic of gender, most of the interview partners limited their understanding of the topic to the gender balance in the teams within the two institutes, and among master and PhD students. When asked how they understood the topic of gender and its mainstreaming into the country programme, most of the

interviewed partners only referred to a balance between men and women in their teams. An exception was a perspective coming from INHEM and discussing the importance to use surveys and questionnaires in their studies to explore gender issues related to research findings. Concerning the transversal topic of the environment, several interview partners suggest that this was not a focus of the country programme at hand.

3.4.2.3 Impact

The logic of how the programme set out to achieve impact in public health is the following: By strengthening the capacities of the research institutes in the country, the programme addresses the need to understand diseases and health behaviour that pose major public health challenges better. This can in turn inform and influence policy and therefore guide policymaking in public health, leading to improve health outcomes among the population in the long term. The interviewees from different stakeholder groups and target groups involved in the programme coincide that the different areas in the programme design were highly relevant to the existing priorities and needs in the country and by the partner institutes.

Through the capacity strengthening approach, the FA4 country programme has had and is expected to have impacts on public health in Cuba. The programme has generally achieved impact by contributing to high-quality research, by generating relevant public health knowledge aligned with the MINSAP priorities and validated by the MINSAP itself, and by strengthening the partner institutes in their professional capacities according to interview information and relevant publications resulting in part from the programme. In three cases mentioned in the interviews, research results at IPK particularly caught the attention of the MINSAP and established elements for influencing public policy and for changing the MINSAP strategy in the medium to long run: results of studies on sexually transmitted diseases and arbovirosis are being discussed and validated by relevant scientific councils and informing the ways the MINSAP rethinks its public health strategies.

A second strand of impact on public health in the country has been the changes in work practices and planning in the sector based on good practice and research findings from IPK activities related to vector control policies. Research results on the stratification of arbovirosis transmission risks and similar patterns of dispersal and dissemination of COVID-19 and dengue associated with population mobility have made important contributions in terms of new knowledge and tools for the Cuban health system. A key example was the identification of sites of high population concentration from which dengue epidemics spread and where there is an overlap in dengue fever and COVID-19 patterns, which has allowed changes in the management of the COVID-19 epidemic in the country favouring a comprehensive approach on these hotpot sites, making more efficient use of scarce material resources and vaccination efforts.

A third important impact related to the work of INHEM has been the comprehensive findings around risk habits – for example obesity and smoking – related to developing or exacerbating non-communicable diseases as well as characterizing the mortality burden of the most frequent chronic diseases. This set of findings was attained through comprehensive research studies encompassing more than 20,000 persons in representative research designs.

Success story: Dengue control in the municipality of Cienfuegos.

Before FA4, the municipality of Cienfuegos was a hotspot for dengue fever outbreaks, accounting for up to 30% of the total number of dengue fever cases in the province. From FA4, with the use of the tool for the stratification of high-risk areas, 12 sites of high population concentration or hot spots were identified in collaboration with the community polyclinic Jose Luis Chaviano and comprehensive prevention and control actions were implemented through educational campaigns with training actions to the community, workplaces and study centres, thus contributing to clinical epidemiological surveillance and the implementation of innovative vector control actions. Through close collaboration with community members and leaders, it was possible to reduce the number of cases and reduce the proportion of cases in the province to 4.9%.

According to interview partners, an important result of INHEM's work is related to the study of the gaps in primary care and attention to hypertensive patients. The findings allowed the identification of bad practice in primary care provision and the development of a plan with measures to tackle the deficiencies in the country. The success factors that supported this particular achievement were the participation of the targeted communities in the project, as well as of local bodies that guaranteed the resources for implementing some of the research findings – for example, integrating physical exercise in primary care – thus contributing to the overall improvement of health indicators in the target communities.

Success story: Improving health results in the area of non-communicable diseases.

An impact related to the work of INHEM has been the comprehensive findings around risk habits – for example obesity and smoking – related to developing or exacerbating non-communicable diseases as well as characterizing the mortality burden of the most frequent chronic diseases. This set of findings was attained through comprehensive research studies encompassing more than 20,000 persons in representative research designs. As a result of INHEM's work on the gaps in primary care and attention to hypertensive patients, bad practices in primary care provision were identified and a country plan with measures to tackle the deficiencies in the country has been developed. The success factors that supported this particular achievement were the participation of the targeted communities in the project, as well as of local bodies that guaranteed the resources for implementing some of the research findings – for example, integrating physical exercise in primary care – thus contributing to the overall improvement of health indicators in the target communities.

3.4.2.4 Efficiency

The programme was seen by most interview partners as mostly efficient and delivered on time with some potential for improvement lying in more diversified funding and closer monitoring. The complex settings in the country and the US embargo caused a series of important procurement limitations and challenges that played a role in the programme's efficiency. In this context, the flexibility in the use of funds provided by ITM and solution-oriented partnership between the institutes and ITM was held as an important strength by many interview partners.

Regarding the allocation of resources, there is a consciousness among interview partners that the funding provided by ITM only covered a certain group of necessities of the institutes that needs to be complemented mostly by other external funding. However, there was also a strong sense by various interview partners that results could be achieved even with limited means in the country programme. The resources have allowed to strengthen the research, human, and institutional capacities at both partner institutes (see details under Effectiveness).

In the context of the US embargo, the administrative and operational complexity in the management of financial resources in the programme is extremely high, which was beyond the control of ITM and the partner institutes. For example, the institutes needed to launch procurement processes to secure lab materials and equipment with ITM's support, but because of the difficulties in the context, several suppliers in the country did not want to bid for some open tenders. In another example, the tracking of shipments to Cuba was extremely difficult. All interview partners confirmed that the relationship between ITM and the institutes was extremely positive and oriented towards the identification and implementation of administrative and operative solutions, which was a key success factor for the complete disbursement of ITM funds. As an example of the extent to which the institutes and ITM went in order to secure disbursements and achieve the efficient use of funds. Through the collaboration, the partner institutes and ITM have identified service and resource providers that can efficiently handle the complexity of securing and shipping materials to Cuba. This proactive and creative approach to deal with the complex conditions have been instrumental for the programme's operations and ultimately in its effectiveness.

During the COVID-19 pandemic, funds that were originally allocated to travels for field work or in-person scientific exchanges between Cuba and Belgium were quickly reallocated to other COVID-19 priorities and disbursed in their entirety. The reprioritisation and effective financial management are a positive factor that allowed for efficiency and

effectiveness in the work of the programme. One of the most important new priorities during the COVID-19 pandemic that could be funded in this way was supporting assessment processes of new COVID-19 vaccines.

3.4.2.5 Sustainability

According to the collected data, several aspects in the programme suggest that the sustainability of its results will likely be secured beyond the FA4. These aspects include the alignment of project results with the priorities and strategic objectives of the MINSAP, the core capacity-strengthening approach that reinforces future researchers through courses, trainings, master's degrees and PhDs, and thus aims to strengthen technical and institutional sustainability, and local capacities within communities. Nevertheless, although the capacities to secure other external funding have increased in both partner institutes as a result of the programme, the institutes' financial sustainability is not yet entirely secured.

Several interview partners agree that the country programme's priorities are strongly in line with the main country challenges and relevant to the government's policies, and that there is a strong political and operational willingness to sustain results achieved in the programme. In terms of alignment with the MINSAP, interview partners point out that the different parts of the programme are strongly associated with state programmes at the national and local levels from the outset. They are thus routinely picked up, implemented, and sustained in practice by the public officials involved in those programmes. However, a challenge in this regard is the lack of stability of staff within municipal administrations that threatens the institutional continuity and sustainability. In addition, interview partners indicate that INHEM also collaborated with the Cuban Ministry of Education, the Ministry of Agriculture, and the Cuban Institute of Sport, in addition to the MINSAP.

According to some interview partners, the collaboration with community members and their participation in some aspects of the programme throughout the years promoted their appropriation of processes, furthered community capacities, and thus strengthened local ownership (social sustainability). In this sense, an interview partner from IPK points at the example of the *Casa Comunitaria Paulo Freire*, a semi-autonomous organ that promotes community work, which raised own funds to sustain the results of the joint project on community involvement for dengue prevention started in the framework of the FA4 in La Lisa.

Regarding financial sustainability at the partner institutes, the core logic of the country programme is to promote the institute's ability to attract external finance by strengthening their research profile and the expertise of staff. In practice, some external funding from national sources has been secured by IPK (e.g. the example raised above in La Lisa), as well as other international funding through a France-funded project, the Inter-American Development Fund, and the Pan American Health Organization.

3.4.2.6 Complementarity and synergy

Project documents indicate that the country programme contributes to goals 5 and 6 of the Joint Strategic Framework (JSF) on an improved health situation and access to and quality of education in the country and is thus generally aligned with Belgian development cooperation in the country. In the self-assessment, an overall aligned with JSF goals is attested to, without a specification of which goals this refers to.

In terms of collaboration within the Belgian development cooperation, two projects with VLIR support were sustained by IPK on arbovirosis (Zika) and parasites. Beyond the FA4, IPK is currently designing a new joint project with the University of Villa Clara, the University of La Habana, the University of Ghent and VLIR-UOS support. In addition, the self-assessment indicates that the country programme engages in continuous exchange with ARES, VLIR and the Belgian Embassy in Cuba, as well as the Cuban Embassy in Belgium. A further aspect to highlight regarding synergies is that both institutes agree that a focus during the new programme should be the strengthened synergies

between INHEM and IPK, as they have potential areas of collaboration that have not been utilised so far in previous FAs.

3.5 DRC

3.5.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[28] in which two stakeholders of the programme took part;
- Information obtained in ten semi-structured interviews with16 stakeholders (involved ITM personnel, involved staff at the partner institutions, alumni of teaching programmes).

In the Democratic Republic of Congo (DRC), ITM has collaborated with four partners: the National Institute for Biomedical Research (*Institut National de Recherche Biomédicale* - INRB), the School of Public Health-University of Lubumbashi (*Ecole de Santé Publique-Université de Lubumbashi* - ESP), the Kimpese Health Research Centre (*Centre de Recherche Sanitaire de Kimpese* - CRSK), and the National Programme for the Fight against Human African trypanosomiasis (HAT) (*Programme National de Lutte contre la THA* - PNLTHA).

The INRB is the national reference laboratory of the DRC. The CRSK is a consortium between Protestant University of the Congo (UPC), the Institut Médical Evangélique (IME), SanRu (Rural Health Congolese NGO) and the Pharmacovigilance Unit of the University of Kinshasa and is hosted at the hospital of IME in Central Congo region of Kimpese. The CRSK is a research centre with, expertise in health research and in the fight against neglected tropical diseases. The ESP is an academic centre with expertise in health policy, part of the University of Lubumbashi, located in the south-eastern part of DRC. The mission of the ESP is to train a competent public health workforce to ensure the development of the health sector. The PNLTHA is the National control programme for Human African trypanosomiasis (HAT) (i.e. sleeping disease). The PNLTHA is a public research institution.

ITM's country programme in DRC aims two objectives: The first one is the strengthening of the health research capacity of three partner institutions (INRB, ESP and CRSK); and the second one is the streamlining of the fight against Human African Trypanosomiasis (HAT) by strengthening local health systems with the support of all partners (INRB, ESP, CRSK and PNLTHA). In order to support the achievement of the first objective, ITM organised its support along three lines of action: (i) the production of new knowledge of adequate relevance and excellence; (ii) the improvement of research in order to be conducted autonomously and propose evidence-based solutions to health priorities in DRC; and (iii) knowledge management to translate these gains in understanding, or new tools, into a clear message that is accessible to policy makers. With regards to the second objective, the ITM programme focuses on: (i) the alignment with the ongoing health sector reform in DRC and therefore a strong anchoring of the operational planning in that of the Provincial Divisions; (ii) the adoption of new technologies, including digital tools; and (iii) an opening to the fight against other Neglected Tropical Diseases.

[28] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

The first objective is focused on the three partners: INRB, ESP and CRSK; while the second objective uses the skills developed in the three partner institutes to support the work of the partner PNLTHA. The total funding volume was 6,500,.000 Euro for objective 1 and 11,065,000 Euro for objective 2.

In addition, the CREDO project: Scientific and Research Capacity to Respond to (Re)-Emerging Diseases (Covid-19) was also included in the FA4 in DRC since 2020. CREDO is an extension of an agreement between ITM and the Directorate General for Development Cooperation and Humanitarian Aid (DGD). According to the documents, the objective of the project is to improve the health of the Congolese population by strengthening research capacities on emerging and re-emerging diseases. In concrete terms, this means investing in local researchers and institutes, so that they are better prepared to deal with (re-)emerging diseases. The CREDO project amounted to 5 million euros. According to interview partners, the CREDO project increasingly focused on research capacity development through the award of scholarships to fellows and young researchers. In addition, the CREDO project was also intended to reinforce labs with equipment.

While the country programme objective highlights research capacity as the principal capacity to be strengthened, the country programme focused on six capacities in total. This is shown in the Theory of Change of the whole FA4 programme. The highlighted parts are the impact pathways relevant in DRC (see Annex 8.3.5).[29] The six capacities focused on in the country programme can be found at the outcome level: Research capacities (OC1), human capacities (OC2), educational capacities (OC3), institutional capacities (OC4), technological capacities (OC5) and relational capacities (Oc6). The key impact pathways that are set to lead to strengthening these five capacities are the following:

1. *Strengthening research capacities:* The programme aimed to reinforce the capacities to be able to publish high-quality scientific research and generate new knowledge. For objective 1, this was set out to be achieved through funding of PhD and fellows, through the reinforcement of capacities of PhD supervisors. For objective 2, ITM supported the development of a research centre.
2. *Strengthening human capacities*: Human capacities were meant to be improved in two main ways. First, through the aforementioned training of PhD students (including visits at ITM) and provision of PhD funding. Second, training for technical staff was set out to improve their ability to support the partners effectively. Specifically, for objective 1, the training of technicians and laboratory staff on new diagnostics and surveillance techniques was expected to contribute to the improvement of generation of new knowledge and high-quality research mentioned above. For objective 2, the training expected to target the zone management team and its technical and financial partners, is essential and should be strengthened, particularly in synergy with the other partners supporting the health zone.
3. *Strengthening educational capacities:* This targeted only the ESP in Lubumbashi, hence only objective 1 of the country intervention in DRC. The educational capacities were expected to be reinforced in two ways: first through the accreditation of the ESP by the African and Malagasy Council for Higher Education (CAMES) to anchor the bachelor's master's doctorate (*Licence – Master – Doctorat* -LMD) system. Secondly, the support provided to the Health Centre Learning and Research Centre (CSAR) to host students from the ESP to use the centre as a training ground. This can therefore be understood as directly contributing to strengthened research capacity in the country programme of DRC.
4. *Strengthening institutional capacities:* For objective 1, the institutional capacities were supported by providing trainings to the administrative, financial, and technical staff at INRB; while at the ESP, the support provided to obtain the CAMES accreditation mentioned above is also expected to contribute to the reinforcement of the management of the educational activities. For objective 2, the reinforcement of the institutional capacities was done through the introduction of new diagnostic, control, and surveillance techniques (for sleeping sickness, as well as for the Buruli ulcer and tuberculosis) and accompanied by the training of staff on the new techniques. In addition, it was expected that the support of ITM would also contribute to

[29] The ToC in annex includes both objective 1 and objective 2.

developing the institutional capacities of the partner PNLTHA at central level (through a greater alignment with the ongoing health sector reform), and at provincial level (development of a Single Action Plan).

5. *Strengthening technological capacities:* In DRC's partner institutes, technological capacities aimed at in this programme focus on digital tools and infrastructures. For objective 1, ITM aimed at supporting in technical investments at INRB (workshop, the animal house, cryobiology, molecular biology, various laboratories, WiFi network, library); at ESP the support aimed digital equipment and investment at the health centre; while at CRSK, ITM was expected to focus its support on the Health and Demographic Surveillance System (HDSS) and its data management centre. For objective 2, the development of the technological capacities was expected to be done through support to the information management (with a geo-referencing IT Tool and diagnostic platform).
6. *Strengthening relational capacities:* For objective 1, ITM aimed at supporting the development of the relational capacities of the partners by organising scientific consultations, field visits, and organising scientific conferences to present the results of the research. For objective 2, ITM expected that the partners INRB, CRSK and ESP would collaborate with the partner PNLTHA in various ways: through the development of an external quality assurance (i.e. proficiency testing) of the agents administering the HAT diagnostics (INRB); through the development of integrated surveillance model for HAT (CRSK), and through the development a new knowledge (PhD thesis from an ESP student). ITM also expected to contribute development the relational capacities of the PNLTHA partner by conducting workshops that would contribute to develop a shared vision on the integration of the fight against the HAT. Further support was expected to be provided in terms of coordination. It was also expected that the introduction of data management tools would reinforce the links between the various health centres in the field and the provincial division of the PNLTHA (through digital imaging and a data management centre).

3.5.2 Key Results

3.5.2.1 Relevance

At the level of the country, the FA4 programme was highly relevant as it addressed major public health challenges in DRC, i.e., the sleeping sickness , Buruli Ulcer, and tuberculosis among others. The FA4 programme also answers the needs of the partner institutions.

At the country level, the documents and the interviewed partners indicate that DRC suffers from multiple epidemic waves, from sleeping sickness , Buruli Ulcer and tuberculosis, Ebola to yellow fever, chikungunya, while the public health sector faces challenges in terms funding, management of human resources and infrastructure. Since 2005, the Congolese government has initiated a reform of the public health sector to decentralize the services. By supporting the reinforcement of the four partner institutions, a National Reference Lab (INRB), a consortium of medical actors (CRSK), a leading school of public health in DRC (ESP), and the National Programme against the HAT (PNLTHA), the ITM programme adopted a relevant approach to implement its activities. According to the documents and the interviewed partners, the objective 1 of the FA4 is therefore relevant in focusing its support on the reinforcement of the INRB in strengthening its role as a National Reference Laboratory and center of expertise in tropical infectious diseases; for the ESP its role as a center of excellence in health policy; and the CRSK can develop operational research very close to the field and was able to develop adapted models for HAT surveillance.

For objective 2, the focus on sleeping sickness in DRC is highly relevant since the WHO has declared sleeping sickness (HAT) a public health issue to be eliminated by 2020, and interruption of transmission by 2030. The interview partners further indicate that more than 70% of cases worldwide are reported for DRC. Although the number of cases is now much lower, the general conditions of the health public sector in DRC confirm the relevance to continue supporting the PNLTHA in its fight against the HAT. ITM is particularly well-positioned to contribute to this issue as it has been involved with the fight against HAT since the 20th century and it manufactures the test for HAT. In

addition, other partners have expressed their interest to contribute to the fight again HAT (e.g. Bill and Melinda Gates Foundation), making the efforts of ITM in this field even more relevant.

Ultimately, the project document highlights that the logic of the programme is relevant as it contributes to improving the organization of the health service and disease control programmes, in order to improve the health of populations. The interviewed partners highlight that the COVID-19 pandemic also re-affirmed the relevance of local health research. The documents underline that the geographical distance of INRB and CRSK creates a complementarity which is required for situations like the current pandemic in a country as vast as the DRC. The complementarity between the biomedical aspects (lab) and public health (organization of services, social acceptance issues, etc.) is also proving its worth.

With regards to the relevance of ITM to the partner institutions, the interviewed partners indicate that the programme answered their needs in order to fulfil their roles and the objectives set for the programme. In particular, the programme answered the needs in terms of human resources by supporting the introduction of new techniques and the reinforcement of capacities of the team. The programme also answered the technological and financial needs by supporting the greater visibility of the partners to attract new financial resources. In addition, some interviewed partners further indicate that the FA4 programme was able to adapt to changes in the operational environment. For instance, when one of the partners experienced challenges in its financial management of the programme, field visits from ITM staff were organized and support was provided to the scientific committee dotted with a strategic plan to alleviate this situation.

3.5.2.2 Effectiveness

According to the survey, the most significant results obtained in the pursuit of objective 1 are the development of research (although the baseline for this capacity was already high), human and technological capacities. The same trend was observed across the partners (at INRB, CRSK and ESP) by the interview partners. To a certain extent, the institutional capacities also improved, although to a lesser extent. The data indicates that ITM was particularly successful in developing the technical and research capacities of the staff at partners institutions. As for objective 2, ITM contributed to reaching the WHO target to eliminate HAT as a public health problem in DRC. According to interviews and project documents, the greatest contribution of ITM was in developing the internal and external quality assurance measures and introducing new diagnostics for HAT.

The program was effective in strengthening research capacities. For objective 1, the interview partners state that the most important achievements in terms of research capacities were threefold. First, the funding of PhDs and fellowships contributed to generating new knowledge in (emerging diseases, scientific research, presentation of results, integration process for greater quality of health services in DRC). Several interview partners highlight the importance of the CREDO funding that was provided as an additional funding line as a response to the COVID-19 pandemic. This new funding line specifically focused on emerging diseases, which was key in developing new knowledge in this field, through specific trainings in the field. The CREDO funds also served to acquire small lab equipment, thereby further reinforcing the newly acquired skills in emerging diseases. For objective 2, the interview partners and documents indicate that ITM support to the National Programme against HAT also contributed to put forward new ideas to change the classical passive/active screening strategies and also add reactive screening, blind spot screening, and exploratory screening (*capability to act and commit & capability to adapt and self-renew*).

Second, the investment in infrastructure and in trainings of staff of the Health Centre Learning and Research Centre (CSAR) supported the research conducted by the students hosted in the centre for the practical application of their research. With regards to the support that was intended to the Health and Demographic Surveillance System (HDSS), the result was only partially reached since the database generated was not adequate, thus hindering the ability to use the HDSS as a monitoring for demographic and health data over time as originally expected (*capability to act and commit*). For objective 2, the data from interviews partners indicates the research capacities, with the most

important results being the operational research of HAT. In particular, the interview partners considered the capacities were improved with regards to the HAT (sleeping disease) through the introduction on new diagnostics and screening (i.e. done by mobile units and mini-mobile units), improvement of quality of data collection and treatment. The data shows that the improvement of the knowledge served to better tackle the sleeping disease in DRC and ultimately eliminate it as a public health issue (*capability to act and commit & capability to adapt and self-renew*). Through the support to mobile units and fixed units for screening, the programme has contributed to ensure adequate coverage of the hotspots in the country to identify suspect cases and continue the surveillance in remote zones or in zones that were not screened recently.

With regards to human capacities, this aspect is also raised as very effective by the interview partners. This was first achieved through the aforementioned training of PhD students (including visits at ITM) and provision of PhD funding. Second, training for technical staff improved their ability to support the partners effectively. Specifically, for objective 1, the training of technician and laboratory staff on new diagnostics and surveillance techniques contributed to the improvement of generation of new knowledge and high-quality research mentioned above. Further, the data also indicates that the train the trainer approach adopted by ITM was successful in terms of improvement research capacities. As such, health care providers, blood banks, and hospitals receive refresher training, allowing them to stay updated on new knowledge and apply them in practice (e.g., reminding clinicians of the warning signs of blood infection). For objective 2, the training targeted the laboratory and technical staff. According to the interview partners, courses on-site were also organized for young researchers on molecular biology (*capability to act and commit & capability to adapt and self-renew*).

The technological capacities were also successfully improved with the support of ITM, as shown by the survey results (see Annex 8.4). According to the documents, ITM's programme specifically targeted digital tools and infrastructures. For objective 1, ITM invested in technical infrastructure at INRB. Of particular importance, the interview partners noted the unique character of the animal unit in DRC, which also contributes to attracting new partners to develop research projects. With the support of ITM, a field bacteriology lab for Ebola was also established, which is also considered an innovation in the Congolese context, by the interview partners. This allows technicians to do cultures easily with biosecurity in mind. At ESP, interview partner noted the support of ITM in equipping the centre computers and in an infrastructure for online teaching; while at CRSK, ITM supported the development of the data management centre of the research centre. For objective 2, ITM supported in a refresher course on Standard Operating Procedures in the technical supervision guide. ITM also supported with the information management in the roll-out of digital tools in the provinces covered by the programme for each mobile team, and diagnostic platform (*capability to adapt and self-renew*).

As showed in the survey result, ITM supported, to a certain extent, the development of institutional capacities. For objective 1, the institutional capacities were supported by providing trainings to the administrative, financial, and technical staff at INRB. At CRSK, the interview partners indicated that ITM strengthened the scientific committee to improve the management of the CRSK, after some financial management challenges were brought to light. To this end, the ITM representation office in Kinshasa supported with some workshops on management. During these workshops, the CRSK developed and adopted a five-year strategic plan. At the ESP, ITM provided support to obtain the CAMES accreditation also integrated in the institution, contributing to the reinforcement of the management of the educational activities. For objective 2, the interview partner stated that ITM support was effective in reinforcing of the institutional capacities through the introduction of new diagnostic, control, and surveillance techniques (for sleeping sickness) accompanied by the training of staff on the new techniques. At INRB, the interview partners highlighted that the reinforcement of the capacities of the lab staff contributed to support the role of the INRB as a national reference lab, in conducting more efficient and sensitive reference analyses. In addition, the interview partners mentioned that to some extent, ITM support the provincial level of the PNLTHA in organising the fight against the sleeping sickness but supporting the mobile teams in charge of the screening but also the fixed health structures (*capability to adapt and self-renew*).

The reinforcement of the educational capacities was effective at ESP, in the context of objective 1. ITM supported these capacities in two ways, according to the data collected. The interview partners first indicate that ITM supported the ESP in preparing for the CAMES accreditation to become an educational facility organised along the Master-Bachelor-PhD structure. Through the organisation of workshops (e.g. on the Bachelor, Master, and PhD curricula), the upgrading and updating of the ESP curriculum, the training of young teachers to work on curricula and training models along the LMD system. According to the interview partners, ESP has been one of the few higher education institutions in DRC to accompany the LMD system. ITM also supported the development of the educational capacities of the ESP through the support to the Health Centre Learning and Research Centre (CSAR). According to the interview partners, the health centre that is closely linked with the ESP and serves as a training ground for the ESP students. ITM supports the centre with infrastructure, can therefore be understood as directly contributing to strengthened research capacity in the country programme of DRC (*capability to adapt and self-renew*).

The ITM contributed to strengthening relational capacities of the partners. At the programme level, the project documents indicate that the set-up of the DRC country programme is built along two objective that are designed to build on each other; as explained in Section 1. The interview partners also confirm this by adding that the reinforced capacities of the partners through the support provided under the objective 1 (INRB, CRSK, ESP) positions them to become service providers for objective 2 to support PNLTHA (lab activities, adoption of quality assurance systems). They further add that the relationship has been closer with some partners than others. The closer relationships were also influenced by the pre-existence of personal relationship among coordinators of the FA4 in the respective partner institutions, according to interview partners (*capability to relate to other actors)*. For objective 2, the interview partners indicate that the programme partially reached its results in reinforcing the relational capacities of the partners. While an external quality assurance (i.e. proficiency testing) of the agents administering the HAT diagnostics (INRB) was developed, the development a new knowledge (PhD thesis from an ESP student) did not reach the expected result since the PhD was obtained but its impact was perceived as limited by the interview partners. Furthermore, the interviewed partner state that the introduction of data management tools reinforced the links between the various health centres in the field and the provincial division of the PNLTHA (through digital imaging and a data management centre).

Concerning the transversal topic of the gender, the interview partners indicate that the basic considerations (i.e. equity in the selection process of PhD candidates, awareness of the representation in the partners staff members, amongst others) are respected although there are no measures specifically tailored to the country. Concerning the transversal topic of the environment, many interview partners suggest that although this was not a focus of the country programme at hand, this is nonetheless a cornerstone of the sector in which the programme takes place. By focusing the support to the treatment of highly contagious disease, ITM activities have tackled the management of lab waste.

With regards to key success factors of FA4, the interview partners first mention the quality of the collaboration between ITM and the partner institutes, which was perceived to have contributed to the successful results of the programme, be it in terms of good communication, responsiveness and establishing a climate of trust. Second, the deployment of ITM experts in the onsite as opposed to remotely, provided a more effective support to partner staff. Third, interview partners also underline that the support provided by the ITM representation office in Kinshasa was also considered a factor that has positively influenced the results obtained. In particular, interview data suggest the support of the office was particularly appreciated for the support it provided to the partners for financial-related questions. Along the same line, the interviews also highlight that the ITM office was also a facilitator in supporting with visa processes for the staff field visits. The interview partners nevertheless indicate that the ITM office would benefit from further clarifying its concrete role and responsibilities. Lastly, the partners also mention that pre-existing relationships can facilitate obtaining some results. This was the case for the relationship between the ESP and the local health division since an ITM is employed there. This facilitates understanding the approach proposed by the ESP towards the local authorities. The director of the Health and Learning facility in Lubumbashi is also a former ITM student.

When asked about the factors that hindered the results, the interview partners indicate two main factors, the first one being the effect of the COVID-19 pandemic, which delayed some activities, especially for collecting samples in the villages. In addition, the interview partners underline that while the pre-existing relationship can be a facilitating factor in some cases, it can also raise some questions as to the extent to which the selection process of partner is based on objective selection criteria or the weight that is given to the relationships when designing the programme and its partners. Some interview partners also perceived the ITM budget framework to be rigid (i.e., closure of financial year) which has caused some break in the activities.

3.5.2.3 Impact

The analysis of impact is done jointly for the two objectives since their concepts are closely interlinked as explained in Section 1. The programme has generally achieved impact by contributing to high-quality research, generating relevant public health knowledge, and strengthening the partner institutes in their professional capacities according to interview information and documents. The survey results confirm the positive results described above, insofar as an improvement is reported in educational, human, research, institutional, and technological capacities. As impact is concerned, one can differentiate between impact at the level of the partner institutions, impact at the level of the country and impact at the level of health at regional level. The most significant results of both areas are presented below.

First, the interview partners indicate that the programme has internally strengthened the professional capacities of the partner institute (this is particularly true for the INRB, CRSK and the provincial level of the PNLTHA), and contributed to the generation of high-quality research results (*capability to act and commit, capability to generate development results*). Strengthened human capacities have improved the quality of research, diagnosis, and treatment of the sleeping sickness by practitioners who took part in the courses. Alumni confirm the usefulness and impact of their training in interviews (*capability to generate development results*). According to several interviewees, there is a general ongoing discussion as to the definition of institutional development. The discussion revolves around what can be considered institutional development within the scope of ITM support: whether ITM support is designed in the stricter sense of institutional development, in the sense of integrating the partners into a larger institutional context or whether it is rather focused on organisational development (in the sense of developing the capacities of the partner institutions to correctly manage high-quality research). This would also contribute to clearly define ITM's added value for this expected level of result and could be the opportunity to identify other actors that would have a greater expertise in this field (whether within or beyond the Belgian actors). For instance, one interviewee mentions that one key factor contributing to improving the quality of the research was the reinforcement of the management of resources in the partner institutions, in particular administrative and financial, which was perceived as outside of the sphere of control of ITM. In the past, a complementary programme had been initiated with the support of the Belgian Embassy to specifically support these aspects (between 2011 and 2013), which was considered a satisfying response to the partners' needs, however this was not pursued in the FA4.

Second, policy impact at national level has been achieved to some extent through strengthened research and relational capacities at the partner institutes. Several interview partners confirm that results from various research projects been considered by the Ministry of Health with great interest and have reinforced the status of the partners. The documents and the interview partners mention that the specific expertise of the partners allows the Ministry of Health to call on their expertise, for instance in the development of the national plan for optimising the use of antibiotics, but also to facilitate specialised training adapted to the needs, for instance in the COVID-19 pandemic, INRB in collaboration with the DPS of Central Congo (third most affected province in DRC) to build the capacity of health providers in three health zones on the use of investigation tools, sample collection and diagnosis.

In addition, the interview partners noted that the status of the selected partners was a contributing factor to the impact of the programme' results at the national level. Indeed, some are public institutions that have gained visibility from the support of ITM. According to interviewees, the partners are able to use the high profile of their institution

to further use their voice to disseminate the results of the programme to the health systems and hospitals. This is particularly the case for the INRB, which is a National Refence Lab that was involved in the response to Ebola and to the COVID-19 pandemic. In addition, the second objective of ITM to reach the WHO target to eliminate the HAT as a public health issue has been reached and will focus on the elimination of the transmission of the disease in the future.

Thirdly, the support of ITM has contributed, to some extent, to the improvement of health at regional level, according to interview partners. Through the reinforcement of research and human capacities, ITM has contributed to create a core group of experts, for example for Ebola and other emerging diseases. In the case of INRB, and in combination with the improvement of the institution's visibility, the partner was able to deploy Ebola experts to Guinea to support the response to the Ebola epidemic.

Success story: Integrating the Bachelor-Master-PhD system into higher education in DRC.

At ESP, ITM supported the adoption of the Bachelor-Master-PhD system (i.e., system adopted in the European educational system in the context of the Bologna process, harmonising curricula and the ECTS credit system). In Western Africa, the Bachelor-Master-PhD system accreditation is delivered by the African and Malagasy Council for Higher Education (CAMES). In DRC, the reform for the integration of the Bachelor-Master-PhD system has been launched since 2010. With the CAMES accreditation of the Public Health Bachelor at ESP, the curricula has received particular interest from the Ministry of Education in DRC, since it is one of the first programmes to be fully constructed for the integration of the Bachelor-Master-PhD system. ESP and the government are in contact to tailor the programme proposed by ESP to the orientations of the Ministry of Education to develop a model that can contribute to the DRC efforts started in 2010 to enter the Bologna process.

3.5.2.4 Efficiency

The programme documents and interviews demonstrate that the FA4 was moderately efficient. This was partly attributed to some delays incurred in the implementation of the activities, also due to the impact of the COVID-19 pandemic, some challenges in financial management, and other contextual factors. As raised in the programme documents, it is also important to note that the FA4 in DRC is implemented in four partner institutions across the two objectives, which adds a layer of complexity to the efficiency of the programme.

First, the interview partners underline that the ITM programme displays some features that contribute to the efficiency of the programme. As such, the structure of the FA4 as a five-year programme is perceived to have contributed to the efficiency of the programme as it allows for long-term planning, which interviewees considered particularly important for research projects in order to obtain the expected results. Some interview partners nevertheless indicate they perceive the financial framework of FA4 to be rigid, especially with regards to the closure of yearly budgets which can affect the continuity of some activities.

Second, the training provided to administrative and financial staff was also considered to have contributed to the efficiency of the programme, although some interviews still perceive the administrative and financial capacities of the partner remain a challenge for efficiency. This was illustrated in some challenges in the financial management of the programme by some of the partners, some of which are still pending to resolved upon closure of the FA4. In addition, some interview partners also perceive a need for greater knowledge of the DGD funding at the partner institutions, for instance regarding the relative flexibility to transfer budget lines from one activity to another. The support of the ITM coordinators was key in this sense to support the partner in gaining knowledge. The interview partners also underline the importance of the support provided by the ITM representation office in Kinshasa.

Thirdly, the clarity of the ITM procedures was also raised by the interview partners as affecting the implementation of the activities, such as the necessary justification for the funding provided, which was considered to have added an administrative burden for some interview partners that do not have resources to externalise administrative

requirements (i.e. PhD, fellows). This difficulty was nevertheless alleviated with the support of the ITM representation office in Kinshasa.

Fourthly, some delays in the implementation of the planned activities also had an effect on the efficiency of the programme. According to the programme documents, on average, 50% of the activities were completed on time, 30% with a slight delay, and 20% with a long delay. The interview partners indicate that on the one hand, the COVID-19 pandemic has had negative consequences for the implementation of some activities. On the other hand, the COVID-19 pandemic also led to an increase in unplanned activities and resulted in additional support from the DGD, called "CREDO". The delay experienced at the beginning of 2020 was compensated by activities of the same type, but on a different pathology in the last quarter of 2020 and 2021.

3.5.2.5 Sustainability

Sustainability across the four dimensions varies from one institution to another, according to project documents, self-assessment results and information from the interviews. The approach of the ITM to contribute to the reinforcement of human capacities for a wide range of stakeholders was considered an added value for the institutional and financial sustainability.

With regards to the financial sustainability, it varies between institutions. According to project documents and interviews, INRB is aware of the fact that financial sustainability depends on structural support from the government, which remains a challenge as explained above. Apart from salaries, the government does not intervene in the running costs, although a budget has been set aside. Through the development of relevant skills (emerging diseases, quality assurance, financial, etc.) the INRB has reinforced its role as National Reference Lab and has increased its visibility. The interview partners note in this context the significant increase in the number of partners the INRB has acquired when compared to the start of the collaboration with ITM in 2000. For example, when the Drugs for Neglected Diseases Initiative (DNDI) started the studies on sleeping sickness, the fact that INRB was already part of the partner working on this in DRC and already had the capacity to carry out the analyses allowed DNDI to set up quickly in DRC and have expertise available for its studies. For ESP, the financial sustainability is not as clearly identified in the documents and by the interview data. Since the ESP is part of a larger institution (University of Lubumbashi) which has its own means and procedures. The CRSK has obtained some additional external funding, such as International Federation of Anti-Leprosy Associations (ILEP), American leprosy missions (ALM), but the main partner remains ITM. Nevertheless, the interview partner point to the fact the CRSK has included the search for external funds in its five-year strategic plan. For PNLTHA and the focus on the sleeping sickness, this received high interest from the Belgian government and other international donors, such as the BMGF. As such, the follow-up FA5 programme will continue with the control of HAT to reduce transmission, including through vector control treatment and the support to fixed screening structures for diagnostics and digitalisation.

With regards to social sustainability, the interview partners indicate that this aspect was not reinforced by the ITM approach since it was perceived that the programme and planned activities originated mostly from the northern partners. This was the case for the selection of thesis topics for the fellowships and the for the selection of equipment that were funded by the programme. ITM bought the equipment but once the activities were launched, it became clear that the staff at the partner institution didn't have the technical knowledge for its maintenance. While ad-hoc measures were taken to reinforce the skills of the staff, the interview partners perceived that the sustainability was not ensured yet.

As for institutional sustainability, the documents and interview partners indicate that the approach adopted for the ITM FA4 contributed to the institutional sustainability by investing in the development of human resources at research, technical but also financial and administrative level at the level of the institution. As one interview raised, the condition for the reinforcement of capacities to be sustainable at the institutional level is also dependent on the capacity to retain the trained staff in the institution. ITM now offers to continue to fund the returning PhD holders

to INRB the same amount they received for their PhD scholarship. This first step ensures the retuning PhD to increasingly enter new projects and ultimately stay in the institution. At ESP, the CAMES accreditation has received particular interest from the Ministry of Education in DRC, since it is one of the first programmes to be fully constructed for the integration of the Bachelor-Master-PhD system. ESP and the government have been in close contact to tailor the programme proposed by ESP to the orientations of the government. At CRSK, the collaboration with INRB throughout the FA4 has also raised awareness of the CRSK to adopt similar quality systems as INRB. One interview partner mentions that the capacity of institutions to manage their activities effectively and efficiently will continue to be reinforced in the FA5, as it was recognised to still need support.

In terms of technical sustainability, ITM support has contributed to a certain extent, according to the interview partners. On the one hand, ITM has invested in necessary equipment (centrifuge, lab equipment, computer, etc.) and infrastructures (field lab) which has contributed to the reinforcement of the research at the partner institutions and in the results in the improvement of the health care. For instance, the equipment acquired for the analysis of samples now enables the partners to do the analyses in DRC instead of sending the samples to other countries. On the other hand, the training of the staff in the use and maintenance of the newly acquired equipment does not appear to be systematically implemented, according to the interview data, which poses a threat to the technical investments. One partner nevertheless mentions that the investment in equipment is likely to attract further projects that have the ability to include technical training on maintenance in their projects.

3.5.2.6 Complementarity and synergy

Project documents and interviews reveal that the programme clearly contributes to strategic goal 4-D of the Joint Strategic Framework (JSF) on an improved management of neglected and chronic diseases, in particular in rural and marginalized areas. Thus, the programme is aligned with Belgian development cooperation in the country at large. In the self-assessment it is described that new collaborations within the JSF have been explored. According to the interviewees, collaboration within the JSF only took place scarcely.

Firstly, most interview partners indicate that the operational context of DRC complicates the realisation of synergies in the framework of the JSF. The interview partners highlight the size of the country, geographical spread, and number of actors, as well as the regional differences to be key factors that can explain why the realisation of synergies can be limited in general in view of the large number of actors present in DRC. The interview partners nevertheless recognise that good relationships exist with the Belgian universities. In particular one interview partner mentions that the search for complementarity and synergies was facilitated at the ESP since some Belgian universities have a local office hosted at the university of Lubumbashi. Other interview partners insist that there is still great potential to find complementarities between Belgian actors, particularly with regards to the reinforcement of institutional capacities. As presented throughout the report, the capacities of the partners in the management of the research have improved, in part as a result of the support of ITM, and will need to continue receiving support. The relevance of the support of ITM in this regard has been discussed by some interview partners and could benefit from relying on other Belgian actors that could support the reinforcement of these management skills,. The interview partners indicate that the contacts and the search for complementarities was facilitated at the level of the specialized hub of actors on health, the *Hub ONG Santé in Kinshasa*, led by the NGO MEMISA.

Secondly, with regards to synergies between the four partners of the FA4, interview partners also indicate that given the setup of the FA4 in DRC based on the collaboration with four partners (along both objectives of the programme), the collaborations and synergies were designed to contribute to greater exchange between the partner institutions. Indeed, the reinforcement of the three partner institutions throughout the activities implemented for the pursuit of objective 1 was expected to position them as service providers to the fourth partner involved in the pursuit of objective 2. According to the interview partners, this has been the case to some extent, although the relationships between the four partners could have been further enhanced. The interview partners do raise some examples of good collaboration that could be further capitalized on in the future. For instance, the INRB receives samples

collected in health centres around Kimpese and subsequently, the mobile teams under the supervision of PNLTHA conduct the first analysis with the collaboration of CRSK to see if a village is at risk. If the analysis identifies suspects, the sample is sent to INRB to conduct further analyses. The further reinforcement of the CRSK to conduct the second level of analysis (currently conduct at INRB) could contribute to support the PNLTHA at the provincial level in shortening the distance from patient to diagnosis and contribute to the effective application of the reform of the health sector in DRC that has been engaged since 2005 in the decentralization of services. The interview partners also mention that the extent to which synergies can also be developed among the four partners (by also between each of the partner institutions and their respective financial and technical partners) is influenced by the preference of the institutions in DRC to function on a bilateral basis rather than with a synergy-oriented mindset.

Thirdly, the interview partners also raise another example of the reinforcement of the relationships between the partners of the FA4 in DRC. With the support of ITM by the procurement of material, a local lab has been set up in Kinshasa to the develop the test for the HAT. As a result, the INRB now manufactures one of the sleeping sickness tests (MAECT) at the PNLTHA and sells it to other partners (IRD Montpellier, WHO, etc.) that are important actors in sleeping sickness control.

Fourthly, with regards to synergies and complementarities beyond the JSFs, the most significant example raised by the interview partners is in the context of sleeping sickness control in the objective 2 of the FA4. The interview partners highlighted that the ITM support to HAT control (implemented in objective 2) benefitted from connections with other larger programmes such as the BMGF. In addition, with the achievement of the WHO objective for the country to eliminate the HAT as a public health problem and the upcoming goal of tackling the transmission of the HAT, the interview partners have raised the interest of importance actors in the field to collaborate with ITM. This is the case of the Bill and Melinda Gates Foundations (BMGF) which resulted in the development of a common research proposal for HAT and the organization of strategic dialogues on HAT, held in March 2022 in Belgium.

Lastly, the interview partners mention that the ability to create synergies and find complementarities is also affected by the size of the projects that are funded. They interviewees specify that bigger projects have better capacities to attract financing considering their bigger weight in the landscape. Along the same lines, the adoption of the five-year funding scheme of DGD was considered a contributing factor to finding complementarities as pointed out by the interview partners.

3.6 Ethiopia

3.6.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[30] in which three stakeholders of the programme took part;
- Information obtained in eleven semi-structured interviews and focus group discussions with various stakeholders (involved ITM personnel, involved staff at the partner institution, alumni of PhD and master programmes, other Belgian actors within the Ethiopian JSF).

[30] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

In Ethiopia, ITM has collaborated with the Gondar College of Medical and Health Sciences (GCMHS) at the University of Gondar (UoG), one of the country's leading universities, located in a part of Ethiopia heavily affected by infectious diseases. The joint research collaboration between GCMHS and ITM started already in 2010 and was expanded to a capacity building partnership under FA3-III in 2014. ITM's country outcome in Ethiopia focuses thematically on two main areas, namely tropical infectious and poverty-related diseases such as leishmaniases and tuberculosis (i) and the containment of antibiotic resistance (ii). Overall, the intervention's country-level objective was to enhance the research capacity and evidence-based medical practice in tropical and poverty related diseases in Ethiopia. Corresponding with this country-level objective, the Ethiopian country programme was structured in five parts. First, the research part had the objective of further consolidating and broadening research on neglected tropical diseases (NTDs) as well as poverty related clinical and laboratory research. Second, the technological part had the objective of clinical and research laboratories' quality being strengthened. Third, the clinical part had the objective of strengthening the practice of evidence-based medicine. Fourth, the training part had the objectives of enhancing clinical decision-making skills of UoG's staff and strengthening of research skills of clinicians and researchers. Fifth, the scientific management part had the objective of an enhanced management of laboratory facilities and aimed at the introduction of an antibiotic stewardship practice. The total funding volume of the project was 1.423.750,00 Euro.
All pathways of change of the programme can be linked to FA4's overall Theory of Change. The relevant capacities targeted in Ethiopia as well as their associated activities, outputs, impacts and pathways to change are highlighted in the diagram (see Annex 8.3.6). The six capacities focused on in the country programme can be found at the outcome level: Research capacities (OC1), human capacities (OC2), educational capacities (OC3), institutional capacities (OC4), technological capacities (OC5) and relational capacities (OC6). All outcomes are interrelated with each other. The key impact pathways that are set to lead to strengthening these six capacities are the following:

1. *Strengthening research capacities:* The programme aimed to improve research processes and structures through high-quality publications, through the creation of opportunities for new and relevant research as well as the generation of knowledge on tropical infectious and poverty-related diseases components of the programme. These outputs were set out to be achieved by promoting research collaborations between researchers within GCHMS and ITM researchers. Furthermore, research projects were funded in both their operational cost (e.g., lab consumables) and staff cost by providing master and PhD research scholarships.
2. *Strengthening human capacities:* Human capacities at GCMHS were meant to be improved in two main ways. First, through the aforementioned training of researchers, PhD students and master students in research methodologies and skills. Second, training for clinical staff was offered in clinical decision-making and evidence-based clinical practice as well as laboratory practice and protocol development.
3. *Strengthening educational capacities*: Educational capacities were sought to be improved in two ways. First, more funding for and supervising of master students' and PhD students' research projects was offered through the country programme. Second, the support offered to master students and PhD students in the form of supervision by the partner institute's researchers should be broadened and enhanced. For this purpose, supervisors received trainings in research support.
4. *Strengthening institutional capacities:* To strengthen institutional structures, the country programme sought to establish a molecular and immunological laboratory platform and train staff in evidence-based medicine and the development of guidelines. Based on this training, hospital practice guidelines were developed.
5. *Strengthening technological capacities:* In the Ethiopian partner institute, technological capacities aimed at in this programme relate to hard technological infrastructure to carry out research. This was set out to be improved through technologically upgraded laboratories. Core activities that set out to achieve this were the provision of technical equipment such as machines for testing procedures and biobank data management, surveillance tools, lab consumables, etc.
6. *Strengthening relational capacities:* To strengthen the relational capacities, collaboration with other Ethiopian universities and other research institutes as well as the national public health institute should be encouraged and deepened.

3.6.2 Key Results

3.6.2.1 Relevance

At the level of the country, the FA4 programme was highly relevant as it addressed major public health challenges in Ethiopia. Interviewees described the major public health challenges as laying in the fact that the political budget allocation for the public health sector in Ethiopia is very low and thus underfunds research into the diagnosis and treatment of NTDs. Interviewees reported, that as a result, policies in the public health sector are partially incomplete and outdated, leading to high morbidity rates specifically among the poor population. Thus, the two major needs at the country level identified through the collected data were the generation of knowledge on NTDs (i) and evidence-based health policies leading to better health outcomes among the population in the long run (ii). Interviewees and project documents suggest that by strengthening the capacities of the higher education and research institute GCHMS, the intervention addressed the need (i) to better understand diseases and health behaviour that pose major public health challenges. Furthermore, various interview partners reported on the introduction of national guidelines on blood donor safety and leishmaniasis being based on the research conducted at GCHMS, ergo the country-level need (ii) being satisfied.

Moreover, the programme is well aligned with the partner's needs. At the level of the partner institution, two needs stand out, that were raised by many interview partners. First, GCHMS needed technological capacity in the form of state-of-the-art laboratory equipment and standard operating procedures. The need was based on the fact that there is an import ban in Ethiopia on medical equipment if it is to be resold. Interviewees reported, that the import ban made the partner institute's independent acquisition of state-of-the-art laboratory equipment and laboratory consumables in Ethiopia impossible, leaving the partner institute with a backward and incomplete technological infrastructure. The intervention was aligned with this need, as ITM bought the needed equipment and materials and shipped them directly to the partner institute. Second, interview partners reported that there was a need for well-educated researchers and clinicians at the partner institute, due to sustaining high staff turnover rates and the lack of high-quality research training. Project documents and interviewees confirmed that the country programme satisfied this need through the training part in clinical decision-making and research skills. Additionally, interviewees reported, that this need was satisfied by Master and PhD-students being able to conduct research projects that were funded through the country programme, being trained in research skills through it and thus being able to learn in closely supervised research projects.

Success story: The first quantitative PCR (qPCR) machine in the Gondar Region.
In the scope of the technological capacity building under FA4, the University of Gondar received various new laboratory equipment to continue its research in the field of NTDs and to raise it to a new level. One of these was the first qPCR machine in the Gondar region. A quantitative PCR instrument is a machine that amplifies and detects DNA. It combines the functions of a thermal cycler and a fluorimeter, enabling the process of quantitative PCR. Hence, the qPCR machine allows the detection of the DNA or RNA of pathogens and accordingly the diagnosis of diseases. With the onset of the Covid-19 pandemic, this qPCR machine acquired an even stronger importance: it was one of the few PCR machines in the country, making it a key tool of national importance in the diagnosis of the disease.

3.6.2.2 Effectiveness

The FA4 country programme can largely be said to have been effective in reaching its capacity-strengthening objectives. Self-assessment results, project documents and interview information demonstrate that most objectives have been achieved or over-achieved across all components of the programme. The survey results are in line with the insights from the interviews and project documents. The key stakeholders at the partner institute who were asked to respond to the survey report being "satisfied" or "very satisfied" at the contribution of FA4 to the capacities at GCHMS. Furthermore, all respondents report that outputs were mostly achieved or fully achieved. Notably, the

programme demonstrated a strict attention to the needs of the partner institute and demonstrated adequate flexibility in adapting to changing circumstances. As a result, it only fell short in some minor points according to the interviewed stakeholders. These shortcomings have both internal and external reasons (see below).

The technological part was highly effective and laid the foundation for the success of the other parts. Here interviewees and project documents show that ITM replaced outdated diagnostic and surveillance tools with state-of-the-art equipment. Furthermore, interviews and project documents confirmed that ITM's funding and management of the procurement process eliminated the lack of further laboratory and clinical material, such as laboratory consumables. Correspondingly, interviewees reported that the strengthened technological capacity of GCHMS enabled research and educational offers to be conducted on an advanced level (*capability to adapt and self-renew, capability to act and commit)*. The rather low baseline in terms of the technological capacity and the significant change induced through the country programme is also reflected in the survey results (see Annex 8.4).

Also, the training and clinical parts were effective, which had positive effects on the human and educational capacity. Interviewees reported that through numerous trainings on operational research, clinical decision-making as well as field visits of ITM staff at the beginning of FA4, human capacity was strengthened. Furthermore, interviewees mentioned that training in the aspect of research project support was also provided by ITM. They reported that through these trainings an improved supervision of Master and PhD students could be enabled and thus also the educational capacity strengthened *(capability to act and commit, capability to achieve coherence)*. Moreover, master and PhD students conducting their research in the scope of the country programme were offered courses on research methodology, further strengthening the educational capacity. In this regard, interviewees also often stressed the high-quality trainings for staff both at the partner institute and ITM as well as courses for students, thus confirming the descriptions of effects on human and educational capacity in the project documents *(capability to adapt and self-renew, capability to generate development results)*. In contrast, the results of the online survey show a comparatively low increase in human and educational capacity. However, this can be attributed to the comparatively high baseline of the two capacities or the specific type of respondent. Since an average increase of at least 0.7 can still be seen, the survey results are also understood as confirming the effectiveness of the training and clinical parts.
Furthermore, the programme was effective in strengthening research capacities. Monitoring tables reveal that a multiple of the envisaged trainings have been carried out, reaching a larger number of researchers than initially planned. The interview partners and project documents stated that the most important achievements in terms of research capacities were threefold. First, the strengthened technological capacity, i.e. the provision of state-of-the-art laboratory equipment and new tool kits led to higher quality of sample processing techniques and higher quality research outputs, which ultimately contributed to publications in international peer reviewed journals *(capability to act and commit)*. Second, research capacities of the staff, especially in the area of laboratory techniques and clinical methodologies were strengthened. One interview partner reported having built up significant expertise and skills and being able to apply these skills in important research projects within the institute (*capability to act and commit*). Third, through better-trained staff and an enhanced laboratory environment as well as the financial support by ITM, a new research line on cutaneous leishmaniasis, the most common form of leishmaniasis in Ethiopia, was initiated. Through the new research line, further research can be conducted in a relevant but so far understudied field and thus acquire relevant knowledge for evidence-based policy *(capability to adapt and self-renew)*.

In addition, the scientific management part of the programme was effective in strengthening the institutional capacities. In the scope of the scientific management part a lab coordinator was appointed. According to the interviewees, this led to an enhanced coordination of all lab-related activities *(capability to act and commit)*. This increase in institutional capacity was also confirmed by the online survey results.

Moreover, the relational capacities of the partner institute were also strengthened. It was stated in the project documents and confirmed by the interviews, that collaborations with other departments at UoG were initiated. Furthermore, in the scope of the intervention a network with other national partners such as the Ethiopian Public Health Institute and the Armaur Hansen Institute was established. Additionally, under FA4 new collaborations with other research sites and other Belgian development actors were explored *(capability to relate to other actors)*.

As far as the transversal topic of gender is concerned, various interview partners highlighted the equal distribution of research positions between men and women under FA4. Project documents and self-assessments stated that gender equality was viewed as a priority and thus institutionalized measures to promote gender equality should be established. When asked about the perceived importance of gender equality in the country programme, most interviewees did not perceive the issue as a priority as gender parity of the positions was already established. Moreover, interviewees could not report on institutionalized measures that enabled the share of female researchers to grow and to sustain that growth. Hence, the prioritization of the transversal topic of gender as stated in the project documents and self-assessment could not be verified by the interviews. Concerning the transversal theme of the environment, there were no planned activities stated in the project documents. This lack of awareness of the importance of the topic under FA4 was also confirmed in the interviews, in which no environment-related measures were known of.

When asked about the key success factors of FA4, those most consistently mentioned by interview sources are threefold. First, the long-established ties and good communication lines with ITM were seen as a crucial factor for the achievement of results. The interviewees, that had direct contact with ITM, reported the ease by which they were able to contact ITM personnel to discuss issues that emerge, be it on the level of project programming, budgeting, and planning, or on the level of access to ITM research knowledge or equipment. This is confirmed by the survey results, where all three respondents reported being "very satisfied" with the relationship with ITM. Second, all interviewees reported, that the programme results were highly depended on the provision of the laboratory equipment, which was brought to Ethiopia in a due to national regulations time-consuming import process. In particular, interviewees highlighted the patience of the ITM staff who took on this process. Third, most interview partners mentioned the flexibility of ITM in the adjustments of deadlines or the re-allocation of planned budgets when the circumstances in the country changed; e.g., ethics review processes took longer than announced or the importation of lab equipment was delayed.

When asked about the key inhibiting factors of FA4, the answers from the interviews and the survey refer mostly to factors outside the project's immediate sphere of influence. The COVID-19 pandemic was the most uniformly mentioned factor, reportedly influencing all planned outcomes to some extent, but especially the objectives related to sampling activities in the field and work at the labs, which were delayed by travel and general movement restrictions. Similarly, the continuing conflict in the Tigray region led on the one side to field missions being cancelled. On the other side the sealing off of the Tigray region also led to a significant amount of clinical study participants not being able to participate anymore. One factor inside the sphere of ITM's influence mentioned in the documents is the choice of only one partner institute. According to the lessons learned documents, potential for a higher effectiveness at the country level is seen, if more partner institutions would be involved in the country programme.

3.6.2.3 Impact

The programme has generally achieved impact by contributing to high-quality research, generating relevant public health knowledge and strengthening the partner institutes in their professional capacities according to interview information and relevant publications resulting in part from the programme. The survey results confirm the positive results described above, insofar as an improvement is reported in educational, human, research, institutional, and technological capacities. Two significant impacts, emphasised in many interviews as well as self-assessment results, are worth highlighting.

First, educational programmes designed, improved, and implemented within the programme have internally strengthened GCHMS' professional capacities and contributed to the generation of high-quality research results (*capability to act and commit, capability to generate development results*). Strengthened human capacities have improved the quality of research, diagnosis and treatment of NTDs by practitioners who took part in the courses. Alumni confirm the usefulness and impact of their training in interviews (*capability to generate development results*).

Second, policy impact has been achieved and is expected to continuously be achieved through strengthened research and relational capacities at UoG. Several interview partners confirm that results from various research projects have been considered by the Ministry of Health with great interest. Moreover, national guidelines were developed and incorporated based on the research on leishmaniasis *(capability to generate development results)*. Following the impact pathways of the country programme, improved capacities imply that more high-quality research can be expected to be produced by GCHMS with implications for health policy (*capability to relate to other actors, capability to generate development results*).

At the level of the country the most significant impact was the development of two national guidelines: guidelines in the treatment of leishmaniasis and HIV co-infection (i) and guidelines on safety in blood transfusion (ii). These guidelines were based on research and published peer-reviewed articles under FA4. According to various interviewees, these guidelines already enabled practitioners to improve their treatment of patients and thus enhanced the health of the Ethiopian population.

3.6.2.4 Efficiency

The allocation of funding both within and across different parts of the country programme was generally considered efficient by many interview partners. However, issues surrounding funding and research management caused some delays and interruptions of activities throughout the programme, i.e. had a negative effect on the timely delivery of outputs. Three key findings, mentioned by several interview partners and found in the project documents, deserve consideration when it comes to the evaluation of efficiency.

First, due to complicated and lengthy review processes of clinical trials through UoG's ethics committee and the national IRB, the start of various planned activities had to be delayed. Second, also the COVID-19 pandemic and moving restrictions, thus staff not being able to enter the newly established molecular labfor over a year or carry out clinical trials also led to delays in the schedule. Various delays in the schedule due to the review processes and the COVID-19 pandemic led to overall increased management and time expenditures that had to be spent additionally and could not be put into achieving the impact of the project. That said, the programme was considered remarkably flexible in shifting project resources (particularly as a result of delays of some components during the COVID-19 lockdowns but also in consideration of the delayed ethics approvals). Third, as the procurement of consumables within Ethiopia is extremely difficult, most of the needed lab consumables were sent to the partner institute directly from ITM in Belgium. This not only resulted in lab material reaching the partner institute much later than required, but also meant that a substantial part of the programme budget remained with ITM in order to pay for the goods and their shipment to Gondar. Even though this aspect is outside ITM's sphere of influence as the import restrictions are set at a national level, interviewees acknowledged that it would be desirable in the future if the partner institute could manage this directly in order to strengthen the autonomy of UoG.

3.6.2.5 Sustainability

According to the collected data, several components are perceived to have been sustainable, with some potential for improvement. By building up expertise within the partner institutions and collaborating in joint projects, partner institutions are able to attract external funding (financial sustainability), train future researchers themselves (technical and institutional sustainability) and hold local ownership (social sustainability). However, the collected data suggests that the implemented measures have certain drawbacks in financial, technical and social sustainability aspects.

Regarding financial sustainability, the picture is mixed. On an institutional level, the idea of the capacity strengthening approach was to put GCHMS and the UoG in a position to attract external funding. According to the project documents, UoG was successful in attracting different partners and additional grants. At the same time interview

partners reported that even though acquisition has taken place, there is still room for improvement and more diversified funding is urgently needed. Furthermore, interviewees expressed their need for skill building in grant applications for their research projects.

In comparison, social and technical sustainability are strong in most aspects, but show one significant weaknesses. Concerning the strengths, interview partners reiterated specifically on the newly established laboratory infrastructure, that GCHMS is able to maintain after the finalization of FA4. Furthermore interview partners emphasized on the skill building of staff that will guarantee the preservation of knowledge throughout future generations at the institute. Concerning the weakness, interview partners criticized that the training and educational parts have largely focused on master's students and their research projects. This initially strengthened the human and research capacities of the institutes. In the medium and long term, a large proportion of these trained research students will however, leave or have already left the institute to pursue a PhD at other research institutions, eventually weakening the initially positive effect.

3.6.2.6 Complementarity and synergy

Project documents and interviews reveal that the programme clearly contributes to goal 3 of the Joint Strategic Framework (JSF) on an improved prevention, diagnosis and treatment of tropical and poverty related diseases. Thus, the programme is aligned with Belgian development cooperation in the country at large. In the self-assessment it is described that new collaborations within the JSF have been explored. In the scope of the Joint Strategic Framework, a workshop on gender equality in research was organized by VLIR-UOS, ITM and ARES in Addis Abeba 2019. In the preparation of this workshop, a gender expert from the University of Leuven, who later led the workshop, visited many of the partner institutes in the JSF twice. Researchers and staff of these visited organisations attended the workshop,69ncludeng two persons of the University of Gondar. The interactive workshop offered an open platform and the possibility of exchange in order to to identify and discuss country—specific opportunities for the advancement of women in science and specifically at the individual institutes. As a result, small hands-on, institute-specific projects were conceptualized. Furthermore, several connection have been made with VLIR-UOS, including a joint supervision.

Outside of the JSF, collaborations with different other Ethiopian and international actors took place. Following the project documents, the first operational research course was organized with ITM and WHO-TDR. Furthermore, collaborations with Bahir Dar University, Wollo University and Arba Minch University were initiated as well as a collaborative network with other research institutes, such as the Ethiopian Public Health Institute and the Armauer Hansen Research Institute. Interviewees reported that through these collaborations new research was enabled to be conducted in a joint manner. Furthermore, the influence on the health policy-making processes could be broadened.

3.7 Guinea

3.7.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;

- Results from an online survey[31] in which three stakeholders of the programme took part;
- Information obtained in ten semi-structured interviews with various stakeholders (involved ITM personnel, involved staff at the partner institutions, alumni of teaching programmes, external stakeholders).

In Guinea, ITM has worked with the National Centre for Training and Research in Rural Health of Maferinyah (CNFRSR;[32] Centre of Maferinyah). This centre carries out research in public health and provides teaching in research methodology, sexual and reproductive health as well as primary health to health practitioners, leaders, and researchers. The country programme can be structured in three parts which correspond to the three country-level objectives. First, the **education** part had the objective for the centre to fulfil its mandate as a national centre for continued education in health. Second, the **research** part had the objective of strengthening the centre's research capacities in their active areas of research. Third, the **scientific management** part had the objective of strengthening the centre's scientific and administrative capacities. The total funding volume in the country programme was 1.062.500 euros.

All three parts of the programme can be linked to FA4's overall Theory of Change. The relevant capacities targeted in Guinea as well as their associated activities, outputs, impacts, and impact pathways are highlighted in the figure (see Annex 8.3.7). The country programme set out to strengthen five capacities: Educational capacities (OC3) were addressed by the education part; research capacities (OC1) and relational capacities (OC6) were addressed by the research part; institutional capacities (OC4) were addressed by the scientific management part; and human capacities (OC2) were addressed by all parts. The key impact pathways that were set to lead to strengthening these five capacities are the following:

1. *Strengthening educational capacities (education part):* The centre's educational capacities were aimed to be improved by developing new and improving existing educational programmes, including full degrees, short courses, trainings, and workshops. This was meant to be achieved by working on three main fronts: (i) enhancing the subject expertise and teaching skills of staff at the Centre of Maferinyah teaching on the programmes, (ii) developing appropriate curricula and modules, (iii) providing pedagogical and educational management support to leading personnel at Centre of Maferinyah.
2. *Strengthening research capacities (research part):* The programme aimed to improve research processes and structures through high-quality publications, opportunities for new research as well as the generation of relevant public health knowledge. These outputs were set out to be reached through funding collaborative research projects and funding a PhD student.
3. *Strengthening relational capacities (research part):* Relational capacities were aimed to be improved by encouraging collaborations both within the partnership and between the Centre of Maferinyah and other actors, including Fraternité Médicale de Guinée (FMG). These collaborations were meant to be implemented through joint research projects as well as exchange with ITM and within the centre.
4. *Strengthening institutional capacities (scientific management part):* In order to strengthen institutional structures, a website for the Centre of Maferinyah was to be created as a platform to provide results from their research and current public health information about the country.
5. *Strengthening human capacities (all parts):* Human capacities at the Centre of Maferinyah and beyond were aimed to be improved in three main ways. First, through training and research support of researchers at the centre, their expertise, knowledge, and skills were meant to be improved. Second, training for administrative staff was meant to improve their ability to support the centre effectively, in particular regarding the ability to manage funding for the institution. Third, trainings and education programmes with

[31] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

[32] Acronym for the French title: Centre National de Formation et de Recherche en Santé Rurale

accompanying education scholarships for (external) health practitioners and leaders in the Guinean health system set out to improve their knowledge and skills to perform their jobs more effectively.

Through strengthening these five capacities, the country programme set out to achieve impact in three main ways. First, it aimed to promote Centre of Maferinyah's effective functioning as an (increasingly) self-sustained provider of teaching and research. Second, it aimed to contribute to research publications and knowledge in public health that inform policy. Third, it aimed to contribute to better healthcare and leadership in the national health system.

3.7.2 Key Results

3.7.2.1 Relevance

The country programme was highly relevant as it addressed some major health challenges in Guinea and responded to the needs of the Centre of Maferinyah. At the level of the country, Guinean health outcomes are poor, even relative to other West African countries. Moreover, Guinea has recently been plagued by several epidemic outbreaks, even beyond the COVID-19 pandemic as some interview partners reveal and involved personnel discuss in their academic writing.[33] These outbreaks have laid bare two public health challenges mentioned by interview partners and in the self-assessment that rendered effective handling of outbreaks difficult and generally contribute to poor health. Both were addressed by the country programme. One is the lack of qualified health personnel, both in numbers and competence. The second one is poor health systems and governance. The programme's education part was designed to chiefly contribute to the training of health professionals and leaders. The research part included projects that specifically target health systems and aimed to generate knowledge to inform policymaking in this regard.

At the level of the partner institution, two core needs stand out that are raised by many interview partners. First, the Centre of Maferinyah needs funding to carry out their research. Second, they need high calibre researchers to work on their projects. The programme closely aligns with these two needs in all its parts. The research and education part directly responded to these needs. The scientific management part indirectly addressed these needs by setting out to strengthen the institute's ability to manage funding and carry out research effectively.

3.7.2.2 Effectiveness

The FA4 programme can largely be said to have been effective in reaching its capacity-strengthening objectives. Self-assessment results, project documents and interview information demonstrate that most objectives have been over-achieved across all three parts of the programme. Notably, the programme also showed flexibility to adjust to changing circumstances. It only fell short in some minor points. These shortcomings have both external and internal reasons whereby the latter can be used to draw lessons for future programming.

The education part was highly effective. Monitoring tables and interview partners reveal that a multiple of the envisaged target group has been reached in both internal and external educational programmes offered, leading to hundreds of health researchers and practitioners having improved their competencies. This demonstrates strengthened educational capacities at the Centre of Maferinyah and improved human capacities at the centre and beyond (*capability to act and commit, capability to generate development results*). The fact that many more people could be

[33] See for example: Kolie, D., Van De Pas, R., Fofana, T. O., Delamou, A., Van De Put, W., & Van Damme, W. (2021). Guinea's response to syndemic hotspots. BMJ Global Health, 6(10), e006550

trained than originally foreseen is partly due to top-up funding obtained from Enabel. This shows the programme's contribution to strengthened institutional capacities to attract external funding as an unintended positive consequence (*capability to act and commit*). Key success factors in the education part mentioned by several interview sources are twofold. First, the motivation and flexibility of involved teaching staff was high. Second, potential technical issues with the online delivery of educational programmes were considered from the very beginning and appropriate IT capacities within the Centre of Maferinyah built up to handle such issues.

In terms of the research part, monitoring tables and interview partners demonstrate that the country programme has over-achieved its objectives in terms of research output. Beyond three originally foreseen research projects, five projects have actually been implemented, resulting in more than five publications so far. While this has contributed to strengthened research and human capacities within the Centre of Maferinyah (*capability to act and commit*), as demonstrated in high scores in the online survey, a key inhibiting factor mentioned by several interview partners deserves consideration to enable stronger capacity strengthening in the future, especially among junior researchers. The latter had to focus on many tasks unrelated to their research, including organisational and administrative work for their superiors. This leaves little time and mental space to focus on research (*capability to act and commit*). While this is partly due to strong academic hierarchies which leave junior researchers will little power to reject working on other tasks, funding that is more strongly tied to time spent by junior researchers on projects or separate funding for staff engaging in administrative and organisational tasks may be a solution to this issue.

Furthermore, relational capacities were strengthened at the Centre of Maferinyah but the country programme's contribution to this was limited since some planned meetings and exchanges both across actors in Guinea (such as planned public health days) and between the centre and ITM had to be cancelled because of the COVID-19 restrictions. Interview sources argue that the centre's engagement in local and international networks was still strengthened, independent of the country programme, through the existing network and relational capabilities of the leading figures at the Centre of Maferinyah (*capability to relate to other actors*). In addition, a notable success factor in this context of hindering circumstances is the country programme's flexibility according to project documents and interview partners. Freed resources from limited exchanges were shifted into relevant research on COVID-19 at the Centre of Maferinyah. This was made possible through DGD's and ITM's flexibility in terms of funding allocation as well as the centre's ability to adjust quickly (*capability to adapt and self-renew*).

The scientific management part of the programme was only added later and this adjustment to changing circumstances also demonstrates the programme's flexibility. This third part was very effective in strengthening human capacities but its objectives in the realm of strengthening institutional capacities through a website were not reached. According to project documents and interview partners, training was carried out in reaction to initial problems of under-spending due to the staff's misunderstanding of basic accounting regarding funding. The training for administrative staff on accounting and effective funding management strengthened administrative capacity in these areas (*capability to act and commit*). However, some interview partners raised the point that this training was focused quite narrowly on DGD requirements and more generic training could have been helpful to enhance the institute's administrative capacities to deal with other donors as well. In terms of further institutional capacity strengthening, a planned website was set up but information on public health and research of Centre of Maferinyah cannot be found on this website (*capability to relate to other actors*).

In terms of the transversal themes of gender and the environment, some activities within the project were planned but the success was mixed. On the positive side, several successfully implemented projects have focused on female-specific issues in health such as sexual and reproductive health, maternal health, or research accompanying Enabel's women empowerment programme "She Decides". On the negative side, several interview partners point out the programme's ambition to have half of the involved staff and students be female. However, the share of women stayed below that. Interview partners mention two key reasons for this shortcoming. First, with household tasks still strongly associated with women in Guinea, there is a lack of qualified applicants. Second, these ambitions were not turned into conditions for funding. In a related programme with similar actors involved, the World Bank imposed a 30% female quota for funding which proved effective in actually achieving this share.

Regarding the environment, project documents and interviews do not point to any specific planned activities. However, the designed and improved educational programmes were online courses. Even if they were not designed to be e-learning courses principally for environmental reasons, an unintended positive effect of an online implementation was a reduction in the use of paper and carbon emissions from travelling.

3.7.2.3 Impact

Through the capacity strengthening approach, both within and outside of the partner institution, the FA4 programme has had and is expected to have impacts on health in Guinea. Three significant impacts, emphasised in many interviews as well as self-assessment results, are worth highlighting.

First, educational programmes designed, improved, and implemented within the programme have internally strengthened Centre of Maferinyah's professional capacities and contributed to the generation of high-quality research results (*capability to act and commit, capability to generate development results*). Furthermore, a publication on the e-learning approach and courses by the institution facilitates knowledge management within it and provides for others to learn from it (*capability to achieve coherence, capability to relate to others*).[34] Externally, strengthened human capacities have improved the quality of care and health management by practitioners who took part in the courses. For example, alumni pointed out that they use health data on patients more and are able to analyse it as a result of their course (*capability to generate development results*).

Second, policy impact has been achieved and is expected to continuously be achieved through strengthened research and relational capacities at the Centre of Maferinyah. Several interview partners confirm that results from various research projects (including work on human resources in health, febrile illnesses, and epidemic outbreaks) have been used by the Ministry of Health. Improved capacities imply that more high-quality research can be expected to be produced by the centre with implications for health policy (*capability to relate to other actors, capability to generate development results*).

Third, besides FA4's direct impact, it has also affected health research and leadership in the country indirectly and is expected to continue doing so through its contribution to the creation of CEA-PCMT[35] (see box: Success Story).

Success story: A new centre as principal training hub for health leaders.

In 2019, the African Excellence Centre for the Prevention and Control of Transmissible Diseases (CEA-PCMT, or CEA in short) was created in Conakry with substantial World Bank funding. CEA is headed by a leading staff member from the Centre of Maferinyah who is also involved in the FA4 programme. Several interview partners stress CEA's role as a new politically influential hub for health research and training in Guinea. It is expected to produce policy-relevant research in the fight against diseases and train health leaders of the future. Interview partners point to two key ways in which the FA4 programme contributed to CEA's creation and staffing. First, the quick development of curricula as a condition for setting up the institution was heavily supported by the programme. Second, the leader and other key staff at CEA are also involved with the Centre of Maferinyah and significantly benefited from FA4's human capacity strengthening.

3.7.2.4 Efficiency

The allocation of funding both within and across different parts of the country programme was generally considered efficient by many interview partners. However, issues surrounding funding management and disbursement caused

[34] Millimouno, T. M., Delamou, A., Kourouma, K., Kolié, J. M., Manet, H., ... & Delvaux, T. (2020). Approche eLearning pour le renforcement des capacités des professionnels de santé en Guinée: une expérience post-Ebola. Sante Publique, 32(5), 537-548

[35] Acronym for the French title: Centre d'Excellence Africain pour la Prévention et le Contrôle des Maladies Transmissibles

some delays and interruptions of activities throughout the programme. Two such issues, mentioned by several interview partners, deserve consideration for future programming.

First, interviews and self-assessment results reveal that an unexpected lack of administrative capacity and knowledge of DGD systems meant that Maferinyah spent less than 50% of the budget in the first year due to a misunderstanding of accounting and disbursements.[36] The programme was flexible in shifting project resources to appropriate training on this. As a result, spending caught up in the subsequent years of the programme. Some interview partners stress that making sure that accounting and disbursements are well understood on the side of the partner and, if necessary, providing training is essential in future programmes, especially when new partnerships are formed.

Second, disbursements at the beginning of the programme were sometimes significantly delayed. This had to do with the start date of the programme on January 1st, 2017, while the donor only disbursed first funds in the second quarter of the year, after changes to the programme. As some interview partners pointed out, this led to delays and interruptions of project activities at several points as the Centre of Maferinyah was not able to bridge funding gaps for longer periods of time. These delays meant that many projects did not make much progress in the first two years of the programme and only picked up towards the end.

3.7.2.5 Sustainability

The country programme has been successful in strengthening capacities by creating and developing structures and ownership within the partner institution according to project documents, self-assessment results and many interview partners. These structures and ownership within the institute lay a good basis for the sustainable continuation of impactful activities (social, technical, and institutional sustainability). However, with some activities still being relatively dependent on ITM funding, financial sustainability is only fulfilled to some degree.

Two key structures that have been developed according to project documents and several interview partners are the following. First, through both trainings and research expertise built up on the job, the programme established a new cadre of managing researchers who now take on leadership roles within the institute. While the research director was initially alone in managing everyone, these managing researchers constitute a new management level responsible for more junior staff. This institutional change is considered very valuable by interviewed stakeholders as it increased efficiency, helping the Centre of Maferinyah to grow as an institute and improve both their research and educational output (institutional sustainability). Second, educational programmes and trainings that have been set up once can now be run at much lower cost in the future. This is because developed curricula and online material can be reused. Furthermore, staff at the Centre of Maferinyah is now enabled to teach the courses and needs less preparation time in the future. By continuously running the courses, they can further strengthen human capacities, both internally with researchers of the centre and externally with healthcare practitioners and leaders (technical sustainability).

Regarding social sustainability, many interview partners point out that ownership sits strongly within the partner institutions. This applies to both educational programmes and research projects.

Regarding financial sustainability, the picture is, in comparison, more mixed. While the idea of the capacity strengthening approach was to enable the Centre of Maferinyah to attract external funding, this has not materialised in the area of research performed within the country programme. The centre was indeed able to secure significant funding from Enabel for their educational programmes, but interview partners were not able to name any grants outside of ITM funding secured for research projects within the country programme. At the same time, across all its activities,

[36] There was an initial hesitancy to spend on project activities for fear of not being reimbursed. At the same time, overhead cost on projects was calculated as a share of total project spending. When budget available for overhead spending was then seen to be low as a result of low project spending, the Centre of Maferinyah was even more careful in further administrative spending (counting as overhead) which meant that administrative processes around projects did not take place and halted project activities. They did not realise that their available overhead spending would also go up as general project spending increases.

the centre does not entirely depend on ITM funding. Indeed, American funding from their national health agency CDC is much larger according to several interview partners. Taken together, while the partner institution already shows some ability to attract external funding, this capacity can be strengthened further in the future to improve financial sustainability.

3.7.2.6 Complementarity and synergy

Project documents and interviews reveal that the programme clearly contributes to goals 3 and 4 of the Joint Strategic Framework (JSF) on an improved health situation and access to knowledge[37] and is thus aligned with Belgian development cooperation in the country at large. Two notable synergies within the JSF were realised with the health NGO Memisa (through FMG) and Enabel and other important collaborations with players outside of Belgian development cooperation are in place.

According to project documents, self-assessment results and interviews, the Centre of Maferinyah has collaborated with FMG by providing research and evaluation accompanying the latter's activities with Memisa in the areas of mental health and primary health care. With Enabel, the FA4 programme collaborated on the education part and Enabel's female empowerment programme "She Decides" in Guinea. As outlined above, Centre of Maferinyah could secure substantial top-up funding from Enabel for their educational activities to increase the number of participants in courses. Regarding the programme "She Decides", the Centre of Maferinyah has been commissioned (through ITM) to identify research opportunities and accompanying evaluation with involvement from CEA-PCMT.

Outside of Belgian development cooperation, interview partners point out that the most important partners of the centre include CEA, the University of Conakry with leading staff from Maferinyah holding academic position at its medical department, and the American health agency CDC. Through strengthening the Centre of Maferinyah's human and relational capacities, the FA4 programme has significantly contributed to fostering those partnerships with more exchanges and rotation visits between researchers at the different institutions.

3.8 Peru

3.8.1 Background and intended impact of the country programme

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[38] in which two stakeholders of the programme took part;
- Information obtained in nine semi-structured individual and group interviews with twelve stakeholders (involved ITM personnel, involved staff at the partner institutions, alumni and current students of teaching programmes, external stakeholders).

[37] Goal 3 is to improve access to quality health care for all (prevention, curative care, rehabilitation and education). Goal 4 is to improve access to knowledge, the quality of research and stimulate innovation.

[38] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

In the scope of Peru's country programme, ITM collaborated with the Instituto de Medicina Tropical "Alexander von Humboldt" (IMTAvH), which is part of the Universidad Peruana Cayetano Heredia (UPCH) in Lima. The IMTAvH is a national and regional reference centre for tropical diseases and is attached to the Cayetano Heredia Hospital. It collaborates closely with the National Institute of Health the Ministry of Health (MINSA), and other local universities. The ITM and the IMTAvH have had a 30-years-long collaboration in the context of basic and translational research for the improvement of health in the field of infectious diseases that pose serious public health problems in Peru, Latin America and globally. This country programme built on previous projects under FA3.

The main stated objective of this country programme is to build research and development (R&D) capacity to deliver strategies and/or tools for the diagnosis and control of infectious diseases. The programme is loosely organised along the following components: (i) tuberculosis, (ii) malaria, (iii) leishmaniasis, (iv) arbovirosis, (v) antimicrobial resistance and (vi) diseases associated with human T-cell leukaemia virus type 1 (HTLV-1). The funding volume of this country programme under the FA4 totalled 2.635.000,00 Euro. The beneficiaries of the programme were the staff of IMTAvH, decision makers and other staff from the Ministry of Health (MINSA) in Peru (direct beneficiaries). Indirect beneficiaries were persons participating in the study interventions in communities and people affected by the diseases targeted in the programme.

While the country programme objective highlights research capacity as the principal capacity to be strengthened, the country programme focused in fact on six capacities. The change pathways and capacities in this country programme can be linked to FA4's overall Theory of Change. The ToC depicted in Annex 8.3.8 below shows the relevant inputs, activities, outputs and outcomes for Peru highlighted. The six capacities focused on in the country programme can be found at the outcome level: Research capacities (OC1), human capacities (OC2), educational capacities (OC3), institutional capacities (OC4), technological capacities (OC5) and relational capacities to influence policy-making processes (OC6). The key impact pathways that are set to lead to strengthening these six capacities:

1. *Strengthening research capacity:* IMTAvH has two clear branches, one of which focuses on research. The programme aimed to improve the research capacity of IMTAvH in the areas of research for disease control of communicable diseases. The means to achieve this were the support for scientists through PhD scholarships, the institutionalised support of high-quality scientific publications, the establishment of a peer-review mechanism for proposals and the promotion of research collaborations between IMTAvH and ITM researchers.
2. *Strengthening human capacity:* The programme aimed to strengthen human capacities through their guided development of PhD dissertations, as well as through trainings and workshops to strengthen the ability of researchers to conduct high-quality research. In addition, IMTAvH staff received trainings in other areas, such as the use of molecular data and tools. To integrate the human capacities that were strengthened, the programme aimed at the incorporation of postdoctoral researchers into the faculty staff at the UPCH upon successful completion of their PhD degrees.
3. *Strengthening educational capacities:* The second branch of the IMTAvH focuses on teaching. Educational capacities sought to be improved in two ways. First, more funding for master students' and PhD students' research projects was to be offered through the country programme. Second, the support offered to master students and PhD students in the form of supervision by the partner institute's researchers was to be broadened and enhanced.
4. *Strengthening institutional capacities:* At IMTAvH, institutional capacities to be strengthened included institutional procedures and resources. This was supported by the development and the improvement of processes, platforms and methodologies, such as improving the quality assurance and the right application of lab procedures.
5. *Strengthening technological capacities:* At IMTAvH, technological capacities relate to the development of rapid diagnostic tests for leishmaniasis and viral infections and next-generation sequencing. The activities in this realm include the provision of laboratory material, surveillance tools, and screening devices.
6. *Strengthening relational capacity (policy influence):* An important hypothesis in the work of the IMTAvH during the FA4 was the communication of new knowledge acquired through the programme research to relevant policymakers to further evidence-based policy and bridge the practice-policy gap. The activities in this realm

included the participation of IMTAvH researchers / component leaders in task forces dealing with policy development, their collaboration on the preparation of technical and operational guidelines to be adopted by the MINSA, and the development of policy briefs and technical notes.

3.8.2 Key Results

3.8.2.1 Relevance

The country programme was highly relevant to the context and challenges faced by the country. The interviewees from different stakeholder and target groups involved in the programme coincide that the different areas in the programme design and its activities were highly relevant to needs and priorities of the MINSA, partners and the partner IMTAvH itself.

At the level of the country, the FA4 programme was highly relevant as it addressed major public health challenges in Peru and aligned well with priorities at MINSA. The logic of how the programme set out to achieve impact in public health was: by strengthening the capacities of IMTAvH as reference institute for tropical medicine in the country, addressing the need to better understand diseases and dynamics that pose major public health challenges and delivering strategies and tools for their surveillance and control. Some of the main challenges in the country include a lack of capacity in the surveillance and control of infectious diseases. The deficient public health system, covering approximately 60 percent of the population, shows currently a lack of strategic direction and consistency in policy and operations and shows fragmentation among various health operators. In addition, for example in the case of malaria, it is an important challenge to reach communities with appropriate techniques. The FA4 aimed to address these challenges by focusing on selected priority diseases in the country (see list of components under Background of the Programme), including work on providing evidence for key decision makers and decision-making fora and processes within MINSA to guide evidence-based policy development, and supporting the development of techniques and protocols, in the case of malaria, to be use in affected communities.

According to various stakeholders interviewed, the work of IMTAvH within the FA4 was integrated in and complementary to MINSA's related programmes and task forces on malaria (*Plan Malaria Cero* and *Plan Nacional de Eliminación Perú*), bacterial resistance and others (see details below under Effectiveness). In addition, the programme found ways to redirect itself in order to address the important new challenge in the country that arose with the COVID-19 pandemic, for example in the realm of the effectiveness assessments of vaccines (see details below under Effectiveness).

Regarding the relevance to the partner institute, the programme addressed core needs, some of which were repeated consistently in the interviews: These core necessities are the need for funding for scientific research, scientific training to attain highly qualified staff in the institutes themselves, being able to renew IMTAvH's research leadership, improving the institutes' ability to secure external research grants and publishing articles in high-impact publications, developing systems to capture and analyse data, and strengthening the capacities to effectively use diagnostic tools. This means, that needs regarding developing human capacities, strengthening research capacities and securing sustainable funding were emphasised.

3.8.2.2 Effectiveness

According to the self-assessment, project documents and interview partners, most of the FA4 programme's objectives were achieved in the country. Interview partners coincided that the most important result at the outcome level was strengthening human and research capacities at IMTAvH. An important challenge has been reintegrating post-doctoral researchers back within the institute. The programme was effective in strengthening research capacities.

The number of proposed publications was considerably higher than planned (17 instead of 10), also in high-impact scientific journals, 43 grant proposals were submitted by IMTAvH researchers trained in the FA4 (of which 22 were awarded). A key example of successful scientific publications was the high-impact research article on leishmaniasis amastigotes and its characteristics by IMTAvH researchers.

The programme was overall effective in strengthening educational and human capacities. According to the project documents, one PhD dissertation was defended and two were ongoing, as planned. However, one PhD on tuberculosis was ended prematurely. The qualification of a new generation of PhD students supported by ITM to take over the leadership of the different components at IMTAvH is a key success for the partner institute (and links to intitutional capacities). The background for this is an important institutional issue that concerns the current generational change taking place at IMTAvH, as several of the institute's scientific leaders have retired lately or are due to leave their mandate in the next years. In addition, the IMTAvH teaching branch was strengthened through the integration of one more staff member as a result of the FA4. In terms of educational results, the IMTAvH was able to reintroduce the master's degree on infectious and tropical disease control and flagship (Maestria en Control de Enfermedades Infecciosas y Tropicales, MCEIT) and other international and national (online) courses, partly by using the financial resources provided by ITM.

Some of the disease components were more effective in their achievement of programme objectives than others in the context of the COVID-19 pandemic. While the components on malaria, antibacterial resistance and tuberculosis (except for the interruption of a PhD) achieved their objectives, the components on leishmaniasis and arbovirus were severely affected by the pandemic mainly due to the severe limitations they face in the collection of samples as basis for their research under the FA4. Within the component of malaria, for example, the IMTAvH colleagues were able to accelerate and find creative ways to keep up on tasks related to laboratory (for example by collaborating with colleagues that already had collected samples before the pandemic and were able to share them).

With regard to the institutional capacities of the IMTAvH, an important challenge in the programme's effectiveness has been integrating the qualified colleagues in the scientific and academic life after their educational programme by integrating them as employees of the UPCH, of which the IMTAvH is part. According to interviewees, in the past, this limitation was mainly because the UPCH favoured hiring faculty members with a clinical background as opposed to a research background. In recent years, this approach has been changing and there is a clear interest at the university in expanding the faculty members with research expertise. However, funding challenges limit the number of researchers hired by UPCH. The lack of an institutional policy for talent retention ultimately reflects funding problems at the UPCH. This lack of an institutional policy and reluctance to offer the postdoctoral researchers contracts as assistant professors and laboratory space at the UPCH is an important challenge for the retention of postdoctoral fellows that graduated with ITM support. As a result, several postdoctoral researchers were unable to reintegrate within the IMTAvH as permanent staff in spite of their willingness and own efforts to do so. Some of them remain in the country, however, working in related fields within the public and academic sectors.

With regard to relational capacities that allowed the country programme's activities to have an effect on public policy, interview partners and project documents raised significant achievements (see details under Impact). Interview partners pointed out that the IMTAvH, as part of the UPCH, is uniquely positioned in the country as a strong actor in the area of public health with the prestige that allows it to advocate and provide evidence for decision-makers to take it up in policy and key decision-making processes.

When asked about the key success factors, several interview partners referred to the longstanding collaboration on equal footing with mutual learning between ITM and the IMTAvH, as well as the strong individual commitment of the institutes' researchers.

When asked about the key inhibiting factors, it was agreed that the pandemic was the main one during the FA4, as it made it impossible for example to continue field work in the provinces to collect samples. In addition, the achievement of some programme objectives relies on external factors, such as the actions of local counterparts and authorities. Nevertheless, interviewees mentioned that IMTAvH lacked a proactive institutional effort to enhance and

expand scientific networking. In fact, most interviewees indicated that any networking activity was limited to the individual efforts made by researchers. The situation at the MINSA (see details under Relevance) and the fast rotation of decision makers and ministry staff have been described as a crisis by the interview partners and also represent important challenges for the achievement of programme objectives.

Concerning the transversal topic of gender, most of the interview partners limited their understanding of the topic to the gender balance in the IMTAvH team and among master and PhD students. A similar response came about when interview partners were asked about the transversal topic of the environment, as the interview partners see the topic not as a relevant focus in their work nor as an institutional emphasis to address these topics.

3.8.2.3 Impact

The programme has generally achieved impact by contributing to high-quality research, generating relevant public health knowledge and strengthening the partner institutes in their professional capacities according to interview information. The extent to which impact is achieved differs to some degree by component. One of the most significant impacts of the programme is the contribution to health research on malaria, tuberculosis and antimicrobial resistance components, in which the FA4 played a substantial role. Through the capacity strengthening approach, the FA4 country programme has had and is expected to have impacts on public health in the country. The programme has generally achieved impact by generating relevant public health knowledge and feeding it into public policy working groups and resulted in guidelines adopted by the MINSA, contributing to high-quality research, and strengthening the partner institute in its professional capacities.

Despite the challenges described above related to the Peruvian health system, the impact of the programme on public policy is overall significant. Interview partners were able to point out several successes in this regard, while also pointing out that there is potential to achieve more. Currently, several members of the IMTAvH team participating in the FA4 are members of interdisciplinary and intersectoral policy committees advising the MINSA on key diseases (such as malaria and the national network of geriatric tuberculosis and antimicrobial resistance hospital protocols and guidelines). In this position, the staff members directly advise the MINSA in their development of policies and guidelines based on the scientific evidence acquired partly during the FA4, with an immediate impact on how the system deals with these diseases. Particularly the components on malaria, tuberculosis and antimicrobial resistance have had an important impact on policy processes. Examples include the successful adoption of a molecular diagnostic methodology tested by IMTAvH during the FA4 into the implementation of the *Plan Nacional de Eliminación de Malaria* and successfully advocacy for the adoption of the Antimicrobial Optimization Programme (PROA) in the country. In order to achieve these successes, the IMTAvH directly benefits from FA4 capacities and activities (concretely, the "evidence-to-policy meetings" held with policy makers and other relevant stakeholders and related policy briefs and technical notes based on FA4 research findings). Several interview partners attested to the fact that the leadership of the institute has a longstanding reputation and influential policy network. However, these supporting factors relied on the commitment of individuals within IMTAvH and were not the result of institutional processes or commitments. This presents the risk that the results might not be sustained when the IMTAvH leadership changes. Interview partners indicate, on the one hand, that there is more potential for the relationship with policy fora and committees to be further institutionalised (and thus less dependent on the willingness and contacts of individual researchers at IMTAvH), and, on the other hand, that human resources at the institute would benefit from trainings on policy dialogue.

Success story: Informing public policy on AMR and integrated resistance surveillance

IMTAvH staff members started their work on antimicrobial resistance (AMR) back in 2007, when the topic was not yet a high priority of the public health agenda. The prominence of this work grew in 2016, when the General Assembly of the United Nations held a High-Level Meeting on AMR and the Peruvian government summoned the IMTAvH for its work on the topic. During the FA4, two staff members of the IMTAvH advised the intersectoral working group on AMR confirmed by 16 Peruvian authorities, including the MINSA and other national ministries in their design and implementation of the Peruvian Multisectoral Plan on the Antimicrobial Resistance. As a result of IMTAvH's contribution, the technical standards that obliges hospitals in the country to invest in good antimicrobial use was recently adopted. In addition, the AMR component at IMTAvH kicked-off a network of resistance surveillance in Lima's hospitals and completed a country-wide study on integrated resistance surveillance in 15 country regions, involving epidemiological and clinical results.

Within the impact on public policy, interview partners differentiate among different policy actors and the influence that IMTAvH has been able to achieve with them. Positive examples include (a) the MINSA, which has been open to recommendations by the institute and actively invites component leaders to participate in task forces and committees directly advising the government, and (b) the National Health Directorate, which has invited the IMTAvH malaria component to support the Plan Malaria Cero. On the contrary, the National Health Institute has not been as open or interested in research results in the programme. According to one interviewee, this is likely because persons in key positions at the NHI had had other priorities in recent months at the time this evaluation was conducted. During interviews for this evaluation, several IMTAvH interview partners stated that their efforts to influence policy and bridge the science-policy divide, while already good, need to be strengthened further through targeted policy-dialogue trainings and other ways to promote advocacy capacities. This focus has been included in the new five-year programme.

Success story: Redirecting FA4 resources to high-impact priorities in the pandemic.

As some activities across the FA4 components stalled because of the lockdowns imposed during the COVID-19 pandemic, the IMTAvH was able to redirect its financial, human and time resources to high-impact activities. One was the partnership with MINSA and dozens of doctors for *telemonitoring* of COVID-19 patients by phone during the gravest COVID-19 waves, as overflowed hospitals and closed-down health centres left many patients without medical attention. Moreover, IMTAvH reallocated resources for an online course on public health aspects of COVID-19 vaccination, in which more than 6,000 students participated.

3.8.2.4 Efficiency

There was generally a strong sense by various interview partners that the IMTAvH had a transparent and efficient financial management and that a lot could be achieved with little means in the country programme. However, according to project documents and the self-assessment, the budget has been spent as planned, except for shifts in the context of the pandemic. In terms of timely delivery within components, self-assessment results, project documents and information from the interviews suggest that the activities were implemented within envisaged timeframes. There were some delays, for example in the purchase of reactive substances and equipment. Some reasons for this were external, as some interview partners suggest, such as changes in the political settings in the country. A success factor for the overall compliance with timeframes and transparent management of financial resources was the existence of qualified accounting staff within the IMTAvH, who has been collaborating in the management of FAs for several years, works well with the components internally and with the ITM, and knows the administrative procedures well.

Regarding the allocation of funding across components, two interview partners raised the suggestion to introduce some competitive spirit among the different components for attracting funds within the FAs and (re-)allocating to

better performing components. Researchers are used to other competitive grant processes (such as those of grant providers in the USA) and agree that this level of competitiveness raises the overall quality of work.

3.8.2.5 Sustainability

While there is strong evidence that the programme's capacity-building approach has worked well and has secured a level of sustainability, there are several challenges in this regard. By building up expertise within the partner institutions and collaborating as partners in joint projects, the partner institute can train future researchers themselves (technical and institutional sustainability) and attract a limited level of external funding (financial sustainability, see details below). However, financial sustainability continues to be a challenge. In addition, the integration of human resources after their PhD completion in Antwerp into the IMTAvH is limited, which affects institutional sustainability. Some important aspects of the programme are supported and sustained due to the commitment and interest of individual researchers but is not yet institutionalised within IMTAvH (see details under Effectiveness). Finally, some work carried out in networks prior to the FA4 could not be sustained during the FA4 country programme (see details below).

Regarding financial sustainability, the different IMTAvH disease components are successful in attracting grants from other sources, such as the large grant by the United States National Institute of Allergy and Infectious Diseases through its initiative "International Centers of Excellence for Malaria Research" and the GORGAS international courses IMTAvH offers with the support from the University of Alabama in Birmingham. Interview partners have indicated that the nature of research funding in the country is always a run for extremely competitive international grants, since limited funding available in the country only comes from one source (the National Council for Science, Technology and Technological Innovation, CONCYTEC). However, questions remain on whether the IMTAvH could in the future increase their financial options through patents of their work and commercialisation, and student fees, as the UPCH is a private university. As of now, there is no active institutional promotion of patents within IMTAvH.

During the FA4, unlike in previous multiyear programmes, the funding support for maintaining networks was no longer available. The sustainability of networks forged during previous programmes and in other projects funded by other sources within IMTAvH was in some cases secured but suffered from this lack of funding and from obstacles presented by the COVID-19 pandemic. For example, while networking in the malaria and tuberculosis components was secured through the support of other sources, networking in the bacterial resistance component was severely affected. One interview partner pointed out an important potential deficiency in this regard. According to this interview, the sustained engagement in networks is also the result of individual interest and commitment with the network and the topic.

3.8.2.6 Complementarity and synergy

Project documents and self-assessment results attest that the programme contributes to goal 8 of the Joint Strategic Framework (JSF) on universal and comprehensive access to health care for citizens in the country and is thus aligned with Belgian development cooperation in the country at large. According to the self-assessment, most cooperation took place with players outside of Belgian development cooperation because other synergies with Belgian actors are not a natural fit, as they are not active in the area of health. There is cooperation with a VLIR project on malaria molecular surveillance and drug resistance.

In the academic realm, the programme had links with the National University of the Peruvian Amazon (UNAP), Arequipa University, and the Naval Medical Research Unit Six (NAMRU-6), a biomedical research laboratory of the US Navy located in Lima.

3.9 South Africa

3.9.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[39] in which three stakeholders of the programme took part;
- Information obtained in eleven semi-structured interviews with a total of twenty stakeholders (programme coordinators, directors, involved staff and beneficiaries at the partner institutions; alumni of teaching programmes; and external stakeholders).

ITM's country programme in South Africa aimed to enhance the capacity for research, teaching, policy advice and advocacy of the partners in the field on human and animal health and at the same time to strengthen the networks of local partners, within South Africa, the African region and beyond with specific attention for gender, human rights, and environment. ITM collaborated with two partner institutions, the Department of Veterinary Tropical Diseases (DVTD) of University of Pretoria (UP) and the School of Public Health (SOPH) of the University of the Western Cape (UWC), drawing on their position as South African Higher Education Institutions with capacity to support the African Region more generally. The partner institutions worked together to achieve the main objectives, each with their specific entry point: DVTD focused on zoonotic diseases circulating in resource-limited communities, while SOPH focused on health policy and health systems organisation and management. The total funding volume of the South Africa country programme was 4,250,000 euros.

To achieve its overall objectives, the country programme focused mainly on strengthening six capacities. This is shown in the Theory of Change of the whole FA4 programme. The highlighted parts are the impact pathways relevant in South Africa. (see Annex 8.3.9)[40] The six capacities focused on in the country programme can be found at the outcome level: Research capacities (OC1), human capacities (OC2), educational capacities (OC3), technological capacities (OC5), and relational capacities regarding networks to create synergies (OC6) and policy-making processes (OC7).[41] The key impact pathways set to lead to strengthening these capacities are the following:

1. *Strengthening research capacities:* The programme sought to improve research processes by building an evidence base through collaborative research on zoonotic and animal diseases (DVTD) and health policy and systems (SOPH), that considers the specific ecological and socio-economic context in South Africa and the Region. The FA4 programme aimed to achieve these outputs, for example, by promoting research collaborations between researchers at the partner institutions and at ITM and by setting up strategic research networks in the region. Activities also involved co-supervision of research, and providing students with skills and support for research, in labs, and in relevant disciplines (i.e. socio-anthropological training). Furthermore, research projects were funded in both their operational cost (e.g. lab consumables, travel, conference and publication fees) and researcher staff costs by providing masters, doctoral and post-doctoral scholarships.

[39] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

[40] It is important to note that FA4's country programme in South Africa is not a full reflection of the partner institutions' activities and objectives in general. Those are much broader and include activities and their results shown but not highlighted in the Theory of Change attached (e.g. support to establish or improve educational management). The highlighted parts only refer to the impact pathways under FA4, not the partner institutions in general and were therefore subject of this evaluation.

[41] While some activities within the programme contributed to strengthening institutional capacities (OC4), this was not initially a focus of the FA4 programme in South Africa and is therefore not highlighted in the Theory of Change for the programme.

2. *Strengthening human capacities:* In South Africa, the FA4 programme aimed to strengthen human capacities through post graduate research training (masters, doctoral and post-doctoral) involving rotation visits by ITM staff. In addition, summer schools, short courses, and workshops were offered for technicians and professionals, scientists, and academics.
3. *Strengthening educational capacities:* This was to be achieved at both DVTD and SOPH by developing curricula and materials for short courses and post-graduate degree programmes. At DVTD, this involved the web-based collaborative MSc Tropical Animal Health (TAH) and Research Masters training programmes, as well as short courses, to improve knowledge, skills, and qualifications of students and researchers at the interface of human and animal health. The educational capacity of DVTD was also strengthened through the recruitment of technical, administrative, and e-learning support staff, which was to simultaneously strengthen research and human capacities. At SOPH, curricula and materials for degree programmes and short courses were to be developed to increase capacity for HPSR that is embedded in country contexts. These course materials were also to be made available as free learning resources to stimulate further interest in the curriculum and strengthen the standing of the educational programme.
4. *Strengthening technological capacities (only applies to DVTD):* This involved technological infrastructure to carry out diagnosis of zoonotic diseases and rapid antimicrobial resistance detection assays, as well as their surveillance and control. The programme aimed to improve this through establishing the laboratory at the Regional Centre for Bovine Tuberculosis (BTB) and Brucellosis (BR) to identify research needs.
5. *Strengthening relational capacities:* The country programme in South Africa largely aimed to enhance the partner institutes' relational capacities to create synergies in local, national, regional, and international networks by leveraging their human, educational, and research capacities in expanded networks. At DVTD, an e-source platform for information sharing, service delivery, and networking was to support networks and outreach programmes, such as the Strategic Network on Neglected Diseases and Zoonoses. Through these consolidated networks, DVTD aimed to leverage their training materials and research towards standardizing diagnostic techniques and improving regional knowledge of zoonotic and infectious diseases. Similarly, by engaging alumni and other institutions within its south-south-north networks in information sharing, curriculum development, trainings, and research, SOPH sought to strengthen collaboration on teaching and research in the field of HPSR. In addition, the programme strengthened relational capacities regarding policy-making processes through their networks and by supporting their students' engagement to inform policy and practice. Though their close engagement with resource-limited communities affected by zoonotic diseases (DVTD) and practitioners in health policy and systems (SOPH), both partner institutions aimed to inform practices and policy in these key areas.

At the heart of the capacity building approach lies the idea that strengthened capacities within the partner institutions are inherently conducive to long-run impact and sustainability since people trained, structures established, and material infrastructure acquired stay within the institutes. This allows them to carry results forward. At the level of (long-run) impact, the country programme set out to contribute to high-quality research, knowledge generation, strengthened professional capacities and health policies in the country.

3.9.2 Key Results

3.9.2.1 Relevance

At the country level, the FA4 programme was highly relevant by addressing major public health challenges in South Africa. The logic of the programme reflects the need for context-sensitive and sustainable approaches to ensuring

the right to health enshrined in South Africa's constitution. To these ends, the programme focuses on strengthening the research and training capacities of DVTD and SOPH, two institutions well established in engaging with the specificities of local contexts and building knowledge economies and communities of practice to address complex health challenges. For example, through collaboration with DVTD, the programme has addressed the growing need for research and education at the interface of animal and human health, which is becoming increasingly recognized, especially during the COVID-19 pandemic. By strengthening the partner institutions' online modalities and consolidating and expanding their regional and international networks, the programme also addresses the need for greater expertise and knowledge exchange at different levels of the health systems of South Africa and the region.

At the level of the partner institutions, the programme was relevant in its focus on the partners' core needs as research and higher education institutions, but interviews reveal that it could have been more relevant if it had better supported certain institutional needs. The programme mainly addressed the needs for training in skills and methodologies, better interdisciplinary collaboration, financial support and supervision for post-graduate students and researchers, and more engagement with technology. By leveraging activities in these areas (i.e. web-based conferences and grant writing workshops) towards networking, the programme also deepened South-South-North collaboration at these institutions and helped make educational programmes, trainings, and knowledge more accessible. However, several interview partners from DVTD indicated a need to strengthen processes for student selection and induction in degree programmes, as well as to support students, which were not initially addressed. According to interview partners, this had implications for the preparedness of new students and the availability of resources to support them, which negatively affected programme completion and graduation delays. Information obtained from interviews indicates potential for collaboration with SOPH, which has strengths in these areas.

3.9.2.2 Effectiveness

The outcomes central to the country programme in South Africa were strengthened educational and research capacities at DVTD and SOPH, both of which were found to be largely achieved. This is reflected in the achievement of most results for the country programme, as reported in monitoring tables and self-assessment results, and in reflections by interview partners. Furthermore, results from the online survey indicate educational, research, and human capacities (which is closely interlinked with the two former capacities at DVTD and SOPH) to be the areas with the greatest need for improvement prior to FA4 and where the most growth has occurred during the programme. Some of the most important results include the achievement of targets (despite initial delays) for the recruitment and registration of students, PhD candidates, and post-doctorate fellows, demonstrating a growing recognition of and interest in the institutions' education programmes (*capability to adapt and self-renew*). Together with the high rate of continuation and completion of these programmes and the overachievement of targets for individuals trained in short courses, workshops, and training programmes, the main results regarding the institutions' educational capacity have been largely achieved (*capability to generate development results*). Additionally, self-assessments, lessons learnt, and interviews underscore the effective collaboration with ITM on adapting and developed curricula to better target health needs at the human-animal interface and in health policy and systems (*capability to act and commit, capability to adapt and self-renew, capability to achieve coherence*). This is apparent in the successful introduction of the Pharmaceutical Public Health track at SOPH and the progress made at DVTD to transition to a new joint MSc degree in Global One Health. Self-assessments and information obtained in interviews also highlight the effectiveness of the programme in strengthening research capacity at both institutions, as indicated by the successful completion of high-quality research, publications by PhDs, and presentations in national and international conferences (*capability to achieve coherence, capability to relate to other actors*). With financial and supervisory support from ITM, students at DVTD and SOPH have been able to pitch their research towards better publications and journals. Several interview partners explained how, in addition to allowing knowledge and insights to reach a wider audience, this also helps the partners gain greater international recognition and engage in more research collaboration (*capability to achieve coherence, capability to relate to other actors*).

Four key factors contributing to success in reaching these results stood out in several interviews. First, the close relationships between the partner institutions and ITM and the high level of mutual understanding between staff and ITM partners were seen to play a key role in the effective collaboration on research and educational activities. Second, the flexibility of research funding and the responsiveness of ITM to changes in financial needs of students and researchers contributed to activities and results that are unlikely to have otherwise been achieved. Third, online platforms have been instrumental for the continued participation of students and researchers in the programme and for sharing knowledge and trainings with a wider audience, for example through short courses, which benefited participants from 18 different countries. Fourth, the provision of additional technical and emotional support to students and researchers through the appointment of additional staff and paid student positions was repeatedly cited as instrumental for the completion of research projects and studies.

Despite the overall successes in achieving objectives in the South Africa programme, three main critical areas for improvement remain. First, students have struggled to complete degree programme, also prior to the COVID-19 pandemic, with some MSc students at DVTD taking 3 years to complete the 2-year programme, according to lessons learnt and information obtained in interviews. Both institutions are increasingly recognizing that degree completion is a multi-faceted challenge involving not only targeted skills development and quality supervision but also appropriate selection and induction processes and access to technical and emotional support. Some efforts have been made to address these needs through a combination of ITM funding for support staff, the development of new support roles at both institutions, and by adding an interview component to the student selection process at DVTD (*capability to adapt and self-renew*). However, interviews suggest that such measures could be expanded to better strengthen institutional capacity for selecting and supporting growing cohorts of post-graduate students. The second area for improvement is the limited variety of short courses and online teaching modules, according to monitoring tables. However, results from the self-assessment and conversations with interview partners demonstrate that efforts to identify further opportunities for mutual teaching through collaborations are underway. Additionally, where course offerings come short in quantity, they make up for in quality as DVTD focuses on a small niche area and SOPH continues to expand the outreach of these courses online through various platforms (*capability to achieve coherence*). Third, not all networking results were achieved due to the reduction of funds at the start of the grant, according to monitoring tables and several interview partners. However, programme documents and many interview partners demonstrate other ways in which partner institutions continued to strengthen networks by finding synergies with other activities (i.e. SOPH strategically selecting students situated at key institutions) (*capability to relate to other actors*).

In addition to the inhibiting factors highlighted above, the COVID-19 pandemic contributed to shortfalls in the programme in several ways. Travel restrictions negatively affected human capacity strengthening by putting on hold staff exchanges between partner institutions and ITM and the practical components of skills modules for students in 2020. Pandemic-related restriction also negatively impacted research progress by inhibited field visits, lab access, and in-person supervision. These disruptions may explain the lack of noticeable improvement to the technological capacity of the institutions reported in results of the online survey. Additionally, the interruptions to training and research as well as growing emotional pressures among students led to delays in degree completion times. Despite these challenges, the programme's flexibility and close collaboration of ITM helped partner institutions quickly adapt according to needs. The existing online platforms also allowed them to continue with most training activities and adapt to most research and supervision challenges. The addition of support staff in the programme also played a key role in monitoring and responding to emotional and psychological needs of students (*capability to adapt and self-renew*). However, most interview partners underscored the high cost of the missing human component from trainings, field research, supervision, and networking activities.

Concerning the transversal themes of gender and the environment, project documents and interviews reveal that the topic of gender is integrated in several activities and measures in the South Africa programme, while the topic of environment is less actively imbedded in programmes and processes at SOPH. Measures and results at both DVTD and SOPH demonstrate a dedication to gender balance among staff, students, and scholarship recipients (all near or exceeding 50%). Beyond gender distribution (quantitative measures), activities at both institutions also take

gender into account substantively (qualitative measures), for example by closely assessing gender-related roles, responsibilities, and needs when offering scholarships and stipends (*capability to generate development results*). Concerning the topic of the environment, whereas this theme is implicit in the research and degree programmes of DVTD that address challenges of human and animal health at the wildlife/livestock/human interface, there is demonstrably less awareness at SOPH of how environmental themes can be integrated into activities and objectives.

3.9.2.3 Impact

The programme achieved impact by strengthening the professional capacities of the partner institutes, contributing to high-quality research, and generating and disseminating relevant public health knowledge among scientists, practitioners, and policy makers. According to self-assessments and many interview partners, through strengthening capacities of these institutions and addressing the financial challenges many students face in their studies and research publications, FA4 has helped address inequity in southern experts publishing their work and influencing the region. All interview partners attest to this being a well-designed programme. Much of the research that came out of this programme is cutting edge and has changed practice by engaging with health workers and policy makers and driving impact (*capability relate to other actors, capability to generate development results*).

The impact of this programme is generated in a number of ways. Lessons learnt and several interviews indicate that the dissemination of research findings and other knowledge through trainings, workshops, conferences, and topic-specific platforms within established networks has contributed to conversations at the governance level in many areas in South Africa and across the region. For example, SOPH continuously monitors health challenges and has developed platforms to collect and disseminate knowledge in key areas through regular meetings with practitioners and policymakers (*capability to achieve coherence*, *capability relate to other actors*). In this way, SOPH has leveraged research, training activities, and networking activities to pull over the poorer health systems in the country and region that are struggling (*capability to generate development results)*. Furthermore, by selecting students who are already deeply inserted in decision-making spaces and by promoting hands-on field research among resource-poor communities and critical field areas, the programme helps ensure that the practical implications of their research for communities and health systems are put into practice (*capability to act and commit*). Several interviewees described how, through these research projects, students contributed to changing community practices, bringing together key stakeholders in capacity building activities, and revising national guidelines (*capability to generate development results)*.

The main unintended, higher-level effects of the country programme were all positive and resulted from capacity building in areas that address a growing need. According to lessons learnt and information from interviews, the educational and research capacity building at DVTD uniquely positioned the partner to respond to the increasingly recognized need for a One-Health approach, attributed in part to the zoonotic origin of the COVID-19 pandemic (*capability to achieve coherence*). At SOPH, the platforms and networks established to disseminate knowledge to inform policy and practice became instrumental to responding to the COVID-19 pandemic by sharing literature and hosting discussion on lessons from the COVID-19 pandemic and on how to scale them up (*capability to relate to other actors*).

Success Story: Revising guidelines on the irrational use of medicines at the national level in Eswatini.

In 2017, a PhD candidate at SOPH based in Eswatini received project funding and a stipend from ITM, allowing her to focus on her PhD full-time and to travel to Cape Town to meet with supervisors and attend writing retreats. Having worked as a pharmacist before and already understanding the landscape, she got in touch with the National Department of Health in Eswatini and used her research funding to test an intervention to inform policy and health systems on the national level. In the end, her report was used to lobby for funding to revise the national guidelines, which has since been achieved. After completing her PhD and graduating last year, she now works in the field of antimicrobial One Health and recently received a promotion.

3.9.2.4 Efficiency

The programme has been efficient in resource allocations with some potential for improvement in ensuring continued access to funds and improving internal communication on fundings uses. Self-assessment results and information obtained from interviews underscore that funding was flexible and that quick responsiveness from ITM facilitated reallocation of funds when needed, helping ensure that funds could be used when and where they were needed most. However, some interview partners indicated that the need to submit financial requests by November each year, and the inaccessibility of funds from then until January led to several inefficiencies including wasted funds and struggles for researchers and supervisors. For example, students working in laboratories during these months had to buy reagents in advance, only to have them expire before they could be used. Furthermore, interviews with partners from DVTD demonstrate some unclarities in the types of activities supported by the funding, although this seemed to vary by institution, indicating a possible need for clearer internal communication on funding.

The programme has also largely been efficient in achieving results in the time envisaged. According to self-assessment results and information from interviews, most results and objectives were achieved on time. Additionally, while there were some delays in appointing MSc students and post-doctoral fellows at DVTD in the first year of the programme, appointments were back on track by the following year and DVTD was able to retain its students and post-doctoral fellows despite the COVID-19 pandemic. Key factors contributing to this timely implementation is the smooth transition of both institutions to online formats during the COVID-19 pandemic. While there were some delays and missed opportunities due to cancelations of research activities, group retreats, and exchange visits, the funding flexibility and responsiveness of ITM allowed funds to be reallocated and alternative solutions to be found.

However, there is still room for improvement to help ensure that results are achieved on time. According to programme documents and information from interviews, some students at DVTD did not complete their studies in time, which may reflect a need for more robust selection and induction processes, better clarification and communication of expectations, and better continued technical, administrative, and emotional support.

Success Story: Lab capacity building and improving animal-human health in rural communities.

One student entered DVTD's programme as a self-proclaimed "young, shy girl from a rural village," and is now completing her PhD and co-authoring papers. Coming from a resource-poor area where animals are not a priority, the programme opened her eyes to the importance of understanding how humans get diseases from animals. The programme also funded her as a lab assistant, where she gained a variety of valuable skills from assessing vaccines to explaining laboratory results to people with no previous exposure. Through the programme, she has passed on valuable skills to numerous students, contributed two research papers of her own, and feels equipped to go back to improve animal and human health in rural, resource-poor communities.

3.9.2.5 Sustainability

Regarding financial sustainability at DVTD and SOPH, the programme has promoted the institutes' abilities to attract external funding by strengthening their research profile, consolidating their networks, and developing skills in grant writing through workshops. Several interviewees highlight how the results of research funded by ITM build opportunities for more external research funding and that support from other researchers and staff as well as from grant writing workshops help students gain the skills to secure these grants. However, according to several interview partners, the financial support for a large body of students, especially those from low-income backgrounds and resource-constrained countries, is an area that is less sustainable without ITM funding.

The programme has also largely achieved technical and institutional sustainability by helping build knowledge and skills among students who train and inform others, creating a multiplier effect. The sustainability of human capacity building and training within these institutions is evident in the involvement of PhD candidates and post-doctorate

fellows to support trainings, research supervision, and the organisation of other activities. Technical and institutional sustainability are also assured by the establishment of the BTB and BR laboratory at DVTD and of networks, such as the African Network for Infectious Diseases, through which the institutions will continue to deliver diagnostic services and support to a broad array of researchers and practitioners. Yet there is still room to improve institutional capacity to better sustain these strengthened human capacities. Information from interviews indicated that networks at DVTD could be more firmly established to better pool knowledge and expertise generated around projects. Interviewees also indicated that more could be done to strengthen DVTD's alumni networks to continue alumni engagement and contributions to human capacity while strengthening the institutions' networks and impact chains.

Concerning social sustainability, results from self-assessments and interviews indicate a strong level of local ownership. Many interview partners attribute this to the close cooperation with ITM as equal partners and to the flexibility of funding that allowed researched to have discretion over the use of their resources and their research activities. Indicative of this level of local ownership and partnership at eye-level, some interviewees demonstrated their intent to work with ITM to help build capacity and share their expertise with Belgian institutions and in Europe.

3.9.2.6 Complementarity and synergy

Both partner institutions contribute to the overall goal of the Joint Strategic Framework (JSF) to help ensure healthy lives and well-being for all by strengthening the health system and developing innovative models for health care. However, project documents, self-assessment results and information obtained in interviews attest that the JSF did not steer collaborations and synergies in the programme.

SOPH was the only partner to engage in synergies planned within the JSF, and only at two of the three levels of synergy and complementarity identified in the JSF: the information and operational levels. These interconnections are most apparent at the information level, where information and expertise were shared with local, national, and regional actors through SOPH's various learning platforms, its PhD programme and thematic clusters, its research meetings on various projects, and through its journal clubs. At the operational level, SOPH has been involved in research projects supported by VLIR-UOS including joint-supervision between UWC and University of Antwerp.

While project documents indicate that planned synergies for DVTD within Belgian development cooperation were not optimally exploited, some interviewees mentioned that complementarities sometimes felt forced and that no obvious synergies were reachable.

3.10 Vietnam

3.10.1 Background and intended impact

This country report is based on the following sources:

- Project documents (project overview and design, lessons learnt, monitoring tables);
- Results from a self-assessment by involved personnel;
- Results from an online survey[42] in which three stakeholders of the programme took part;

[42] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

- Information obtained in ten semi-structured interviews with various stakeholders (involved ITM personnel, involved staff at the partner institutions, alumni of teaching programmes).

In Vietnam, ITM has worked with the National Institute for Malariology, Parasitology and Entomology (NIMPE). NIMPE has a mandate from the Vietnam Ministry of Health to carry out national policies for surveillance and control of parasitic diseases in the country, including malaria and food and waterborne diseases. Moreover, the institute carries out laboratory and field research and has a mandate to implement the national health care policies from the ministry of health. ITM's country programme in Vietnam is organised along two components: (i) strengthening the research capacities of NIMPE staff and (ii) enhanced diagnostic and surveillance tools (ii). Together, these two components are expected to lead to improved knowledge at the institute (as manifested in high quality of research outputs) and an improved outreach of the institute. The ultimate goal is to improve the country's evidence-based research, and control and elimination strategies of parasitic diseases. The pathway to change can be further differentiated along the malaria component on the one hand, and the component of food and waterborne diseases on the other hand.
All pathways of change of the programme can be linked to FA4's overall Theory of Change. The relevant capacities targeted in Vietnam as well as their associated activities, outputs, impacts and pathways to change are highlighted in the diagram (see Annex 8.3.10). The four capacities focused on in the country programme can be found at the outcome level: Research capacities (OC1), human capacities (OC2), institutional capacities (OC4), and technological capacities (OC5). The key impact pathways that are set to lead to strengthening these four capacities are the following:

1. *Strengthening research capacities:* The programme aimed to improve research processes and structures through high-quality publications, opportunities for new and relevant research as well as the generation of knowledge on the malaria and parasitic disease components of the programme (outputs). These outputs were set out to be achieved by promoting research collaborations between researchers within NIMPE and ITM researchers. Furthermore, research projects were funded in both their operational cost (e.g., lab consumables) and staff cost by providing master and PhD scholarships.
2. *Strengthening human capacities:* Human capacities at NIMPE were meant to be improved in two main ways. First, through the aforementioned training of PhD students (including visits at ITM) and provision of PhD funding. Second, training for administrative staff was set out to improve their ability to support the Institute effectively. Specifically, training of library staff members to use novel electronic library systems was planned to increase the effectiveness of the library support at NIMPE provided to researchers and students.
3. *Strengthening institutional capacities:* In order to strengthen institutional structures, the country programme sought to develop diagnostic and surveillance tools for food and waterborne diseases, molecular epidemiological surveillance tools for malaria control and elimination, train staff in Good Clinical Laboratory Practice (GCLP) standards as well as improve the electronic library system at NIMPE.
4. *Strengthening technological capacities:* The above mentioned planned improvement in the electronic library system, diagnostics and surveillance systems were also targeted at strengthening the institute's technological capacities.

3.10.2 Key Results

3.10.2.1 Relevance

The country programme is highly relevant as it addresses some major health challenges in Vietnam and responds to the needs of NIMPE. At the level of the country, the program is well aligned to the nations' proclaimed goal of eliminating malaria by 2030. This goal is threatened by, first, antimalarial drug-resistance of the P.falciparum substrain of malaria, second, resistance to control and elimination interventions by substrain P.vivax and third, high prevalence of malaria in remote communities . Malaria Other food and water borne diseases (FWBD) also continue

to be a challenge in Vietnam, as the countries' animal production and food consumption habits continue to promote zoonotic disease transmissions. The behavioural component of the parasitic disease transmission is seen in the heterogeneity of transmission across diverse population subgroups, specifically, in the disproportionately high outbreaks among ethnic minorities and vulnerable population groups. To address these challenges, the programme focus on the development of new surveillance and diagnosis tools for both malaria strains, P. falciparum and P.vivax that are able to track infections at the provincial level. Moreover, to address the heterogeneity of epidemiology of parasitic diseases, the social science research capacity of NIMPE was increased: Funding for a PhD in medical anthropology, courses in multidisciplinary research methods and trainings in social network analysis were provided to increases the capacity of NIMPEs medical anthropology department. Finally, new diagnostic tools and surveillance tools for FWBD were developed and validated as well as transferred into national control programmes.
Moreover, the programme closely aligns with the partner's needs. At the level of the partner institution, two (additional) needs stand out that were raised by many interview partners. First, at the time of the start of the intervention, NIMPE needed technological capacity in the form of state-of-the-art laboratory equipment and standard operating procedures. Second, they needed high calibre researchers to work on their projects. According to the interview partners, these needs were addressed by ITM. The perception of the interviewees is that the intervention brings NIMPE closer to its goal of conducting high quality research independently of ITMs laboratory resources and ensure knowledge transfer to other researchers as well as other research areas.
However, to maintain its relevance in the future, interview partners see the necessity to shift the focus again to other parasitic diseases that do not currently receive much attention. This is because Vietnam is expected to eliminate malaria before 2030. That said, interview partners see a potential in the further strengthening of the social science component of the malaria research in order to continue to eliminate outbreaks in selected areas

3.10.2.2 Effectiveness

The FA4 country programme can largely be said to have been effective in reaching its capacity-strengthening objectives. Self-assessment results, project documents and interview information demonstrate that most objectives have been achieved or over-achieved across all components of the programme. The survey results are in line with the insights from the interviews and project documents. The three respondents report being "satisfied" or "very satisfied" at the contribution of FA4 to the capacities at NIMPE. Furthermore, all respondents report that outputs were mostly achieved or fully achieved. Notably, the programme demonstrated a strict attention to the needs of the partner institute and demonstrated adequate flexibility in adapting to changing circumstances. As a result, it only fell short in some minor points according to the interviewed stakeholders. These shortcomings have both external and internal reasons (see below).

The programme was effective in strengthening research capacities. Monitoring tables reveal that a multiple of the envisaged trainings have been carried out, reaching a larger number of researchers than initially planned. The interview partners stated that the most important achievements in terms of research capacities were threefold. First, state-of-the-art laboratory equipment and new tool kits were provided, which led to higher quality laboratory samples and higher quality research outputs, which ultimately contributed to publications in international peer reviewed journals. Second, research capacities of the staff, especially in the area of laboratory technique were strengthened. One interview partner reported having built up significant expertise and skills and being able to apply these skills in important research projects within the institute (*capability to act and commit*). Third, the social science component of the programme involving funding of a PhD student in medical anthropology, as well as several trainings in social sciences methods have strengthened the capacities for research that relates to social factors of parasitic outbreaks as a result of FA4. This increased focus on medical anthropology has encouraged more collaboration of researchers across disciplines as social sciences and natural sciences work together to explore important issues of public and community health (*capability to achieve coherence*). According to the interview partners, the strengthened research capacities have directly led to at least 9 manuscripts published from research done in the programme, of which two were published high quality international peer reviewed journals, and indirectly to many more national publications.

The achievements of the FA4 in the component concerning research capacity also imply strengthened human capacities at NIMPE (*capability to act and commit, capability to generate development results*). In fact, many more persons were trained than originally planned, which, however, is partly due to top-up funding obtained by ITM. Additionally, some employees trained by ITM have now advanced into key positions in the organisation (success story). A shortcoming mentioned by one interview partner – which, however, cannot be confirmed by all interview partners – deserves consideration in this regard, as it may suggest a potential for even stronger capacity strengthening in the future. The interview partner explained that NIMPE was not able to maintain all acquired human capacity at the institute, as several researchers[43] trained with FA4 funding left the institute shortly after. According to this interview partner, this is partly due to the absence of contractual conditions that would impose some form of mutual commitment (on the side of employees as well as employers) of collaboration for a determined number of years as a condition for student funding. That said, the available data and interview responses could not unequivocally establish the veracity of this interviewer's response.

Considering institutional and technological capacities, project documents, self-assessment and interview information all confirm that standard operating procedures (SOPs), incorporated in the newly developed molecular techniques, have successfully been established, and significant updates in laboratory equipment have taken place. Moreover, ITM assisted NIMPE in the implementation of the required internal quality audit. These capacities, in turn, facilitate strengthened research capacities by enabling high-quality research output (*capability to act and commit, capability to generate development results*). Interview partners state that important insights for policymaking around community health can now be generated from this research (*capability to generate development results*). For instance, the intensive study of a drug resistant malaria strain has already resulted in adapted national guidelines for antimalarial treatment for the strains responding less well to the default treatment. Moreover, the funding of the PhD student in medical anthropology has led to the emergence of a medical anthropology department/strand of research within the institute (*capability to adapt and self-renew*).

In spite of these successes, the programme fell short of achieving its objective in strengthening institutional and technological capacities in two notable ways: First, an improved electronic library system could not be installed, in spite of the fact that it prominently features in the program's impact logic and was intended to contribute to an improved access of NIMPE researchers to international scientific publications. The training of the library staff member was implemented successfully. However, the newly acquired skills could not be put to use, since the corresponding software was not present at NIMPE. According to one interview partner, the necessity to acquire the software was not communicated clearly to the NIMPE staff. He states that NIMPE might have profited from more guidance in its choice of trainings to follow from ITM, and the technical requirements needed. According to the interviewee, in the future, it must be ensured that the appropriate technical requirements are available so that trainees can directly apply the newly acquired capacities at the partner institute.

As far as the transversal topic of gender is concerned, a large majority of the trained staff under FA4 was female. Several interview partners however mentioned that increasing the number of female staff is not an explicit priority at the institute, since the staff of NIMPE has a high share of female staff involved in research projects. As far as the transversal theme of the environment is concerned, the environment related measures mentioned in the project documents could not be verified by the interviews. None of the interview partners are aware of any reflection conducted about environmental impacts of the work at NIMPE, or in the context of FA4. They indicated large opportunities for improvement here, as the topic is rarely addressed, while the impact of NIMPE on the environment is potentially large. The impact is demonstrated, for instance, when one considers one of the most used interventions to eliminate malaria in the country, the distribution of mosquito nets that are sprayed with a powerful mosquito repellent chemical. While these nets are very effective in preventing malaria illness, they pose a potential environmental threat. According to several interview partners, many users of this net do not follow guidelines when disposing them, and they ultimately end up in rivers. While the distribution of those nets is not an FA4 funded activity, they present an opportunity for a future intervention in the context of the transversal objective environment.

[43] The exact number could not be verified with certainty, however, one interview partner with broad oversight of the programme reported at least 3

When asked about the key success factors of FA4, those most consistently mentioned by interview sources are twofold. First, the long-established ties and good communication lines with ITM were seen as a crucial factor for the achievement of results. All interview members reported the ease by which they are able to contact ITM personnel to discuss issues that emerge, be it on the level of project programming, budgeting, and planning, or on the level of access to ITM research knowledge, equipment or access to international publications. This is confirmed by the survey results, where all three respondents reported being "very satisfied" with the relationship with ITM. Second, most interview partners mentioned the flexibility of ITM in the adjustments of deadlines or the re-allocation of planned budgets when the circumstances in the country changed. For instance, initially the programme foresaw an intervention study on cysticercosis in selected communes of Thanh Hoa and Hoa Binh province. However, first research results indicated a very low prevalence of cysticercosis in these areas, making the planned intervention studies irrelevant. Instead, the focus shifted on a suspected high endemicity reported in the southern Binh Phuoc province and on a suspected cysticercosis outbreak among children in Bac Ninh province. Moreover, ITM was able to flexibly adjust the deadlines for field research components of FA4 when it transpired that the imposed social distancing and lockdown regulations imposed by the government due to the COVID-19 outbreak would make it impossible to gather enough field data. Instead, a focus was placed on components concerning laboratory data and corresponding dissemination of results.

When asked about the key inhibiting factors of FA4, the answers from the interviews/surveys are mixed. Factors inside the projects' sphere of influence include the lack of measures to increase the independence of NIMPE (see also chapter 2.5). Moreover, several interview partners mentioned frequent staff turnover at ITM as an inhibiting factor (for instance, the change of the financial focus point at ITM) This reportedly caused some inefficiencies in communication and created some unclarities about responsibilities. Moreover, the shift between project coordinators at NIMPE midway through the funding period was reportedly not executed as seamlessly as it could have been. Outside the projects' immediate sphere of influence, the COVID-19 pandemic was the most uniformly mentioned factor, reportedly influencing all planned outcomes to some extent, but especially the objectives related to sampling activities in the field, which were delayed by travel restrictions. Interview partners reported that a larger effect could have been achieved if they had had more time beyond the 5 years foreseen by the DGD funding. Although interview partners acknowledged that these effects were not under ITM-control. Finally, most interview partners mentioned the limited human resources capacities at NIMPE, and difficulties to attract more applicants. This is especially true within the medical anthropology department, which is considered relevant by interview partners, but is currently understaffed. Thus, the research at the medical anthropology department was reportedly not as far reaching as it could have been, for instance, when it comes to transferring transdisciplinary knowledge into concrete policies, interventions and programmes, which, according to one interview partner, will be a significant task for the future.

3.10.2.3 Impact

Through the capacity strengthening approach, the FA4 country programme has had and is expected to have impacts on health in Vietnam. Self-assessment results, project documents and interview information demonstrate an overall positive impact of the programme. The survey results confirm the positive results described above, insofar as an improvement is reported in human, research, institutional, and technological capacities. However, because the baseline ratings of capacities are already very high, the reported increase in the survey is not substantial. That said, while the respondents of the survey are key actors, they are a limited number. As impact is concerned, one can differentiate between internal impact (at the level of the partner institute) and external impact (at the level of the country). The most significant results of both areas are presented below.

The most significant impact results on the level of the NIMPE institute according to the interviews are threefold. First, the technological capacities in form of new laboratory equipment and diagnostic/surveillance techniques has resulted in 9 publications, of which two in international peer reviewed journals, and created the fundament for a bigger international outreach of the NIMPE institute. This potential for greater outreach, in turn, strengthens the

capacity of NIMPE to establish itself as a centre of excellence for parasitic diseases in Vietnam, and attract new partners and donors in the future (*capability to relate to other actors, capability to generate development results*). Moreover, it contributes to NIMPEs longer term goal to adhere to WHO laboratory standards and receive the respective certification *(capability to adapt and renew)*.

Second, the research capacities and human capacities in form of trainings have led to new SOPs and laboratory practices, which, besides leading to novel diagnostic tools and the above-mentioned publications, have reportedly led to vertical and functional scaling up effects. An unplanned vertical scaling up effect has been the strengthening of links between health care systems on the national and local level. These have been achieved by the translation of ITM training material into Vietnamese, resulting in a "train the trainer" effect and greatly increasing the reach of malaria elimination knowledge. Functional scaling up has been achieved by the fact that the strengthened molecular research capacities and new SOPs for the diagnosis and surveillance of parasitic diseases (specifically the development of more accurate PCR tests and procedures) have laid the fundament for the COVID-19 PCR and antigen rapid tests.

Third, the emergence of a new medical anthropology pillar at NIMPE is significant for the evaluation of impact. While the human capacity of this pillar is still low (i.e., consists of only one staff member currently), several interview partners have emphasised that the social science research and trainings conducted under FA4 have contributed to a mentality shift at the institute, and a greater openness for transdisciplinary research (*capability to achieve coherence*). Several interview partners see a large potential in medical anthropology and social sciences in general for increasing the effectiveness of elimination strategies in the future.

At the level of the country, the contribution of FA4 is most directly visible in that, in 2020, the official national guideline for diagnosis and treatment of malaria was adapted, after research generated under FA4 had brought to light a new malaria strain that necessitated a new strategy/new standards for diagnosis and surveillance (*capability to generate development results*). Moreover, the research and treatments conducted in a remote mountain area of

Success story: Decrease of the malaria prevelance in Nam Tra Mi.
In 2017, Nam Tra Mi - a mountainous and poor district of Quang Nam province - had a very high prevalence of malaria. Funded by the FA4 programme, NIMPE reserachers, educators and medical staff were able to spend significant time in the field, carry out extensive research, treatment and communication campaigns stimulating the local community to adapt their prevention behaviours. Thus, not only did funding of FA4 ensure free treatment, but the behavior change communication and education intiatives for local people decreased the prevalence of malaria significantly and sustainably

Vietnam has led to a significant reduction of malaria prevalence in the region (see Box 1).

3.10.2.4 Efficiency

The allocation of funding both within and across different parts of the country programme was generally seen to be cost-effective by many interview partners. However, issues surrounding funding management and disbursement caused some delays and interruptions of activities throughout the programme. Two key findings, mentioned by several interview partners, deserve consideration when it comes to the evaluation of efficiency.

First, due to the late approval of budgets, both on the side of DGD and the Vietnamese government, some planned (and already initiated) components necessitated additional external sources (in Belgium as well as Vietnam). While outside of ITM's control, this seems to be a clearly preventable cause of inefficiencies in Belgian development cooperation. That said, the programme was considered remarkably flexible in shifting project resources (particularly as a result of delays of some components during the COVID-19 lockdowns) and effective in achieving additional funding, by leveraging partnerships with other actors of Belgian development cooperation.(for instance, with ARES

see also chapter 2.6) Moreover, while the actual spent resources from ITM slightly exceeded the planned resources, most interview partners stressed that the additional spending was justified by changed circumstances. For instance, one interview partner mentioned additional resources spent on new machines for the analysis of blood samples that will be very cost effective for both NIMPE and her donors on the long term.

3.10.2.5 Sustainability

According to the collected data, several components are perceived to have been sustainable, with some potential for improvement. By building up expertise within the partner institutions and collaborating in joint projects, partner institutions are able to attract external funding (financial sustainability), train future researchers themselves (technical and institutional sustainability) and hold local ownership (social sustainability). However, the implemented measures have not significantly contributed to a possible future financial sustainability of NIMPE.

Technical and institutional sustainability is also strong in most aspects, but the research expertise in medical anthropology is currently too low to have a high potential for sustainability. Regarding the further development of research expertise, there is broad consensus among interview partners that the capacity building approach has worked. Regarding technical infrastructure, interview partners report a significant improvement in laboratory equipment and improved competences of the staff in their use. When it comes to human resource capacity, the picture is mixed. While several research partners do not report any loss of staff that had been trained, others mention some turn over, or at least a strong risk of trained staff leaving NIMPE.

Regarding social sustainability, local ownership is generally strong. According to the self-assessment results, the partners are involved in and have ownership over all stages of implementation of the programme. Many interview partners at NIMPE reported a sense of co-ownership and co-operation at eye level with ITM.

Financial sustainability appears to be the aspect that is perceived as weakest by interview partners. As the institute in Vietnam that holds the mandate to carry out national public health policy, a large portion of its funding is provided by the Vietnam ministry of health. However, the government resources allocated to NIMPE are not large enough for NIMPE's measures to tackle the health challenges of the country in a sustainable way, are unpredictable (i.e. subject to potentially large oscillations each year), and recently affected by the need to prioritise the battle against the COVID-19 pandemic. Therefore, NIMPE remains dependent on the funding from other donors. For instance, the share of funding coming from ITM has, reportedly, not significantly decreased since the beginning of their collaboration, which is testament to NIMPE's dependence from ITM. Specifically concerning FA4, some results at the level of impacts mentioned above are an example of this dependency (for instance, the implementation of malaria surveillance tools as part of the national malaria programme remains dependent on ITMs funding). At the same time, Vietnam has been categorised as a middle-income country in 2018, which is expected to affect the amount of funding NIMPE will receive in the future from international donors. According to several interview sources, to secure financial stability on the long term, future programmes could focus on strengthening NIMPEs capacity to secure financing, for example, by offering courses on raising funding, networking, and research communication, by way of leveraging existing partnerships between ITM and other actors of Belgian development cooperation that may already offer such courses elsewhere. The interview partners uniformly expressed the hope that NIMPE may reach a level of research capacity to make it attractive as a partner for cooperation at eye level, possibly being able to offer human, technological, or educational capacity in exchange for financial capacities. In a similar line of argumentation, several interview partners maintain that further programming should target the visibility of NIMPE in international research networks and strengthen the capacities of research staff to establish networks and collaborations.

3.10.2.6 Complementarity and synergy

According to project documents, synergies and complementarity were sought with other actors of Belgian civil society in the context of the Joint Strategic Frameworks. ITM partnered with ARES and the university of Liege to provide a basic molecular biology course for researchers from NIMPE. Moreover, an additional cross-sectional study for the malaria mixed model research as part of the PhD was funded through APMEN The project coordinators continued to seek collaborations with additional civil society organisations in an effort to secure funding for planned project activities, however, they did not succeed. That said, the interview partners were not able to confirm ITM's initiatives towards more complementarity. Instead, they emphasised the need of NIMPE for more synergies with other actors.

Beyond financial collaboration with other actors from Belgian collaboration, interview partners were not aware of other initiatives to increase synergy with other actors. At the same time, several interview partners see a significant opportunity for more independence in the building of more ties and networks with other actors. One interview partner expressed this as follows: "I see the role of NIMPE working with international researchers to combine knowledge, diagnostic capacity, exchange elimination strategies, [and] working with communities to improve interventions. […] NIMPE has a very strong position within governmental infrastructure for malaria elimination, and strong ties to ministry. However, we could do more as an international voice by making connections to international research." This, in turn, would have contributed to achieving the proclaimed goal of the FA4 to support NIMPE in becoming a centre of excellence in the country (whether for the diagnosis of food and water-based diseases, as stated in the programme's ToC, or other parasitic diseases).

4 Overall synthesis at programme level

In this section, the programme-level evaluation results along the criteria relevance, effectiveness including the implementation of the transversal topics, impact, efficiency, sustainability and complementarity and synergies are outlined. The results are presented by referring first, if applicable, to the survey results and then to the qualitative data (e.g. from case studies, document analyses, etc.). Results on specific country outcomes or institution types are only described when differences emerged.

4.1 Relevance

The criterion of relevance addresses the extent to which ITM's capacity activities are designed to respond to the needs of the partner institutions and – in the context of the JSF – the needs of the respective country. Therefore, in this evaluation, relevance is analysed on an institutional and country level. The institutional level addresses the extent to which the capacity strengthening activities respond to the needs of ITM's partner institutions. The evaluation aimed to identify gaps and strengths of the capacity development activities with regard to the partner institutes' needs for financial, institutional and human resources. In addition, the country level addresses the extent to which the FA4- programme outcome is in line with major challenges of the countries concerned.

At the **institutional level the overall** data analysed suggests that ITM interventions are predominantly aligned with the needs of partner institutes. Although this impression is largely confirmed in the interviews of the case studies, specifically with regards to financial and institutional resources, some deficits in the fulfilment of needs in the area human resources were reported by interviewees.

Case study interviews and project documents suggest that the institutional core needs in the aspects of financial and institutional resources were sufficiently covered by ITM's interventions. In terms of **financial resources**, according to the data collected, ITM has provided sufficient financial support to partner institutions. This was referred to by interviewees by pointing out their success in affording high quality research projects and well-trained staff. Furthermore, ITM's financial support also enabled the partner institutes to expand their technological infrastructure,

and with this also satisfied their need for more **institutional resources**. Besides state-of-the-art laboratory equipment, data suggests partner institutes needed institutional resources in terms of enhanced research management structures. Here ITM provided support to enhance existing structures or establish new structures, such as lab management positions and structures in Ethiopia and Burkina Faso.

The interview data proposes that the interventions were largely but not entirely adequate to cover and address existing institutional needs with respect to **human resources**. In the human resources aspect, the core needs identified consisted of partner institutes being able to train and further educate researchers and staff and to retain them as employees. These needs emerged to ensure the continuation of research projects, as well as the transfer of knowledge within the institutions in the long term. In order to satisfy this need, ITM interventions provided training for staff and scientists in research methodologies, clinical skills, supervision and article writing. In addition to the trainings, ITM offered rotations of staff to further enhance the human capacity. Also, research field visits and monitoring visits were undertaken by ITM staff to support scientists on site. Whereas all these activities were carried out in all types of partner institutions, higher education institutes also received support from ITM in the development and improvement of curricula, and several degree programmes on PhD- and master-level. Moreover, Master and PhD scholarships for research were provided by ITM as well as possibilities for students to conduct research at ITM. Even though these activities covered the majority of the institution's needs in terms of human resources, many interviewees cited that the partner institutions received little support in implementing measures on how to retain trained staff. This aspect is closely linked to the technical sustainability on the programme-level and will thus be further discussed in chapter 5.4.. Furthermore, interview partners reflected, that some of the interventions lacked measures to enhance the partner institutions' ability to attract and win further external funding, which was seen as an institutional need. It was emphasized that external funding of research projects is - besides the reputation and standing of the partner institute - also dependent on the quality of research proposals. There was a need for further training and support for staff applying for research funds, which, according to the interviews, was met partly by some of the county programmes.

Next to addressing the institutional capacities of its partner institutions, ITM aimed to ensure its relevance on a **country level**. This means that the capacities developed by ITM partner institutions should fit the needs of the country to tackle major health challenges. The case studies found that the specific challenges faced by National Health Systems varied widely in nature (see country reports in chapter 4). However, what was found in all countries in the case studies and in the analysis of the documents was the need for innovations and new knowledge in the fields of public health, biomedical sciences, clinical sciences and social sciences (i) as well as evidence-based policies that are adapted to the diverse major health challenges (ii).

Interview findings reveal that in order for the interventions to address the heterogeneous country-level needs, the individual ITM country promoters worked closely with the partner institutes to at first create an overview of the specific needs and second, design the planned activities and programme outline in a manner that it ultimately equipped partner institutes to tackle these. This close cooperation process was mentioned to be key for the needs-orientation of each intervention. Interviewees and project documents moreover suggest, that by strengthening specifically the research and human capacities of the partner institutions, the intervention addressed the cross-cutting need (i) to better understand diseases and health behaviour that pose major public health challenges, which was conductive to generating innovations and new knowledge. Furthermore, the majority of country programmes led either directly (e.g. national guidelines developed directly by researchers from the programme) or indirectly (e.g. research knowledge by partner institutes that influenced the development of new guidelines or the improvement of existing ones) to new or improved national health or clinical practice guidelines relevant to the country-level (ii).

4.2 Effectiveness

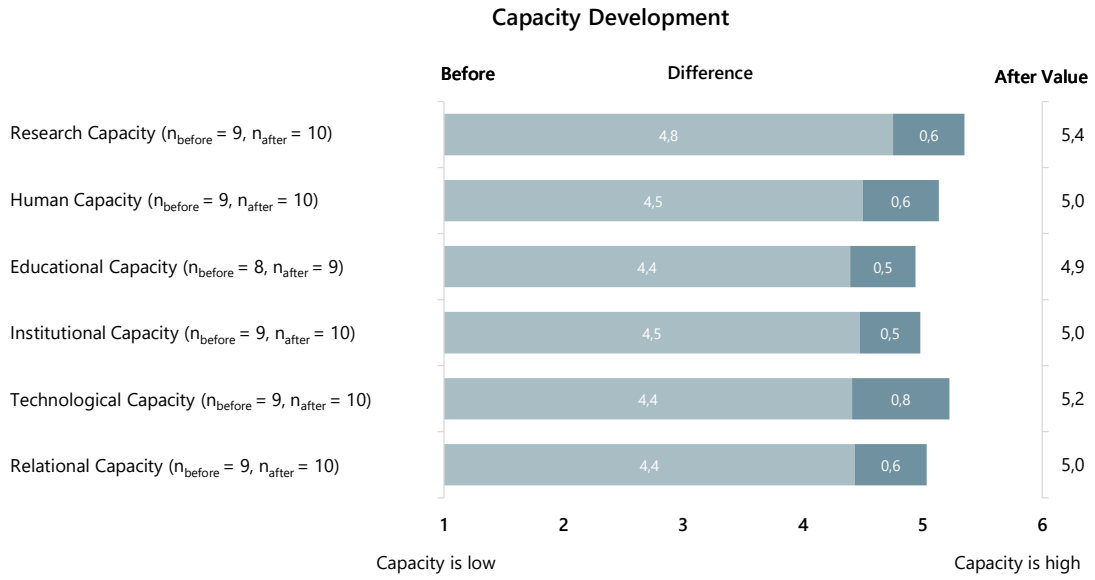
This section focuses on the programme-level results of ITM's ten country interventions. This analysis provides an overview of the results achieved so far, as planned in the Theory of Change. It covers the extent to which the activities

have led to the achievement (or not) of the expected results (outputs) and changes (outcomes). This section also provides an assessment of the extent to which ITM's activities contributed to these changes and whether potential explanatory factors for these outcomes can be identified. The section therefore discusses the results of ITM's activities by focusing on the development of institutional capacities both along the 5C-model and with regards to the partner institutions' development of research capacities (OC1), human capacities (OC2), educational capacities (OC3), institutional capacities (OC4), technological capacities (OC5) and relational capacities (OC6).

4.2.1 Achievement of Outcomes

The FA4 country programme can largely be said to have been effective in reaching its capacity-strengthening objectives. The survey results shown in Figure 4 indicate a clear increase in the self-assessed partner institutions' gain in research, human, educational, institutional, technological and relational capacities.[44] Moreover, the picture emerging from the survey shows quite evenly distributed capacities at base- and endlines, which speaks for the overall holistic approach of the interventions. Furthermore, project documents and interview information from all case studies confirm the findings in large.

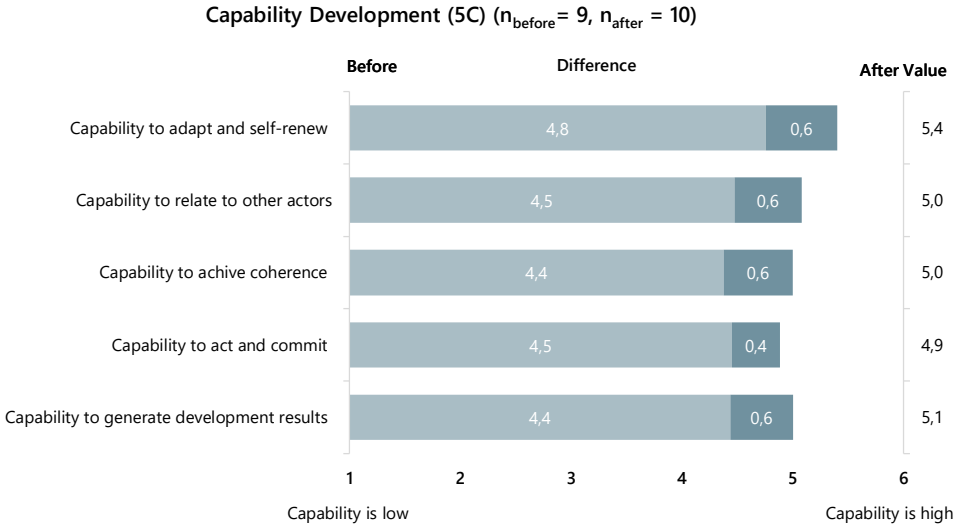
Figure 4: Capacities among the partner institutes before and after ITM's interventions. (six-point Likert scale from 1 "capacity is low" to 6 "capacity is high")



Taking a closer look at the data and differentiated survey results, the general tendency that the interventions have strengthened capacities is confirmed here as well. If the **5C model is applied to the survey results**, an even more homogenous picture of capacity strengthening effects is illustrated than by the results on the aggregated level (see Figure 5): The capability baselines are rather high and close to each other, as they are located between 4.4 and 4.8. Further the data shows an increase in all capabilities that is identical, namely 0.6, for four of the five capabilities. Only the increase in the capability to act and commit is slightly smaller at 0.4 than for the other capabilities. Putting the 5C perspective on the survey results thus confirms the findings at an aggregate level and gives the interventions further proof of work.

[44] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Specifically in Guinea, all of the participants joined the partner institutions after 2017 and with that were not able to assess the institutions' capacities before the intervention. Hence, a pre-post comparison for Guinea was not possible in the scope of the online survey. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

Figure 5: The 5 Cs among the partner institutes' before and after ITM's interventions. (six-point Likert scale from 1 "capacity is low" to 6 "capacity is high")



With regards to the difference values in Figure 4, **technological capacity, i.e. the partner institutes' technological infrastructure** stands out as having improved the most due to ITM's interventions. At the same time, the baseline of the technological capacity is one of the lowest. This indicates that the technological infrastructures in the partner institutes were comparatively less developed and thus still had most room for improvement. The interviews held in the case studies confirm this impression: in the majority of countries, as described in chapter 5.1, there was a great institutional need for state-of-the-art diagnosis and surveillance tools, lab equipment and materials. The interviewees reported that through the funding provided but also the support of ITM in importing these goods, the technical infrastructure of the partner institutes was significantly expanded. Furthermore, interviewees reported that the strengthened technological capacity of the partner institutes enabled research and educational offers to be conducted on an advanced level (*capability to adapt and self-renew, capability to act and commit)*.

As shown in the survey results, **human capacity and educational capacity** were also generally strengthened. Project documents and case study findings confirm these positive effects and moreover show the close link between both levels of capacity. With regards to the development of human capacities, i.e. the value added by staff and students to the partner institutes, interviewees among most case studies emphasized the importance of staff and research skill trainings provided and funded by ITM, rotations of staff as well as field visits of ITM staff. Furthermore, interviewees in various case studies mentioned that training in the aspect of research project support was also provided by ITM. They reported that through these trainings an improved supervision of Master and PhD students could be enabled and thus also the educational capacity strengthened *(capability to act and commit, capability to achieve coherence)*. Moreover, master and PhD students conducting their research in the scope of the country programmes were offered courses on research methodology, further strengthening the educational capacity which entails the improvement of educational programmes' quality. In this regard, interviewees often stressed the high-quality trainings for staff and courses for students, thus confirming the descriptions of effects on human and educational capacity in the project documents *(capability to adapt and self-renew, capability to generate development results)*.

The interventions were also effective in strengthening the **research capacities** of ITM's partner institutions, i.e. in improving research structures and processes. Here, survey results show an increase of 0.6**.** The interview partners and project documents confirmed the overall positive effect and stated that the most important achievements in terms of research capacities were threefold. First, the strengthened technological capacity, i.e. the provision of state-of-the-art laboratory equipment and new tool kits led to higher quality laboratory samples and higher quality research outputs, which ultimately contributed to publications in international peer reviewed journals *(capability to act and commit)*. Second, research capacities of the staff, especially in the area of laboratory techniques and clinical

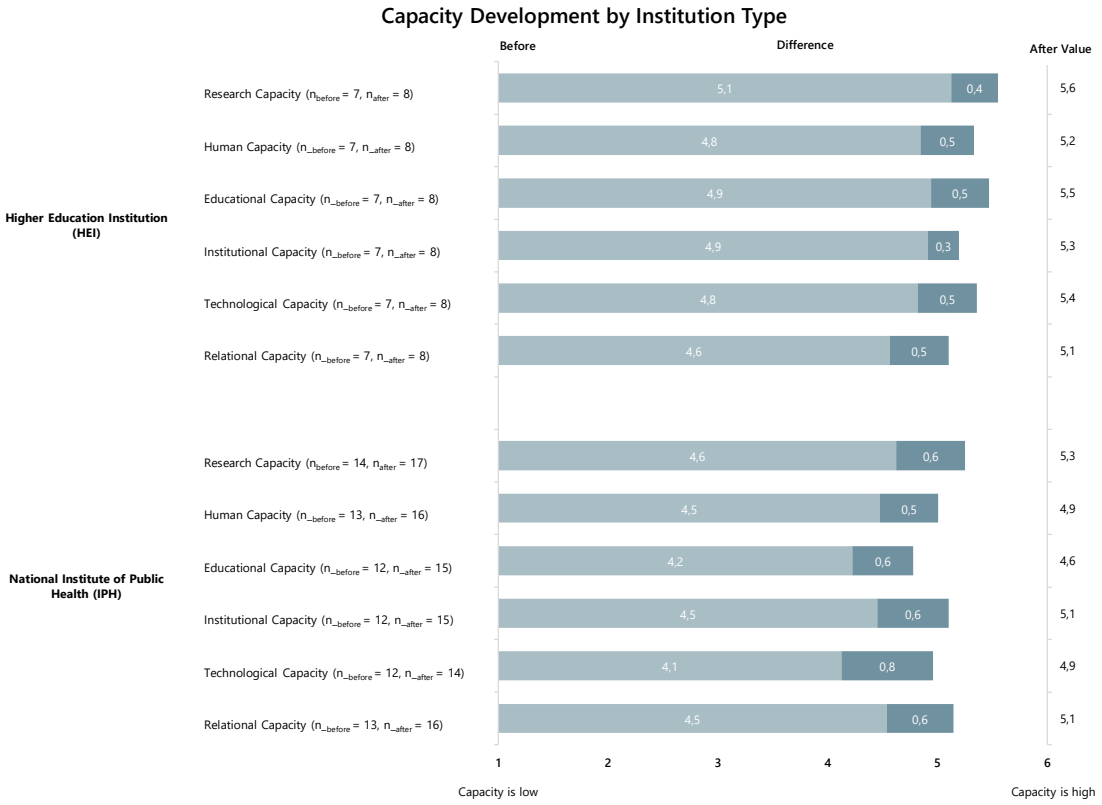
methodologies were strengthened. Third, through more, better-trained staff and enhanced laboratory environment as well as the financial support by ITM further research can be conducted in nationally relevant but so far understudied fields and thus, partner institutes are able to acquire relevant knowledge for evidence-based policy *(capability to adapt and self-renew)*. Additionally, the findings from the case study also suggest, that the strengthening of research capacities has been a priority in the country programmes. Accordingly, activities to strengthen other capabilities often ultimately served the aim of strengthening research capacity by establishing the needed preconditions for it and/or making use of interrelations between the outcomes.

Moreover, survey results also show an increase in **relational capacities** of the partner institutions. Relational capacities refer on the site to partner institutes being actively engaged in networks to create synergies and on the other site to them actively influencing local or national policy-making processes. Case study findings reveal that the focus of conducted relational capacity strengthening activities varied across countries: on the one hand, country outcomes such as the ones in Cambodia, South Africa and Vietnam focused on the enhancement of collaboration within the JSF *(capability to relate to other actors*). On the other hand, in country outcomes such as the one in Benin, the focus was on the creation of contacts and information flows with actors outside the JSF, e.g. international organisations, other (inter-)national research institutions and political actors *(capability to relate to other actors*). Even though the networking activities included under FA3 were not continued in the realm of FA4 due to the increased geographical focus imposed by DGD, relational capacities of partner institutions were still strengthened. Asked about this paradox, interviewees explained that the partner institutions found alternatives to the networking activities and let them take place on their own. Alternatives entailed, for example, partner institutions strategically selecting staff members that already possessed a professional network that they would bring with them or partner institutes using financial resources from other donors to realize networking activities. Moreover, stakeholders from some partner institutes, such as the ones in South Africa and Burkina Faso, explained that the networks that were established under FA3 continued to exist and further strengthened relational capacities under FA4 through joint research. However, partners pointed out there is still a need for network support, especially to establish good connections to the political sphere and thus increase country level impact.

As shown in the survey results in Figure 4, ITM supported the development of **institutional capacities**. Institutional capacities are understood as processes and structures of an institution, such as for example quality management systems and administrative structures but entail also the enhancement of technological infrastructure. As stated in the ToC and confirmed by the data, the institutional capacities were strengthened by the provision of trainings to the administrative, financial, and technical staff at the partner institutes. In the majority of country programmes, case study data indicated, that ITM also offered support with the creation of research management structures, such as the establishment of a research committee in DRC or a lab management position in Ethiopia. Furthermore, the enhancement of the technological laboratory infrastructure and human capacities also positively influenced the institutional capacity. In this context, various interviewees from different country programmes highlighted that ITM's support was effective in reinforcing the institutional capacities through the introduction of new diagnostic, control, and surveillance tools accompanied by the training of staff on the new techniques. This strengthening of not only the technological but also human capacities of the lab and clinical staff contributed to supporting the partner institutions' status of pioneers in their functions as education facilities, reference laboratories or institutes of public health.

The differentiation of **survey results by institution type** further confirms findings from the aggregated level (see Figure 6). Here, Higher Education Institutions and National Institutes of Public Health show rather high baselines between 4.1 and 5.1 and positive effects on all capacities in form of capacity increases by between 0.3 and 0.8. As only two participants were assigned to Reference Laboratories and only one participant to National Programmes of Public Health/MoHs findings derived from these were not representative and thus excluded from the analysis.

Figure 6: Capacities before and after ITM's interventions according to institution type. (six-point Likert scale from 1 "capacity is low" to 6 "capacity is high")



However, the **survey results differentiated by country** show a more mixed picture, which however also tends to reflect the trends at the aggregate level but not in detail as they reveal various country-specific differences (see Annex 8.4). Generally, most capacities have been strengthened in all countries. Nevertheless, the extent to which each capacity was strengthened varied within each partner institute and among the country programmes. Furthermore, the partner institutions show different capacity baselines according to the survey data. Findings from the interviews confirm these results. Moreover, the analysis of case study data suggests, that the different capacity baselines and varying extents of capacity strengthening are connected in two ways: Firstly, the strengthening effects of the interventions on a capacity tended to be stronger if the capacity baseline was comparatively low to begin with. Looking at the data from DRC, with capacity baselines between 3.6 and 4.2, capacity increases of between 0.8 and 1.5 are observable. In comparison, data from South Africa, with rather high capacity baselines between 5.2 and 5.7, show lower capacity increases of up to 0.5. One way to explain this aspect is that it tends to be easier to develop capacities with the same inputs that have a lower baseline than those that are already highly developed from the start.. Secondly, the interventions were reported to be highly needs-driven (as described in chapter 5.1), and thus country programmes often focused on specific capacities which showed the greatest need for strengthening according to the partner institutes' stakeholders. The disaggregated survey results confirm the findings from the interviews which were described in the scope of the aggregated level data analysis before, name that human and research capacities are the focused capacities in most countries. However, the qualitative and quantitative data also shows by the reported increase in all capacities among all partner institutions, that ITM applied a holistic approach, and, despite the focus, has not led to capacities falling behind.

Besides the varying capacity baselines and needs-aligned approach, case study interviews reported very heterogenous, outcome- and/or country-specific factors influencing the achievement of outcomes, e.g. in Ethiopia the time-consuming partner institution-inherent ethics review processes or the rapid change of political context in the Cuban country programme. The qualitative data analysis suggests three promoting factors and one inhibiting factor that were relevant throughout all country programmes. Regarding the **promoting factors**, interviewees from all

countries reiterated on the trust relationship between partner institutes and the ITM at eye-level (i) and ITM's responsiveness (ii). The interviewees, that had direct contact with ITM, reported the ease by which they were able to contact ITM personnel to discuss issues that emerged, be it on the level of project programming, budgeting, and planning, or on the level of access to ITM research knowledge and equipment. Moreover, interview partners among all country programmes emphasized the flexibility of the ITM (iii) in the adjustments of deadlines or the re-allocation of planned budgets when the circumstances in the country or institutional context changed, e.g., when internal review processes took longer than announced or the importation of lab equipment into the partner countries was delayed. These three promoting factors were also confirmed by the survey results: 75% of participants indicated to be "very satisfied" with the day-to-day collaboration with the ITM specifically in terms of the ITM's responsiveness, availability and flexibility.

When asked about the key **inhibiting factors** in FA4, the answers from the interviews refer mostly to factors outside the programmes' immediate spheres of influence. The COVID-19 pandemic was the only uniformly mentioned inhibiting factor, reportedly influencing all various outcomes to some extent. Here specifically activities concerning the strengthening of research capacity as well as ones aiming on strengthening relational capacity were negatively affected. Accordingly, sampling activities in the field, work at the labs and clinical trials as well as networking activities were cancelled or postponed due to travel and general movement restrictions. The flexibility of ITM and the close relationship between ITM and the partner institutions helped to solve these challenges and mitigate the negative effects of the pandemic (see chapter 5.4 for further analysis).

4.2.2 Transversal topics of gender and environment

In spite of the achievement of the capacity strengthening aims the programme-level analysis reported in the criterion of effectiveness, interview data showed that nearly all interventions fell short in the implementation of measures concerning the transversal topics of gender and environment.

Starting with the **transversal topic of gender**, interviews reveal that in the majority of countries gender equality was understood as researching staff and PhD positions being equally distributed among men and women. Following this understanding, we found gender parity among the partner institutions' research positions is the considered among few country outcomes, such as the ones in Burkina Faso and Ethiopia. In South Africa gender equality was perceived in a more gender-transformative[45] way, including campaigns to support female researchers and staff with their care burden and thus enabling them to equally participate in research. In Guinea, sexual and reproductive health was one of the research foci in the country programme. Hence, the Guinean country programme incorporated gender health issues as a corner stone of their research. Except for Guinea and South Africa, no measures to promote gender equality were found to be formalized in the country programmes. Moreover, interview data suggests, that the occurrence of the equal distribution of positions among men and women was due to individual committed persons in the partner institutes or coincidence. Results of the case studies indicate that the reasons for this are the lack of specific aims, indicators and strategies in the project designs.

With regard to the **transversal topic of the environment**, the evaluation of the case study interviews revealed that in nine of ten country outcomes there was little awareness on how environmental considerations can be incorporated in research activities and management. Accordingly, in these nine country interventions there were no formalized measures to promote environmental protection. In this regard, DRC is the only exception: Many interview partners from DRC suggest that although environment was not a focus of the country programme at hand, it is nonetheless a cornerstone of the sector in which the programme took place. By focusing on the support to the treatment

[45] Gender transformative approaches create opportunities for individuals to actively challenge gender norms, promote positions of social and political influence for women in communities, and address power inequities between persons of different genders. Gender transformative approaches generally aim at addressing roots causes of inequality, going beyond fixing the numbers.

of highly contagious diseases, ITM activities have tackled the management of lab waste as a formalized environmental measure in DRC.

4.3 Impact

The criterion of impact refers to the extent to which the intervention has generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects. In the analysis, the evaluation team looks at the extent to which ITM's capacity strengthening activities have contributed to changes in the long-term, as defined in the Theory of Change (see section 2.2). As presented in the Theory of Change, ITM's partner institutions should act as agents of change by using and transferring knowledge *(institutional level impact)* and contributing to scientific and public discourse and practice relevant to their respective contexts *(country level impact)*. The realisation of these impacts relies on the development of the partner institutes' professional capacities as well as on their influence on the political and societal sphere.

The results from the case study analyses show, that the **institutional level of impact was threefold:** First, ITM enabled all of its partner institutes to conduct high quality research and generate innovation on public health, biomedical sciences and clinical sciences. This knowledge was manifested in published articles in high-ranking national and international journals by the majority of country programmes. Thus, offering the basis for evidence-based policies. Secondly, the interview analysis also highlighted the interventions' human capacity aspect as crucial for the institutional impact: through the by ITM conducted trainings, research and clinical skills of researchers, students, staff and clinical practitioners at the partner institutions were enhanced. This lasting positive effect on the human resources of the partner institutes, combined with the improved technological infrastructure, led to the research being carried out at a new level and thus to the generation of innovation and new knowledge as described above. Third, case study findings suggest, that the strengthened professional capacities validated all partner institutes in their national and/or international role as research institutes, reference laboratories or higher education institutes and further in their role as pioneers.

As presented in the Theory of Change, ITM also aspired to reach a **country-level impact** with their interventions through the strengthening of the partner institutions' relational capacity and with that the expansion of their influence in the societal and political sphere. To this end, collaboration between institutions within and outside the JSF was established or strengthened as well as through networking and conferences new contacts and information flows with external actors from the political sphere created. Case study data suggests, that all country programmes strengthened the influence of the partner institutions on the political sphere and having impact on policy-making processes, thus country programmes leading to newly established or enhanced policies in public health and guidelines in clinical practice. Overall, the interviews highlight, that policy impact has been achieved in all countries and is expected to continuously be achieved through strengthened research and relational capacities at the partner institutes. However, according to the interviews, the type of influence exercised on policy-making processes was predominantly indirect in most countries, i.e. policy makers considered findings from the partner institute's research but researchers did majorly not have a say or were not directly consulted in the design of policies and guidelines. Some country programmes, such as those in Vietnam and Ethiopia, represent the minority in which guidelines on malaria treatment and on leishmaniasis and HIV co-infection treatment were drafted directly by researchers from the partner institutes. One promoting factor for the extent of political influence identified in various interviews was the already existing connections from the partner institutes to political stakeholders. Here, interview analyses show that partner institutions that were connected on an institutional level with political institutions or partner institutes that had individual staff/researchers being well connected with political actors, showed a greater relational capacity and also greater extent to which their research influenced policy-making processes in the respective countries.

Ultimately, ITM intends to **contribute to improve health worldwide.** Since this intended change on the highest level follows a long causal chain, a plausibility analysis is conducted regarding ITM's capacity strengthening activities. As the training activities strengthen capacities of students to act as qualified professionals and of staff to

conduct state-of-the-art research and show high-quality clinical practice, the results show that graduates, research and clinical staff, as well as partner institutes as overarching entities are in the position to collectively contribute to the improvement of health worldwide. Moreover, the country programmes show institutional as well as country-level impacts. In case that these remain or will be continued in the form of further national or regional policies and guidelines, they are likely to also have a positive impact on health worldwide.

Based on results from section 5.1, 5.2 and 5.3, it is plausible that ITM enhances the partner institutes with professional capacities and contribute to further transfer the generated knowledge. It is also plausible that ITM contributes to worldwide health through its partner institutions' innovative knowledge that is published in high-ranking international journals and the enhancement of and innovations in clinical practice. However, the extent of the country programmes' achieved impacts on the national level are varying.

4.4 Implementation Efficiency

The criterion of implementation efficiency describes the extent to which the intervention delivered results in a timely way. "Timely" delivery means that outputs and outcomes were achieved within the intended timeframe, or a timeframe reasonably adjusted to the demands of the evolving context. In addition, it also expresses to what extent the inputs were managed in a cost-efficient way, i.e. whether funding was sufficiently distributed among the planned activities and thus among the outputs and outcomes.

The **allocation of funding** both within and across different parts of the country programmes was generally considered efficient by most interview partners throughout all interventions. In this regard, interviewees reported that the financial, technological and professional resources provided by the ITM were sufficient to reach the country programmes' outputs and outcomes. It was also reported that the programme allowed for a funding (re-)allocation depending on the emphasis that involved partners deemed pertinent. In this context, interviewees specifically emphasized the eye-level relationship between the partner institutes and the ITM as a success factor for the sufficient allocation of provided resources.

Concerning the **timely delivery of results**, the analysis of the case study data found that this aspect was a challenge for almost all country programmes due to the COVID-19-Pandemic. Interviewees from all country programmes reported, that lockdowns, moving restrictions and delays in the import of lab consumables and equipment led to delays and missed opportunities due to cancelations of research activities, group retreats, and exchange visits, educational activities, and field work. The extent of the delays and impact of the pandemic varied however between country programmes. Interviewees reported that in some programmes, such as in Ethiopia[46], some results could not be produced because field work, clinical studies and work in the laboratories could not take place due to movement restrictions, whereas in other countries, such as in Burkina Faso and South Africa, the majority of research could continue in the laboratories under stricter hygiene precautions. The interview analysis points to two aspects that were decisive for the extent of the individual country programmes to cope. Firstly, it became clear in the interviews that it had an impact on whether activities could be held online or had to be held on site. Educational and training activities often proved to be feasible online, whereas research activities often had to be postponed and could be continued only after the lockdowns had ended. Secondly, the interviews showed that the expansion of the technological infrastructure in the aspect of online teaching and exchange as well as the national expansion of internet access was essential for holding online formats. Here, too, the technological conditions in the respective countries were different, leading to different ways of dealing with pandemic-related difficulties in the holding of activities.

Moreover, the case study data indicates, that stakeholders from the partner institutes felt supported by the ITM in the transition to online formats and perceived the responsiveness and funding flexibility of the ITM as crucial for

[46] Besides COVID-19 related lockdowns, also moving restrictions due to security concerns in the Tigray region were also a challenge for the timely delivery of results in the Ethiopian country programme.

coping with the COVID-19 related challenges in the programmes' schedules. Interviewees emphasized that ITM's responsiveness and funding flexibility allowed funds to be reallocated and solutions to be found which ultimately enabled partner institutions to cope with the COVID-19 pandemic in the first place.

4.5 Sustainability

This subchapter describes the extent to which the outcomes of the interventions continue or are likely to continue after the finalization of FA4. To this end, the evaluation team examined the financial, social, technical and institutional capacities of the partner institutions, which are needed to sustain the programmes benefits over time. As the evaluation was conducted shortly after the finalization of FA4, it focuses on the estimation of the net benefits' likelihood to continue over medium- and long-term. Overall, several programme components are perceived to have established preconditions for sustainability, with some potential for improvement, specifically in the financial and technical dimensions.

Concerning **social sustainability**, the analysis of collected data suggests that preconditions are established as partner institutions had ownership over the programmes' components, that were implemented at all stages. This was expressed in the fact that mainly researchers from the partner institutes were in charge of carrying out their research activities and reported to have had the discretion over the use of the by ITM provided resources. Here, see also 5.2.2) , two effectiveness promoting factors , (i) the trustful relationship on eye-level between ITM and the partner institutions and (ii) the flexibility of funding, was reported as being crucial for the partner institutes established ownership of projects, as ITM provided them with a lot of freedom in designing and carrying out the country programmes. Furthermore, ITM's capacity strengthening approach has succeeded in building up expertise in the fields of research conduction, clinical practice and research management within the partner institutions. Thus, human capacities of the partner institutions were sufficiently strengthened to also being capable of taking the ownership of state-of-the-art research. As reported in the project documents and manifested in the Theory of Change, besides the trainings for staff and researchers, ITM also provided support for the partner institutions to establish new or enhance existing research and lab management structures to further manifest the institutions' ownership. The analysis of the case study data shows that in the country programme, where such structures have been newly established or enhanced, the structures are also likely to be sustained and thus also providing the preconditions for **institutional sustainability** of the interventions' outcomes. Moreover, preconditions were established by the strengthening of the partner institute's relational capacities, more specifically through supporting the formation of a sustained collaboration between the partner institutes and other research organisations, political actors, as well as also partly other donor organisations. Interviewees emphasized that to this end, specifically the enhancement of the institutions' reputation and validation in their roles as pioneers (see also section 5.3 institutional impact) through ITM's capacity strengthening activities were crucial.

Regarding the establishment of preconditions for **financial sustainability** in the scope of FA4, the picture is mixed. To establish the preconditions for financial sustainability, the core logic of the country programmes was to promote the partner institutions' ability to attract external funding by strengthening their research profiles and consolidate their networks. Overall, the case study interviews suggest that this logic was successful in all country programmes, even though the extent of actual acquired external funding varied among the partner institutions. While in one country, the ability to attract external research funding has increased to such an extent that the share of total funding provided by ITM fell from 80% to 10% during the intervention, the other partner institutes have been able to attract further funding but are still largely or entirely dependent on ITM support for their activities. One influencing factor for the extent to which external funding could be acquired by the partner institutions, was the provision of grant application training by ITM. The analysis of the data suggests that in the few countries, where such training was integral part of the programmes, partner institutes were able to attract more external funding. In this aspect, also various interviewees being stakeholders of country programmes without such training, expressed their need for skill building in grant applications for their research projects.

With reference to preconditions for **technical sustainability**, the analysis of data suggests, that these were partly established. On one side, ITM provided monetary resources and equipment to enhance the partner institutions' lab and clinical infrastructure. In this context, staff, researchers, and clinicians have also received training from ITM to learn how to use and maintain the new equipment. The fact that the equipment provided remained with the partner institutions even after the end of the interventions created the preconditions for technical sustainability in this area. On the other side, the analysis of the data shows that closing of the generational knowledge gap, which is also essential part of technical sustainability, was not achieved in most country programmes due to the remaining high turn-over of staff and researchers in most partner institutions. Even though the country programme documents report of a high amount of conducted trainings and human capacity strengthening activities in all countries, these activities are viewed as only partly sustainable by various interviewees from all country programmes as lots of PhD and master graduates, researchers and staff already left the partner institutes right after finishing their project. The low retention rate of researchers, graduates and post-graduates led to a loss in knowledge experience and capacities.

4.6 Complementarity and Synergies

The JSFs created within the scope of FA4 should lead to joint and coordinated efforts of the Belgian development cooperation actors in the respective partner countries, which ultimately was supposed create synergies and complementarity of activities. This subchapter analyses to which extent complementarities and synergies between the country programmes and on the one hand actors within the JSF and on the other hand actors outside the JSF were achieved.

Generally, findings from the case studies, indicate that all of the country programmes contributed to the overall stated goals in the respective joint strategic frameworks. Moreover, all country programmes show that collaboration between the partner institutes and other actors took place. However, the types and extent of collaboration varied between the country programmes with regards to both collaborations within and outside the JSFs.

The analysis of the interview data shows that the degree to which partner institutes collaborated with other Belgian development actors varied strongly **within the JSF**: Whereas there is strong cooperation between the partner institutes and other Belgian actors such as VLIR-UOS, ARES and ENABEL in individual country programmes, such as in Burkina Faso, Guinea and DRC there are no points of contact with other Belgian organisations at other partner institutes such as the GCHMS in Ethiopia and Benin. Results of the qualitative analysis imply that decisive factors for the collaborations within the JSF were twofold: Firstly, partner institutions that already had strong links with other Belgian development actors prior to and under FA3, were more likely to also show collaboration in the scope of FA4 within the JSF. Secondly, interviewees that were stakeholders from other Belgian development organisations pointed out that where there was a commitment by Belgian actors to networking activities and cooperation, collaboration tended to take place. Above that, the qualitative data analysis implies that collaboration within the JSF was predominantly complementary, whereas synergies were difficult to find in most countries due to the other thematic areas of work of JSF members.

Considering the sphere **outside the JSF**, case study analysis shows that all partner institutions maintain collaborations with other research facilities and national actors of public health. Due to communication and joint projects between the partner institutes and other research facilities taking place in the scope of most country programmes, complementarity of, and synergies between, the different research actors were established. Collaboration with other international donor organization varied between the partner institutes. Here, again already existing networks were reported in the interviews as essential for these collaborations. In addition, interviewees from all interventions pointed out, that the increase in the national and international reputation of the partner institutes was considered a promoting factor for the establishment of new collaborations outside the JSF.

5 Conclusions and Recommendations

This chapter presents the conclusions and recommendations by the evaluation team. These are based on the results presented in the previous chapter and address evaluation questions along the criteria of relevance, effectiveness, impact, sustainability, implementation efficiency and complementarity and synergies. The main data sources for the results and the analysis are the online survey of county outcomes' key stakeholders, project documents and ten country case studies with interviews and focus group discussions with involved ITM personnel, involved staff at the partner institutions, alumni of PhD and master programmes, other national research actors and other Belgian actors within the respective JSFs.

5.1 Conclusion

The evaluation showed that the country programmes under FA4 were highly needs-oriented. In particular, the individual interventions responded to institutional needs for laboratory and research equipment as well as addressing research gaps with capacity building efforts and funding support. In the aspect of human resources, the evaluation found that the country programmes were not able to fully satisfy the need for the retention of qualified staff and trained researchers. Regarding country-level needs, the evaluation suggests again an alignment to these by all interventions under FA4, as all country programmes equipped the partner institutions to tackle major challenges in public health in their respective countries.

In terms of effectiveness, the evaluation showed that all capacities of the partner institutions were strengthened by ITM's interventions and the impact hypotheses within the ToC could be verified. This trend was particularly evident at the aggregated level of the survey results. It was confirmed by the results of the quantitative data analysis from the perspective of the 5C model, reflecting the same findings. Moreover, looking at the survey results differentiated by Institution Type, the trend of general capacity strengthening is further verified. The analysis of survey responses differentiated by country programmes also presented overall positive effects on most capacities among the interventions but the extent to which capacities were strengthened varied among the country programmes. The case study analysis suggested two reasons for this, namely the diminishing marginal utility of interventions with increasing capacity baselines, and secondly, the prioritisation of specific capacities, especially research and human capacities, in consultation with partner institutions.

In the scope of the case studies, a small number of influencing factors being relevant to all country programmes' effectiveness was identified. Stakeholders from all country programmes highlighted the flexibility, high responsiveness and the trusting relationship at eye-level between ITM and the partner institutions as key success factors. Further, the COVID-19 pandemic and the resulting lockdowns reported as only cross-cutting inhibiting factor.

Furthermore, the evaluation found that the transversal topics of gender and environment did not receive much attention throughout the country programmes. The evaluation revealed that in most countries, with the exception of SA and Guinea in the area of gender and DRC in the area of environment, no formal measures have been introduced in the scope of the country programmes. Within the framework of the qualitative data analysis, this could be explained on the one hand by the lack of awareness among the project stakeholders in the partner institutes. On the other hand, the overarching design of FA4-programmes lacked concrete objectives in the aspects of gender and environment.

Concerning the criterion of impact, the evaluation shows, that institutional and country-level impact as well as the preconditions for a global-level impact were established. Due to the interventions partner institutes were able to enhance the conducted research and with that generate innovations and new knowledge. The strengthening of research capacities (further) validated the partner institutes' role as pioneers in their respective research

community and on the national level, creating farther institutional impact. Moreover, national policies on public health were enhanced, directly or indirectly based on the findings of the state-of-the-art research of the partner institutes, leading to country-level impact of all country programmes.

The evaluation assessed that the implementation of country programmes was overall conducted in an efficient manner. The allocation of funding was considered to be generally efficient by stakeholders from all country programmes. While there were some delays in the timely delivery of milestones due to COVID-19, the funding flexibility and responsiveness of ITM allowed funds to be reallocated and alternative solutions to be found.

With regards to sustainability, the evaluation found that preconditions were established in two of the four dimensions. As the partner institutes showed strong ownership of all components of the country programmes and enhanced research management structures at the end/after the finalization of FA4, preconditions for social and institutional sustainability were considered by the evaluation team to be established. Preconditions for financial and technical sustainability were assessed to be partly established, as the majority of partner institutes was still dependent on ITM funding in their research activities and the fluctuation of the trained human resources remained a challenge for all partner institutes.

Moreover, the evaluation reflected that collaborations of the partner institutes within the JSFs were predominantly of complementary nature. The extent to which these collaborations between the partner institutes and other Belgian development actors were established varied among the country programmes and depended on already existing cooperation structures. Collaborations and synergies with actors outside the JSF, but within the health sector were common, and cited as having positive effects on the capacities of the partners.

5.2 Recommendations

Based on the results and conclusions of the evaluation the following six recommendations are derived.

1. **ITM should maintain its participative approach in further intervention designs under the following FAs. Accordingly, it should involve key stakeholders from the beginning to enable a highly needs-oriented intervention design and execution.**

The evaluation showed the high relevance of the participatory project design and implementation approach of ITM. It has led not only to a high relevance and ownership of activities in the interventions by partner institutes but was also a key element in the achievements in the realm of efficiency, effectiveness and sustainability. Moreover, while the participatory approach is a success factor for ITM in FA4, it can be further expanded to more intensively include further stakeholders, such as policy-makers (see recommendation 4). It could also be expanded to include partners that more deliberately are included to create synergies (see recommendation 6).

2. **ITM should continue with their holistic approach to capacity development, which supports strengthening all relevant organizational capacities.**

While country interventions had set some priorities in term of institutional capacity development (commonly research capacities), all interventions followed a holistic and comprehensive approach to strengthening partner institutions. This holistic approach responds to the experience of ITM that different institutional capacities are interrelated and that focusing only on one, would not be successful. This experience was visualised in the FA4-ToC and was validated by this evaluation. In this regard, ITM has gathered extensive experience in all relevant capacity development areas and thus could explore setting other priorities in individual interventions (e.g. on educational capacities) under the condition that its high participatory and holistic approach (see also recommendation 1) remain at the centre of the intervention's design.

3. **In order to promote a positive development of the transversal topics gender and environment, ITM should engage these topics strategically and create guidelines for the interventions.**

The evaluation showed that both topics did not receive sufficient attention and that a common understanding of why, how and what to include in the interventions in terms of gender and/or environment was missing. The incorporation of these topics in the intervention design and activities was therefore strongly influenced by the awareness and understanding of the individual persons and stakeholders involved. For future cross-cutting topics, ITM should therefore **create overarching guidelines** that serve as orientation for those stakeholders designing and implementing country interventions. Such an orientation might also be helpful as country contexts (e.g. policies, cultural sensitivity, etc.) could have implications on how cross-cutting topics, such as gender, should be included. Such a guideline should explain the rationale behind the cross-cutting topic (e.g. pointing at requirements and understanding of funding institutions and existing ITM strategies and concepts) to make sure that involved stakeholders have a strategic understanding of why the topics should be included. The guideline should also define an overarching objective for the Framework Agreement, offer a definition of the cross-cutting topics to make sure that a common understanding between the different stakeholders exist (for example by defining different gender-approaches such as gender-responsive, gender-transformative, etc.), and **encourage its discussion with partner institutions**. As a guideline, this document should also be practical in nature and support those involved in the design of country interventions. This could be achieved through an **assessment matrix** that needs to be filled out and guides the stakeholders through a reflection process on why and how the cross-cutting topics should (not) be included (e.g. due to cultural, political reasons, country contexts and specificities of the intervention). Finally, ITM could consider setting targets (including indicators) specifically on cross-cutting topics mandatory. To not force specific topics on partners, this could be complemented by a mandatory requirement that asks stakeholders to thoroughly explain why cross-cutting topics are not considered relevant at the target-level of intervention.

4. **To further expand the country level impact of the interventions, ITM should promote applicability for policy-makers at all stages of the research process.**

While the evaluation validated country-level impacts, it also showed that there is to a certain extenta gap between research output and research uptake by policy-makers. To address this gap, ITM should take into account (pre-)conditions and mechanism for research uptake. With regard to the **(pre)-conditions**, a sound understanding of the context in which a prospective intervention will take place facilitates research uptake. Here, it is essential not only to understand the broader context of the policy sector but also to identify structural barriers which can take – for example - the form of dominant health regimes, imbalanced power relations, capacity constraints on the side of the relevant stakeholders or existing conflicts between important stakeholders in the health sector. With regards to the **mechanisms** facilitating the uptake of knowledge, technologies or developed services experiences from other evaluations show that research uptake takes place with those stakeholders that are either the collaboration partners or the explicit targeted audience of the funded interventions. Thus, the selection of partners must be thought through carefully when setting up an intervention by already thinking about the end-users. If partners are not end-users themselves, uptake is facilitated if they have excellent pathways to the targeted end-user group of the respective intervention (e.g. policy-makers). These stakeholders should however normally not actively participate in formulating the research topics (e.g. because they can be politically influenced, which would be a reason for new politicians taking their place not to take up results). In contrast, they should be considered when analysing the context and potential structural barriers and involved throughout the implementation of data collection in order to create the necessary conditions for research uptake. In addition, the establishment of particular modes of collaborations with these relevant stakeholders – e.g. in the form of advisory boards – has proven successful in guaranteeing continuous needs-orientation of the research during the data collection and synthesis phase. It is therefore also important that preliminary research results are shared in a tailor-made format for each specific user group (e.g. policy-makers normally do not read extensive or complicated research articles). Finally, developing a clear and comprehensive ITM

strategy on research uptake that delineates the creation of conditions for uptake can also be a success factor that could ensure a more proactive and consistent approach to research uptake by ITM and its interventions.

5. ITM should include sustainability targets into its project designs and actively promote sustainability throughout the whole intervention process of implementation.

While the evaluation showed that some pre-conditions for sustainability exist, it also illustrated some challenge, such as staff turnover rates. To further strengthen sustainability, the following options should be taken into account by ITM, while also taking into account that their realisations and utility might vary across interventions and countries:

- As staff retention is difficult to be sustained by a time-bound international intervention, ITM could consider working and **setting up beneficiary groups** (for example research groups) instead of focusing on individual persons. In a group context, knowledge and experience is disseminated and shared more frequently and in a more in-depth level. Accordingly, permanent staff from the partner institutions should be part of the (research) groups and fixed mechanisms of knowledge management and dissemination should exists.
- Another mechanism to ensure knowledge and expertise remains available to the partner institutions is the creation of an **alumni association** that also serves as expert pool. Beneficiaries could automatically enrol into such an alumni association, which could be an expansion of ITM's and/or institutional partners' existing alumni network. Experiences show that maintaining an active alumni network comes with costs and needs to be managed and create benefits for those participating. Accordingly, a first step at this point in time could be to incorporate alumni into ITM's existing alumni network. ITM would then need to create mechanisms through which alumni can be "contracted" as short-term experts to – for example - facilitate peer-to-peer learning not only in their prior places of work, but also through their deployment in other countries and interventions. Such and professional alumni network can also be beneficial as many might end working with/at relevant (policy) stakeholders, such as health ministries (see recommendation 4).
- Staff retention is often caused by the lack of funding. Accordingly, supporting the partner institutions' ability to attract **third party funding** can contribute to decrease staff turnover. Accordingly, ITM could more systematically support the development of such capacities by (a) offering trainings, (2) facilitating the creation of (research) consortia to apply to for funding and (3) further supporting the visibility of the partners vis-a-vis funding parties. This could also benefit the creation of synergies (see recommendation 6)
- Finally, ITM should consider setting **sustainability targets** for their interventions. Such an exercise comes with the need to reflect on what the pre-conditions for sustainability of results are and the reflection on what needs to be done during the time of implementation to ensure the durability of results. Setting targets therefore creates the need to develop and implement specific activities designed to increase the probability of the changes being sustained after the intervention ends.
- Experiences show that sustainability can mean different things depending on the country and the type of intervention and sector in which it is implemented. Accordingly, ITM should consider developing a susta**inability concept** that defines what sustainability means in the context in a health-research-policy nexus and offer some mechanisms and best-practice examples that might be included in the corresponding to be designed intervention.

6. To achieve more synergies at output and outcome level, the JSFs need to incorporate this target at the strategic, project/intervention and process implementation levels and be regularly updated.

While in the context of FA4, ITM achieved complementarity with other stakeholders, room for improvement still exists with regards to the creation of synergies at the level of results. Synergies mean joint or coordinated efforts to achieve greater results at output and outcome level and efficiency. If such synergies are deliberate, they must be part of the design phase at both strategic and operational levels, and be part of the implementation, e.g. through continuous coordination and co-creation. This means that the creation of synergies cannot be achieved through a "perfect set-up" at the start of a JSF/ITM intervention, but that they need to be regularly updated to ensure that a

coordinated efforts to create synergies stay up-to-date, which can result in the pursuit of new synergy potentials and the abandonment of old synergy targets. In the context of FA4 this would moreover translate into transparency about which and how synergies at the level of the country or the Joint Strategic Framework (strategic level) and the individual intervention in a country are designed to be achieved. Synergies that are not already incorporated and designed at the strategic level are oftentimes difficult to achieve at the operational level, as a lot of resources need to be spent to search, communicate, coordinate and co-create with (new) partners. In Framework Agreements, such as FA4, synergies could be achieved through the following principles:

- Synergies can be achieved **by amplifying the (research and innovation) funds and their impact** (e.g. finding a third party that supports the research, helps widen the target groups, etc. or that can help create the planned results with less resources). Here for example, at the strategic level this could include requirements or orientation towards the combined usage of different instruments to achieve combined objectives. While the JSF were intended in this way, efforts to have a regular reflection based on experiences on the ground and adjust the JSF accordingly need to be increased.
- Synergies can also be achieved **by combining different forms of (research and innovation) support** offered by different instruments (e.g. combine the capacity development funding with funding for knowledge dissemination, networking, uptake, etc.). This again could be designed at the strategic level but would need to be specified at the intervention level to assess its relevance and appropriateness.
- Finally, synergies can be created **by carrying innovative (research) ideas further** along the (research and innovation) cycle or value chain to ensure that successive projects build on each other. This for example could be implemented by expanding the type of institutions working in the consortium to include stakeholders that can support the co-creation process further. This for example could include considering (pharmaceutical) companies, NGOs or others that can take up results and apply them directly. This could also entail ensuring that results are disseminated and used horizontally, i.e. by other organisations in the country, (sub-)regions, etc.

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7 Annex

7.1 Design and Methods

7.1.1 Theoretical Background: Measuring Capacities

ITM, in addition to providing reinforcement of education and research, focuses a large part of its activities on partner institutions' **capacity strengthening, both at individual and institutional level**. As outlined in FA4, this capacity strengthening aims to contribute to reinforcing health research and education capacities in low- and middle-income settings, and as such generating better quality of, and access to health care for populations; and ultimately to improve health worldwide. The final evaluation of FA4 consequently revolves around the question of (successful) capacity strengthening among the partner institutions, and the need to apply the same benchmark for capacity development (i.e., for measuring it consistently) across the different country-level outcomes.

Capacity development, today, is seen as a corner stone in development policies of donor countries and partner countries alike and a key element in achieving the Sustainable Development Goals (SDGs). At the core of this consensus, according to Mizrahi, is the assumption that, "transference of resources from rich to poor countries, although important, is not sufficient to improve the performance of public and private organisations in developing countries"[47]. It is considered of equal importance that organisations in the developing countries enhance their capacity to utilise, manage and deploy their resources in order to achieve their strategic (development) objectives. In most cases this involves a need for some kind of organisational or institutional reforms and the capability to manage it. At the same time, we are confronted with a long-standing **paradox regarding capacity development** in development cooperation: Although capacity development has gained considerable traction and is seen as central by both donors and partner countries, there is no broadly accepted definition of what "capacity" entails. The commonly used **definitions** range from the narrow to the more holistic:

- "'Capacity' [is] the ability of an organisation to produce appropriate outputs"[48]
- "'Capacity' is that emergent combination of attributes, assets, capabilities and relationships that enables a human system to perform, survive and self-renew"[49].

While definitions of the first category define capacity as the ability of an individual, organisation or institution to perform certain predefined functions (against an existing norm regarding the performance of a given individual or organisation)[50], the more **holistic definitions** share a general understanding of "capacity" as the product of the interplay of different elements in a system. Capacity development in these definitions – in line with ITM's objective to strengthen partner institutions' capacity – primarily relates to the overall performance of an organisation in order to deliver a service and to the ability of the organisation to adapt to a changing context. This understanding of capacity development implies that capacity development is a product or a final situation, in which analysing organisational culture, vision or values are central, since capacity development is the result of an ongoing and complex process[51]. Capacity development in these definitions is according to Boesen & Therkildsen (2005) and Morgan (2006) first seen as an end in itself and only secondly as a mean to a greater end[52].

Some standpoints of this scholarly debate on capacity development have found their way into policy, converging towards a basic understanding of the practice of capacity development (see below), and emphasising the

[47] Mizrahi, Y. (2004). Capacity Enhancement Indicators. Review of the Literature. WBI Working Papers. Washington D.C.: World Bank Institute, p. vii.
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endogenous character of capacity and capacity development. According to Walters, the function of donors is therefore, "not to 'do' capacity development but to promote it"[53]. Against this background, there is a growing consensus among official agencies[54, 55] and academics[56] that capacity development is:

- A complex process between elements in an open system that involves changes in relationships;
- A process involving changes in identity and power structure;
- A primarily endogenous process based on the concept of local ownership.

To unify these approaches, we will turn towards Peter Morgan's concept of capacity and his understanding of organisations as open systems as an analytical framework for this evaluation.[57] Morgan, thereby, develops his model (see below) based on the concept of "emergence", understood as a process where "elements (of capacity) combine and interact over time to create a greater whole […]"[58]. These (and further) reflections are summarized in the so-called **5C model**. This model, developed by Peter Morgan in 2006[59] (and recently at the centre of the book "Capacity Development Beyond Aid" published in 2015[60]), is considered to provide a flexible and holistic framework for the analysis of capacity development in development cooperation[61]. Being a widespread model in evaluation practice in general, we have used it as Syspons *inter alia* in the context of evaluations for the German Academic Exchange Service (DAAD), the Austrian Development Agency (ADA), the Netherlands Universities' Foundation for International Cooperation (Nuffic), and the Academy of Research and Higher Education (ARES) to analyse institutional capacities of different types of organisations, including universities or graduate schools.

For the purpose of this evaluation, the model allows us particularly well to address the challenge of the heterogeneity of the different country-level outcomes by outlining **five core capabilities** that organisations must have to ultimately create public value. **Capabilities** are defined by Peter Morgan as the collective ability of a group or a system, here ITM's partner institutions, to do something either inside or outside the system. **Capacity**, in turn, is defined as the overall ability of an organisation or system to create value for others. The five – separate but interdependent – core capabilities in organisations/systems are: the capability to act, the capability to generate development results, the capability to relate, the capability to adapt and the capability to achieve coherence[62].

1. The **capability to act** is fundamental for an organisation to have volition, to choose between options, exert influence and to change and develop on the basis of strategic intent.
2. The **capability to relate to other actors** within the context in which a system functions is seen as imperative. To gain support and protection, form informal alliances and/or formal partnerships affects the legitimacy of the organisation and thus how effectively it can pursue its mandate.
3. The **capability to adapt and self-renew** affects the ability of an organisation or system to change and adapt to external or internal developments, new ideas and ultimately to learn.
4. The **capability to achieve coherence** relates to a central tension in all human systems, between the need to differentiate and diversify and the need to maintain a common strategic focus.
5. The **capability to generate development results** is to a high degree equated with effective performance management in the form of better service delivery. There are two interrelated types of development results:

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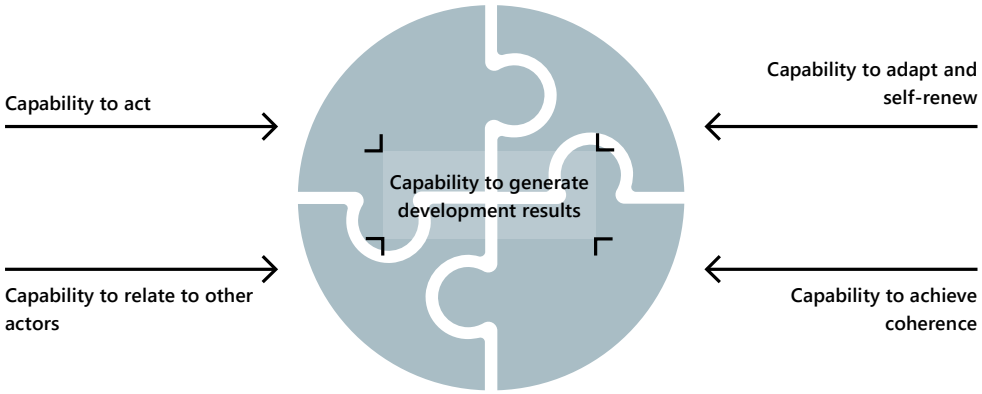
[55] OECD. (2006). The Challenge of Capacity Development: Working towards good practice: The DAC-Guidelines. Paris: OECD.
[56] Ed. Greijn, H., Hauck, V., Land, A., Ubels, J. (2015). Capacity Development Beyond Aid. The Hague/Maastricht: SNV Netherlands Development Organisation and European Centre for Development Policy Management (ECDPM).
[57] Most approaches are only instrumental and only assess what an institution can deliver, but not what conditions are necessary for an institution to deliver results. Morgan's 5C-Model, in contrast, is a holistic approach that takes into account the latter.
[58] Morgan, P. (2006). The Concept of Capacity. Maastricht: European Centre for Development Policy Management, p. 3.
[59] A further development of the model was published in 2013 (Leslie, G. and Holvoet, N. (2013). Feeling for the Intangible: A Framework for Donor's Monitoring and Evaluation of Capacity Development Interventions. Working Paper 2013.05. Antwerp: Institute of Development Policy and Management). However, this was little received in academic and especially evaluative discourse, so that we continue to refer to the original model from 2006.
[60] Ed. Greijn, H., Hauck, V., Land, A., Ubels, J. (2015). Capacity Development Beyond Aid. The Hague/Maastricht: SNV Netherlands Development Organisation and European Centre for Development Policy Management (ECDPM).
[61] Raetzell, L. (2012). Evaluation of NPT and NICHE. Berlin: Rambøll Management Consulting
[62] Morgan, P. (2006). The Concept of Capacity. Maastricht: European Centre for Development Policy Management, p. 8-19.

The first type of development result is improved capacity itself. The second type is programmatic, in the form of organisation-specific outputs and outcomes. Accordingly, this capability results from the interplay of the other four capabilities (see also figure 7).

Figure 7 shows the interplay of the five capabilities as used by this evaluation.

Figure 7: Five core capacities of the CDI



Source: Syspons, 2021

For the purpose of this final evaluation of the FA4 and based on the specific evaluation interests and questions, this generic model will be adapted and further developed to meet the evaluation needs. More specifically, we will use the 5C model to measure the **effectiveness of the country programmes**.

The Inception Report hereby differs from the proposal in the offer, where the 5 capabilities were broadly linked to all evaluation criteria. The following paragraph describes the added value of using the model to assess the performance of the country outcome-level interventions, i.e., to operationalise capacity development at outcome level.

The added value of using this kind of conceptual framework in evaluations is that capacity development on organisational level can be made **comparable along the five capabilities between organisations** – in the context of this final evaluation, the (heterogenous) country programmes and/or the different types of partner organisations/institutions ITM works with (see Chapter 2). The approach thereby, firstly, accounts for the heterogeneity of the different country programmes. Secondly, it matches the evaluation's summative objectives by allowing to **aggregate individual programmes' results at framework agreement level**. Finally, it allows a detailed assessment of the strengths and weaknesses of the respective organisation/institution, speaking to the evaluation's formative objectives. Evaluation results in this regard are thus expected to be of use and relevance for the (upcoming) interventions of the FA5.

For this purpose and based on the 5C model, Syspons has developed a **Capacity Development Index (CDI)** which has successfully been applied in several development capacity evaluations. It can be used with qualitative and quantitative methods to assess the effectiveness of capacity development measures on organisational level. For this evaluation, the CDI will be used to inform ITM about which capacity have been developed in which specific context (or not) and what are the enabling and hindering factors that have influenced these findings. The CDI also gives the opportunity to have an overall vision (e.g., on programme level) on which capacities are best developed and where are the capacity development activities not reaching the objectives. Based on indicators and descriptors assigned to the five capabilities in the assessment grid (evaluation matrix) the CDI equates quantitative performance scores regarding capabilities/capacity of the different organisations/institutions.

As such, the 5C model will be used **retrospectively** for analytical and evaluative purposes knowing that the country programmes were not systematically developed along the model. We will therefore – following the idea of unique causal chain paths for each of the country interventions (see below) – make sure that respondents, e.g., in the online survey, have the possibility to select themselves which items are appropriate in the respective context. We hence do not assume that all possible outcomes specified by the 5C model, and the overarching programme/framework agreement Theory of Change have been addressed equally by all country-level interventions.

7.1.2 Evaluation Design

While the 5C model (see section 8.1.1) will help us structure the analytical process and come up with quantitative performance scores (i.e., information that is positioned at the outcome level of the ToC), it does not allow to explain *how* effects are achieved. Several evaluation designs can be considered to answer this question (see Stern et al. 2012[63]).

Due to the complexity of this evaluation and the limitations in available data, we chose the generative/mechanisms approach:

1. The *generative/mechanisms approach* (seeking to answer the question: How did the intervention achieve the intended observed impact? What is it in the intervention that made it (not) work to achieve the intended observed impact?) relies on identifying the "causal mechanisms" that generate a desirable effect. In order to use this approach, the existence of one case with good quality data sources is sufficient. The approach is based on an existing theory for the intervention in question, which allows the evaluator to understand the factors that cause the observed effect. As a result, this approach permits an in-depth understanding of the case and its context, proving a detailed explanation of both. Nevertheless, this approach contains a larger risk of bias on behalf of the researcher, since the estimation of the effect and its causality depend in a greater manner on qualitative considerations, rather than quantitative data. This approach is mainly used in "theory-based" and "realist" evaluation designs. This generative/mechanisms approach seems most suitable to be employed as a research design for this evaluation for the following reasons: Firstly, it requires only one case with good quality data sources. It can thus be applied both to the project/outcome and to the programme level. Secondly, it answers the guiding questions of this evaluation on enabling and hindering factors.

In the search of the suiting approach, following evaluation designs were excluded:

2. The *regularity approach* assesses causality depending on the frequency of association between a given cause and an effect (seeking to answer the question: *Which factor causes the observed intended impact of the intervention?*). This means that causality can be verified when several cases that were subjected to the same intervention have the same effects. Since several cases are analysed when using this approach, it is possible to know with certainty whether the intervention has the desirable effect or not. Thus, in order to apply the regularity approach, several interventions in the same context with different implementation designs would be needed to find out which causal factors led to the results. At project/outcome level, this is not given in the case of this evaluation. At programme level we do see different (country level) interventions contributing to the same (programme level) results. However, as these are implemented in diverse contexts, the regularity approach cannot be applied here.
3. The *counterfactual approach* (seeking to answer the question: *How much of a difference did the intervention (or other factors) make in terms of the intended impact?*) compares the impact in a (randomly) selected intervention group as opposed to that in a control group. This is a robust method which avoids several types of bias, most importantly selection bias. On the downside, however, this approach does not focus on the questions "why" or "how" and it is weak at generalising the results of the

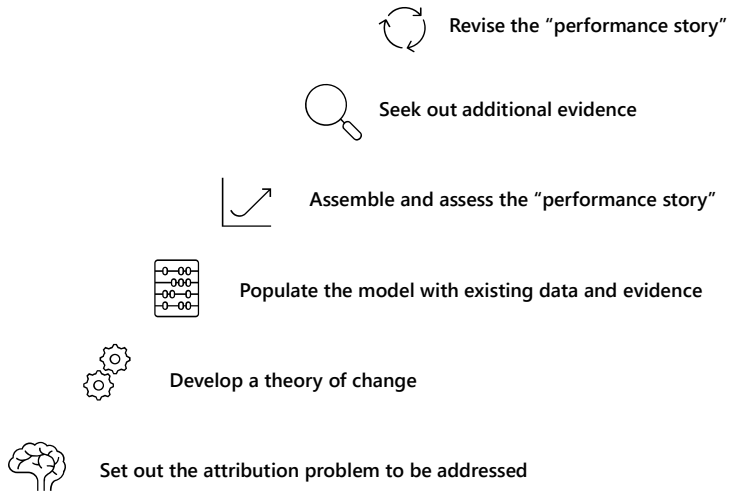
[63] Stern, E. et al. (2012). Broadening the range of designs and methods for impact evaluations. Working Paper 38. London: Department for International Development.

experiment (external validity) since it excludes analysis of the context. With regard to the FA4 final evaluation, no comparison group exists due to the uniqueness of the partner institutions and the respective interventions. While it would be possible to compare interventions or parts thereof to similar interventions in other countries, each country context is highly different in terms of, among others, institutional capacity, developmental needs, and legal framework. Thus, such a comparison would be far from meeting the criteria of a robust research design.

4. The *multiple causation approach* (seeking to answer the question: *Did the intervention (or other factors) make a difference with its intended impact, for whom and under what circumstances?*) generates from the idea that an effect is caused by a combination of causes. In order to evaluate impact using this approach, the evaluators need to have access to a sufficient number of cases that have comparable characteristics. This approach is useful when dealing with cases that have a limited complexity in order to for example identify typologies. Vice versa, it is difficult with this approach to interpret highly complex combinations of causes within a selected case. Given the high level of heterogeneity of the FA4's country-level interventions and the lack of a sufficient number of comparable cases, this approach cannot be applied either.

To implement the generative/mechanisms approach, and to understand the effectiveness of ITM's country programmes, we will apply a **contribution analysis.** This is a concrete analytical approach that assesses whether realised effects can be ascribed to an intervention and which factors acted as drivers or inhibitors to realise the observed effects (Mayne, 2001). This approach was developed by John Mayne to assess to what extent observed changes can be attributed to a project or a programme. The analysis is based on an explicit theory of change or intervention logic and examines the underlying hypotheses as intended in the theory of change. Simplistically, the implementation of a contribution analysis as articulated by John Mayne can be broken down into six steps:

Figure 8: Six steps of the contribution analysis approach



Source: Syspons, 2022

For this final evaluation of the FA4, these (generic) steps will be applied as follows.

1. Set out the attribution problem to be addressed: As described in the terms of reference, the evaluation aims to assess the performance of ITM's country programmes. In the inception phase of the evaluation, further defined and operationalise these intended impacts.

2. Develop a theory of change: In the inception phase of the evaluation, we revised the Theory of Change for the respective ten country outcomes. We also constructed the theory of change of the FA4 in close collaboration with the Steering Committee, and other relevant ITM staff.

3. Populate the model with existing data and evidence: Data to populate the model will be collected through quantitative and qualitative methods. These include an online survey of partner institutions as well as interviews and desk review of existing data (see Chapter 4). At this stage, the evaluation will also be able to collect impactful success stories, key success areas and critical areas for improvement. Therefore, we will use an adapted version of the most significant change approach (MSC). This qualitative evaluation method makes use of storytelling and assumes that certain less visible impacts and unintended results can best be identified through key events or changes experienced by the main stakeholders. The MSC approach will be used for several questions in the evaluation dimensions effectiveness and impact, because in these areas MSC has most potential to reveal hidden and to classify results.

4. Assemble and assess the "performance story": Based on the collected data and the evidence, the performance story of the ITM country programmes, is developed, and the underlying impact hypotheses are reviewed. The preliminary results will be continuously reflected upon together with the ITM Steering Committee to identify areas for further investigation.

5. Seek out additional evidence: The results of the reflections with ITM are used by Syspons to identify avenues for further data collection in areas where findings are inconclusive or explanatory factors have not been identified. For this, new data and evidence to adjust the theory of change will be gathered during the field missions in an iterative process to close data gaps from the online survey.

6. Revise the "performance story": In an iterative process, the performance story of ITM's country programmes, will be refined and elaborated in the final report. To this end, the theory of change may be adjusted. Based on the revised performance story, strengths and weaknesses of the project will be identified and recommendations for future action will be derived.

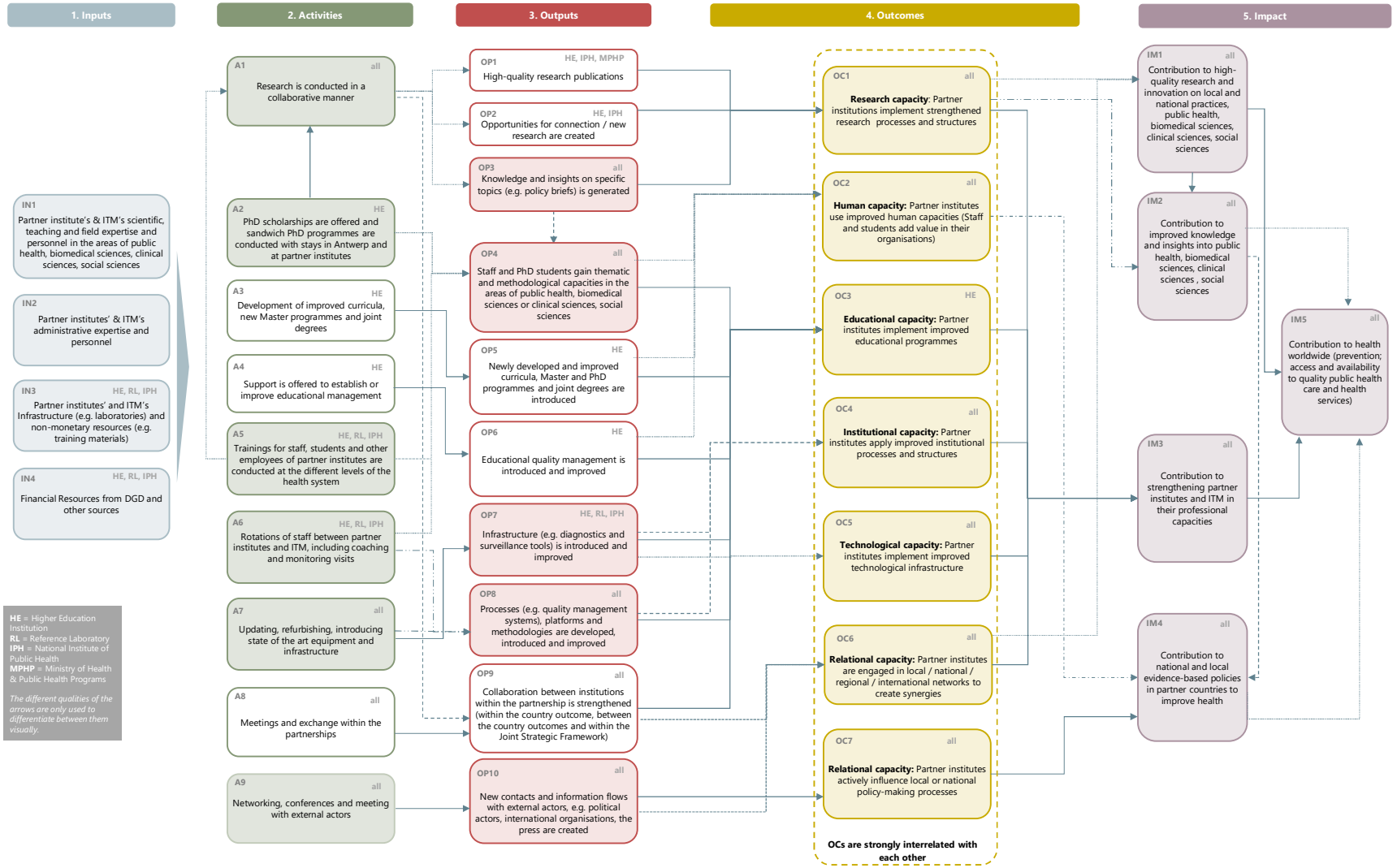
The specific methodological approach which allows to collect a solid data basis for the contribution analysis is presented in the following chapter.

7.2 Evaluation Matrix

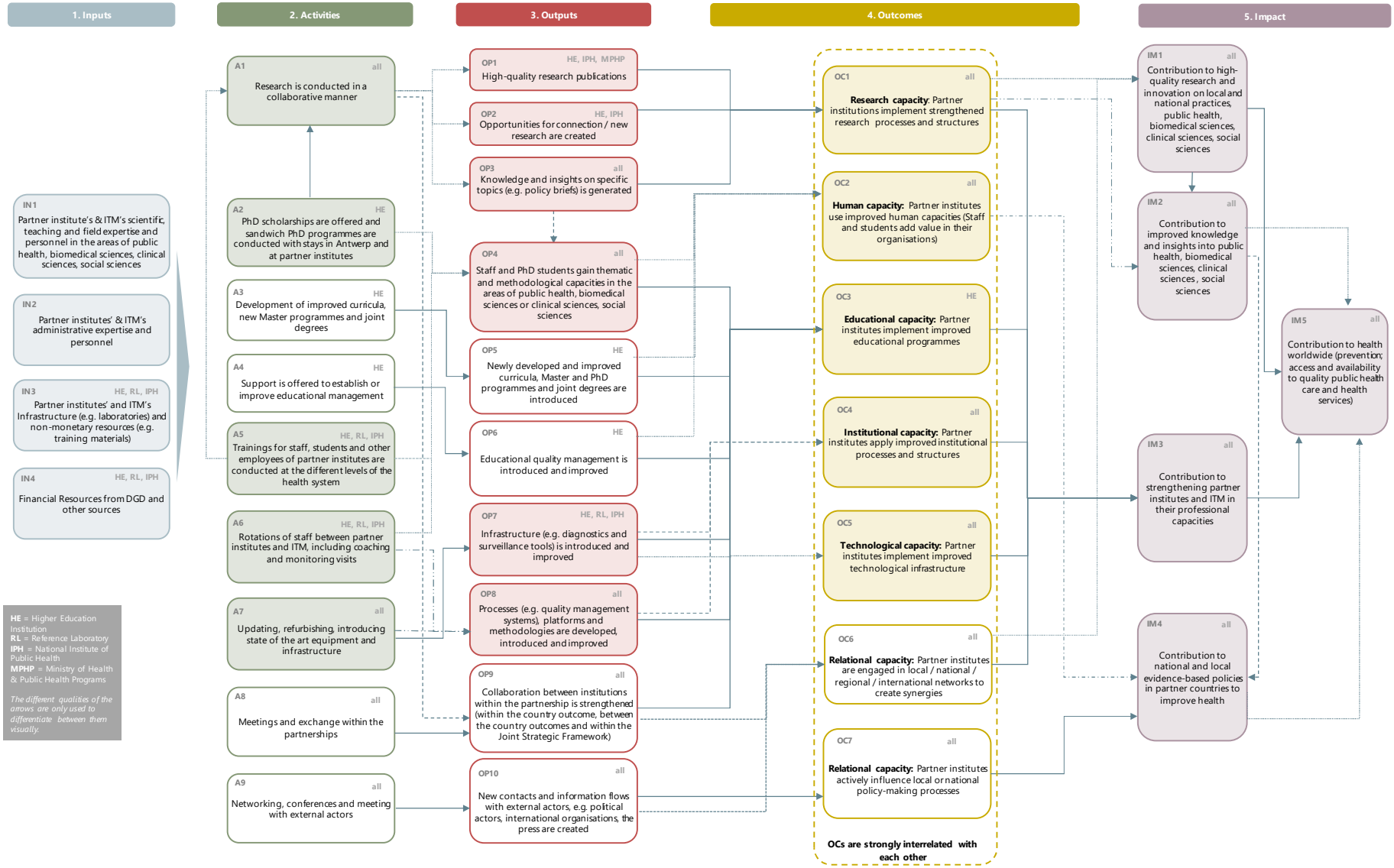
See attached document.

7.3 ToCs per Outcome

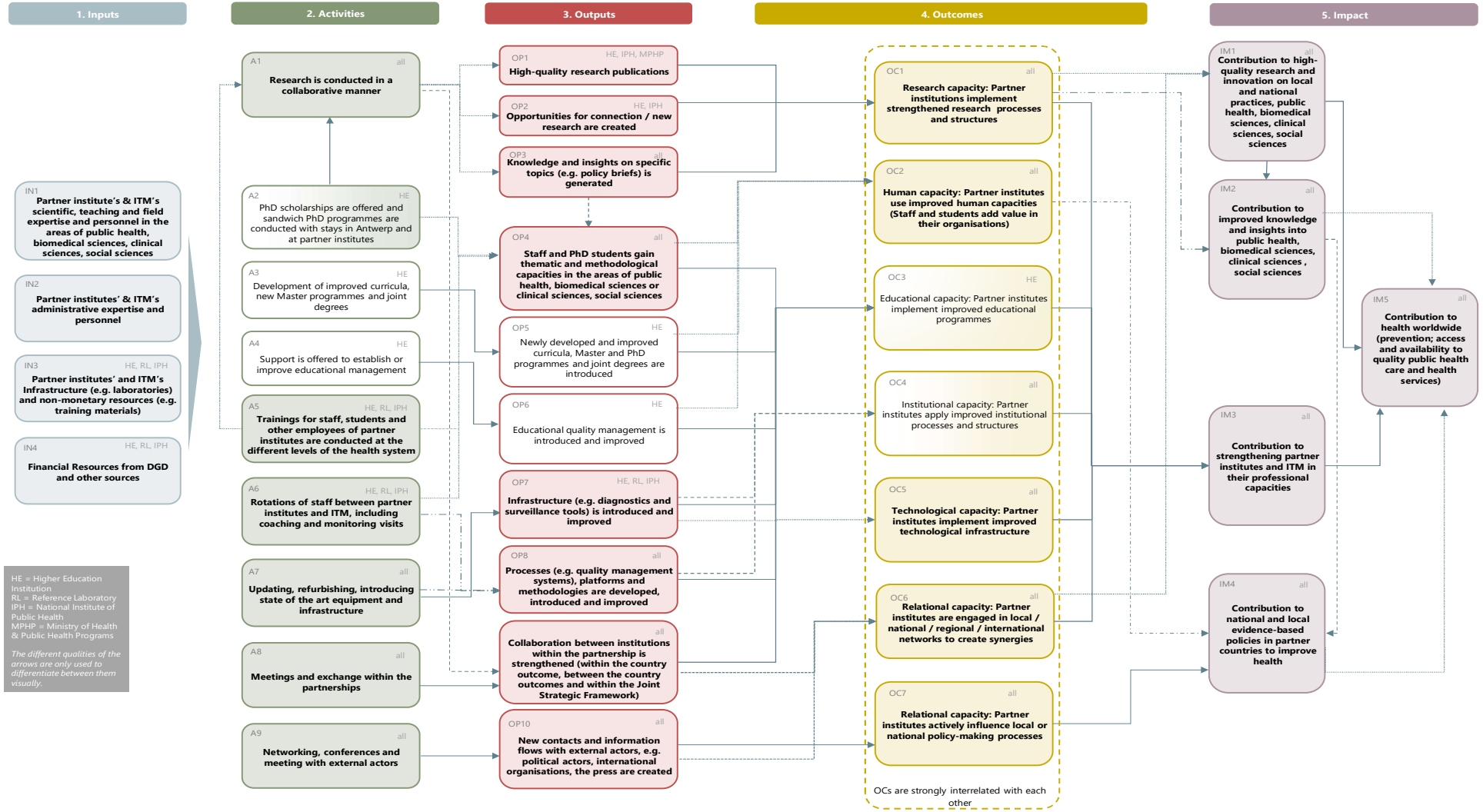
7.3.1 ITM FA4 Theory of Change and impact pathways in the country programme in Benin



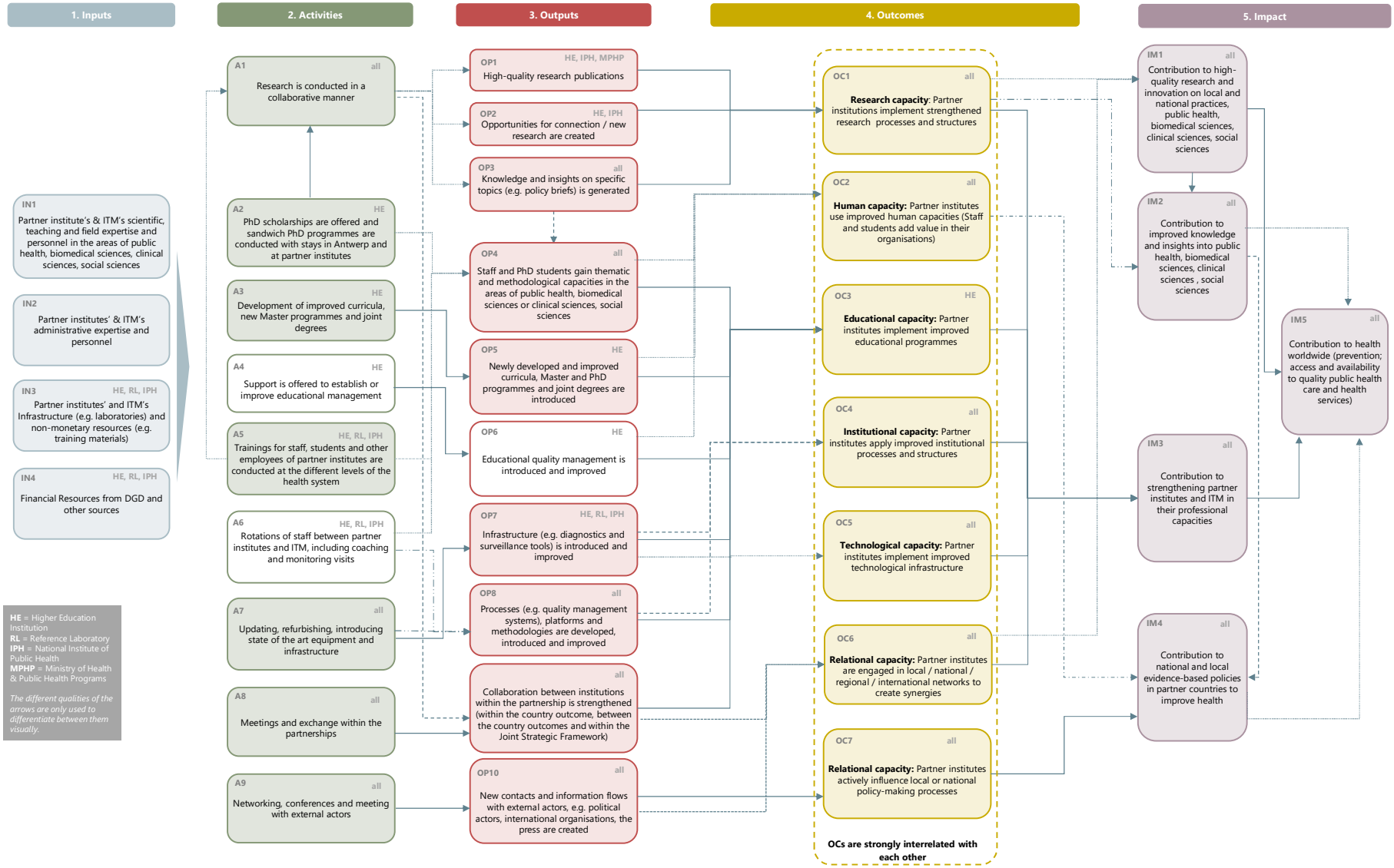
7.3.2 ITM FA4 Theory of Change and impact pathways in the country programme in Burkina Faso



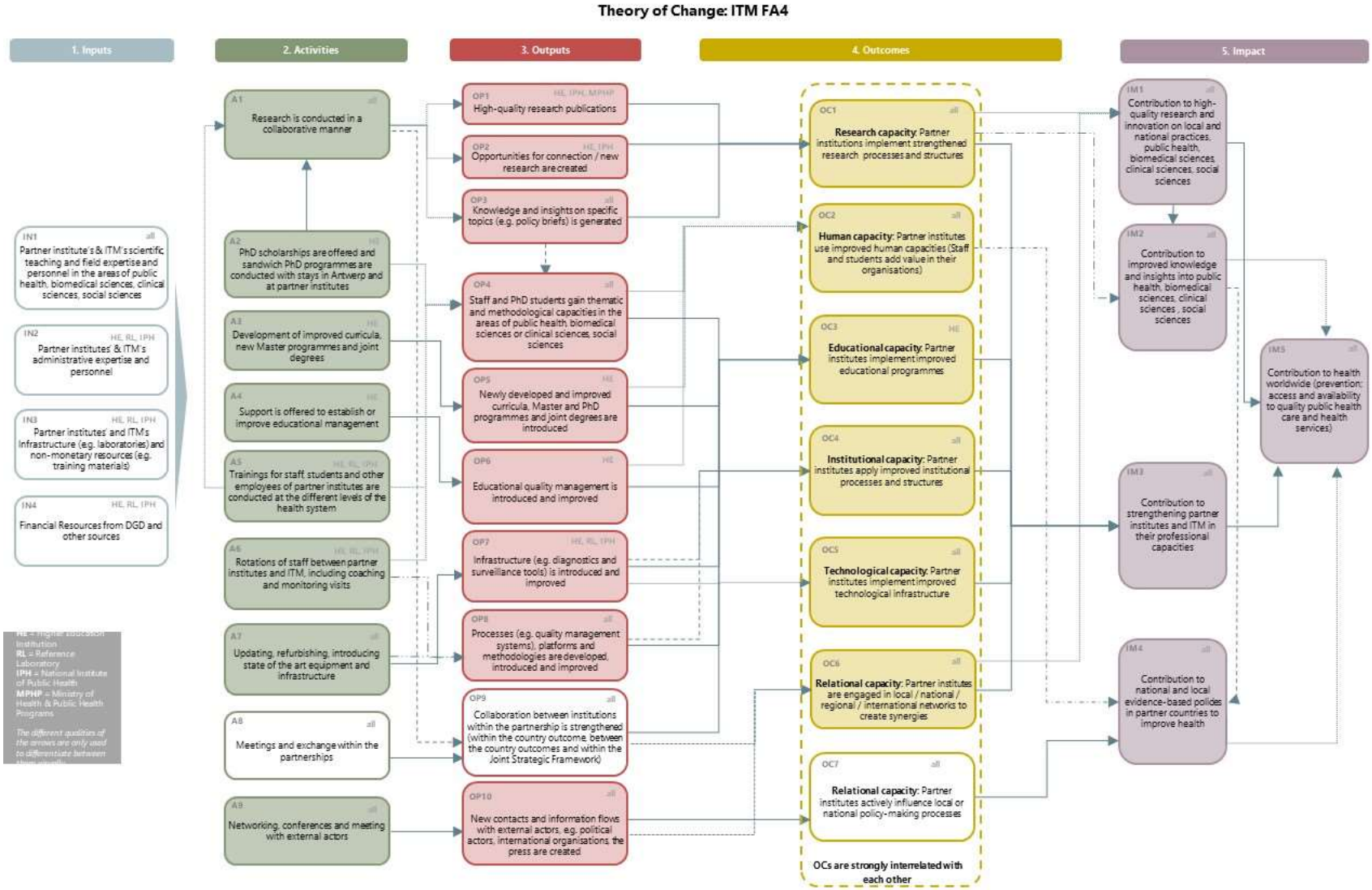
7.3.3 ITM FA4 Theory of Change and impact pathways in the country programme in Cambodia



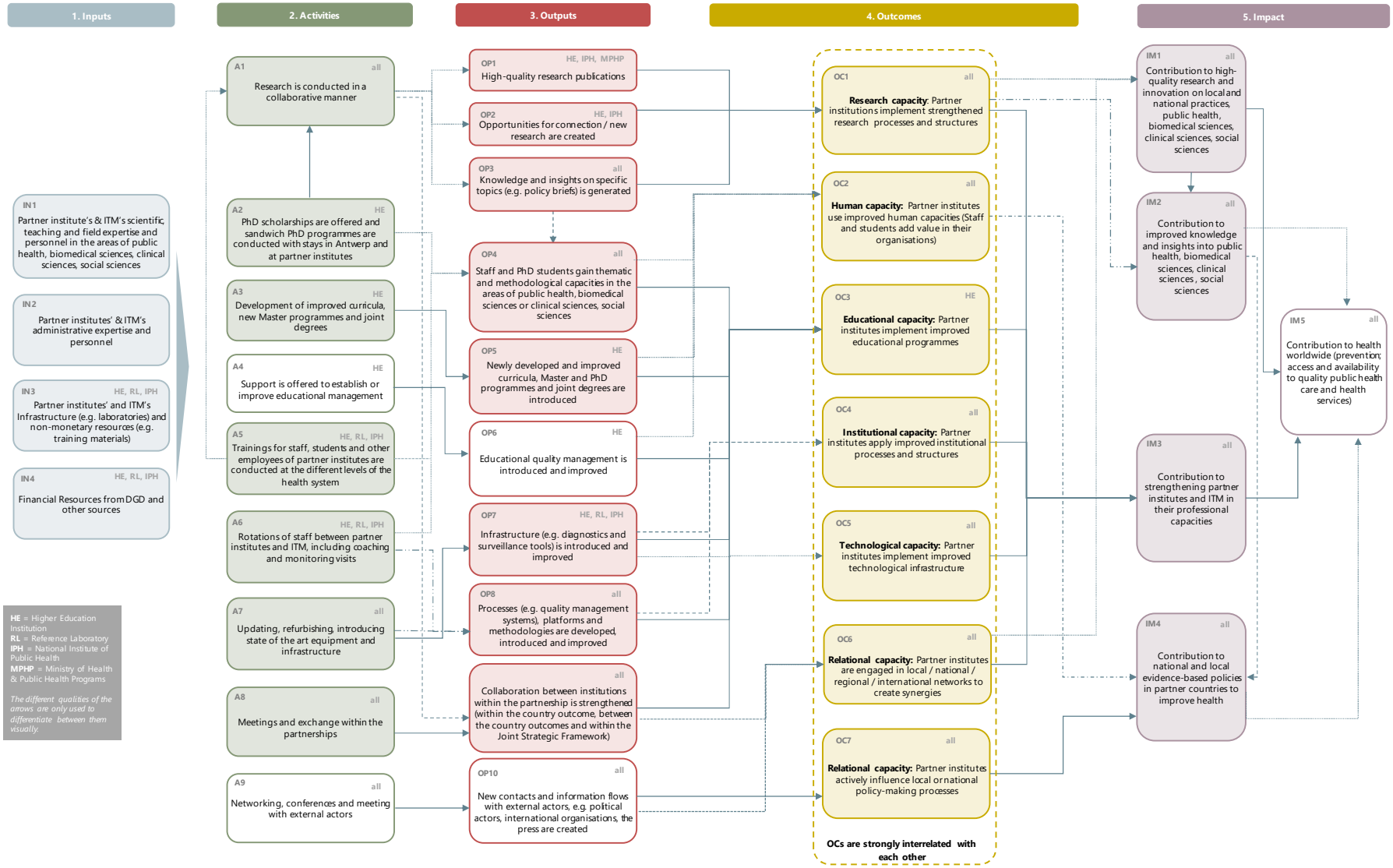
7.3.4 ITM FA4 Theory of Change and impact pathways in the country programme in Cuba



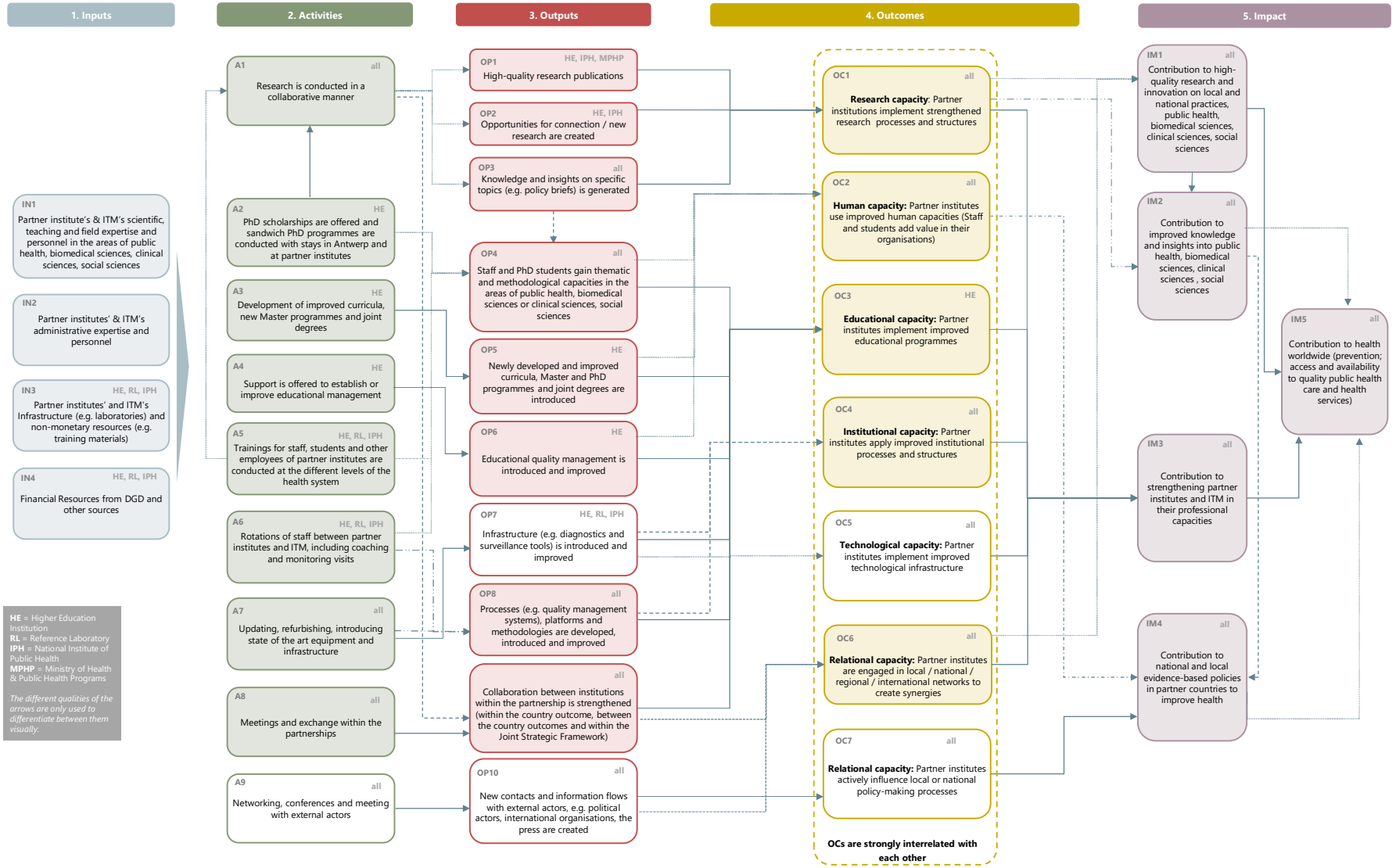
7.3.5 ITM FA4 Theory of Change and impact pathways in the country programme in DRC



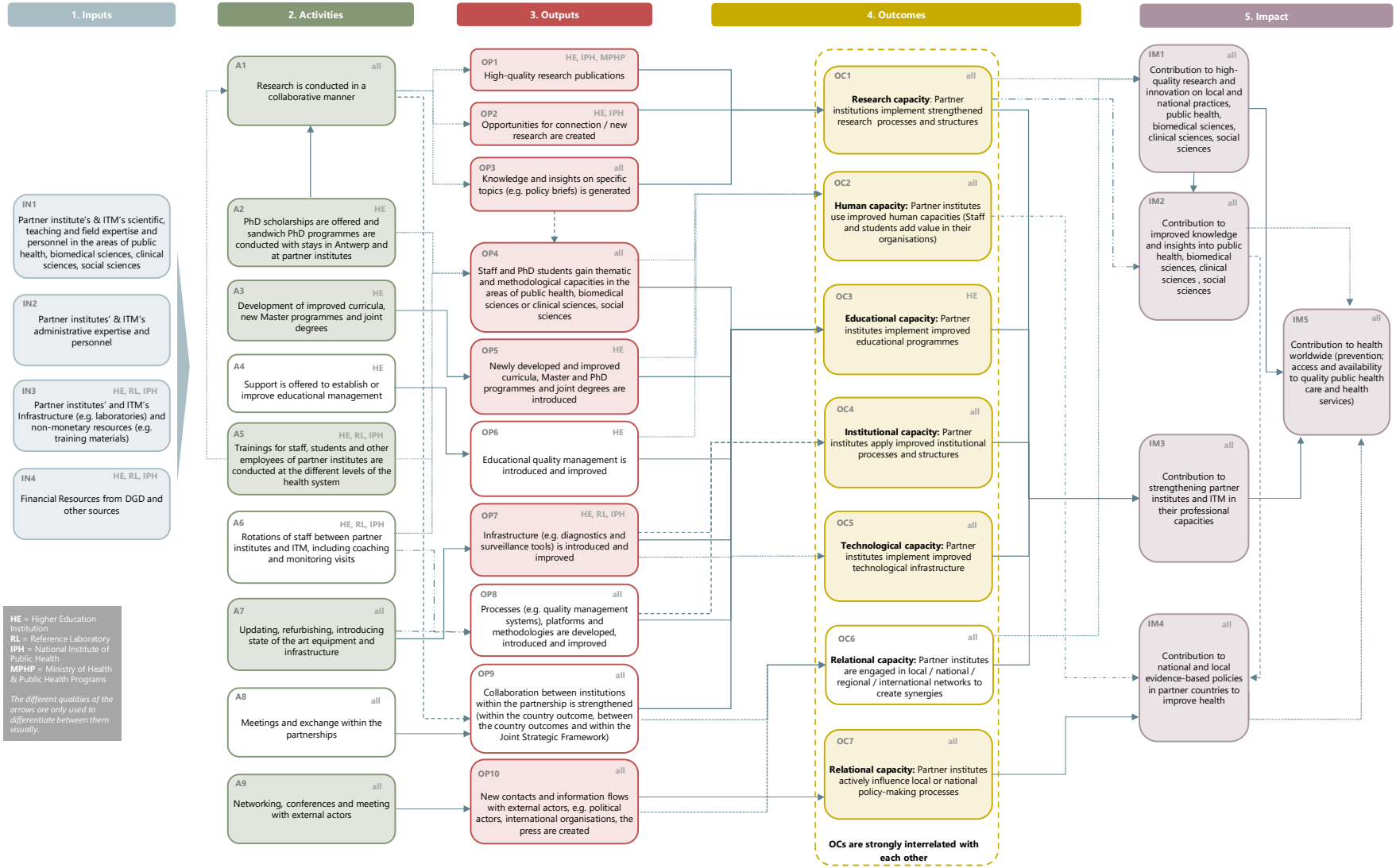
7.3.6 ITM FA4 Theory of Change and impact pathways in the country programme in Ethiopia



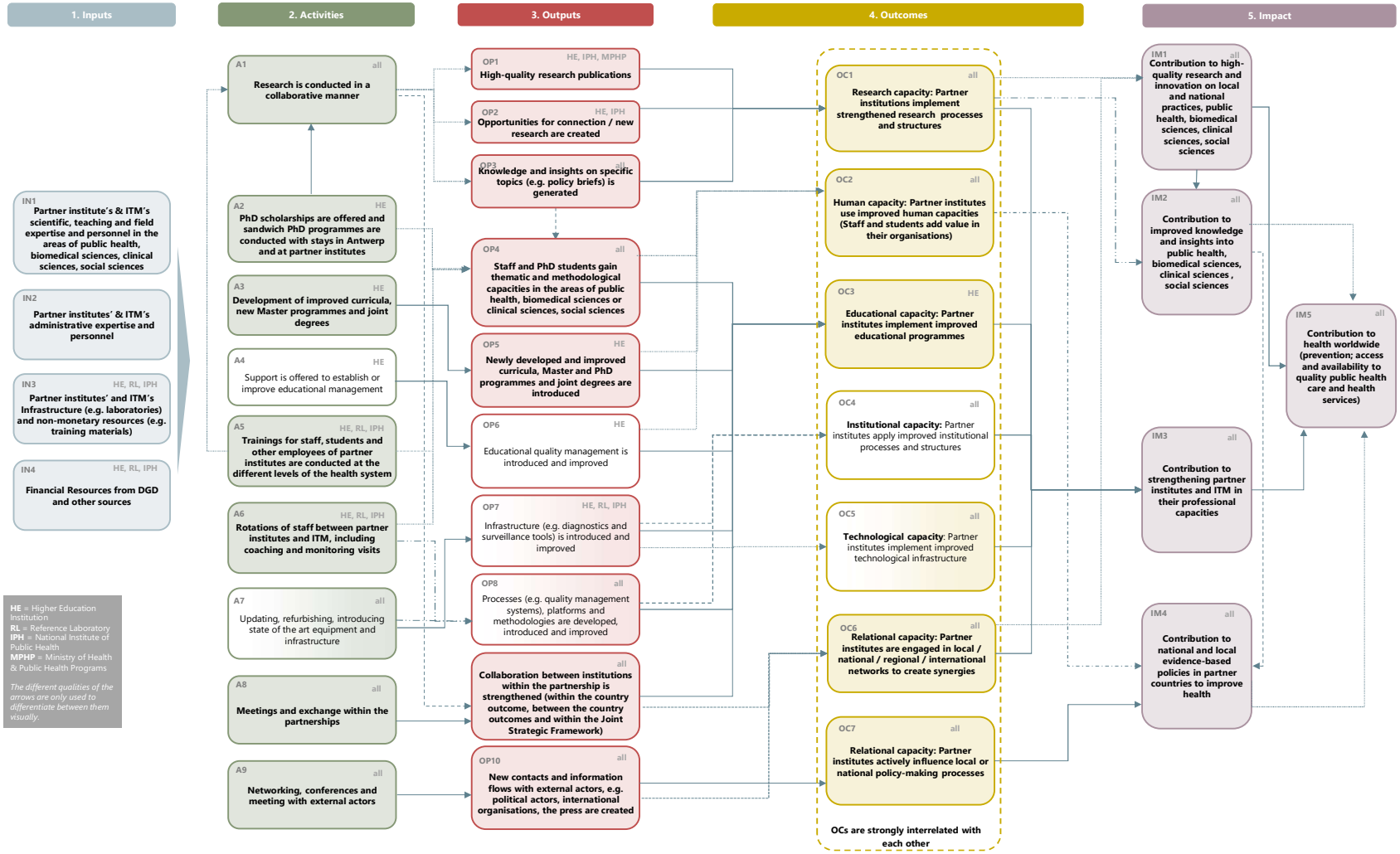
7.3.7 ITM FA4 Theory of Change and impact pathways in the country programme in Guinea



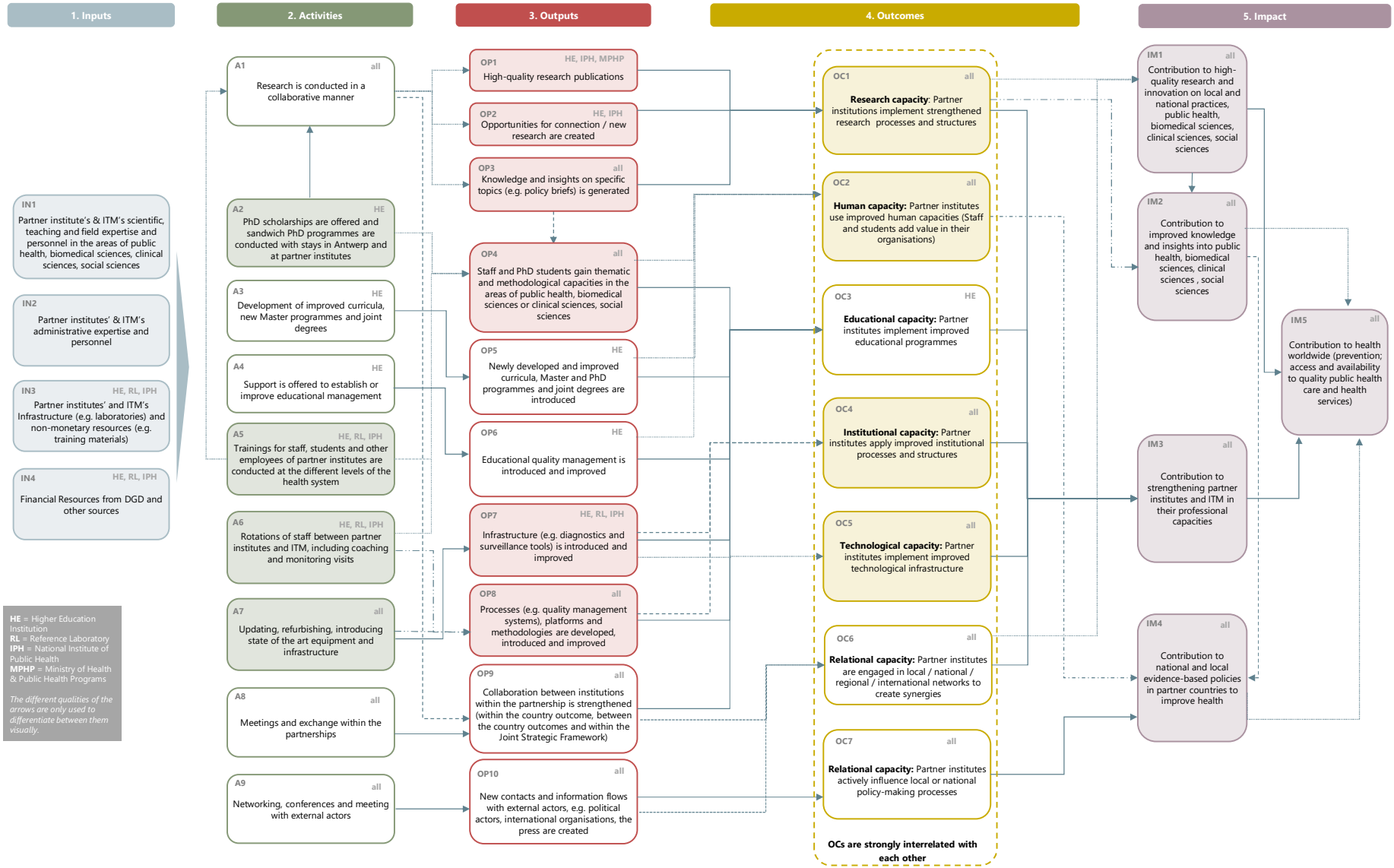
7.3.8 ITM FA4 Theory of Change and impact pathways in the country programme in Peru



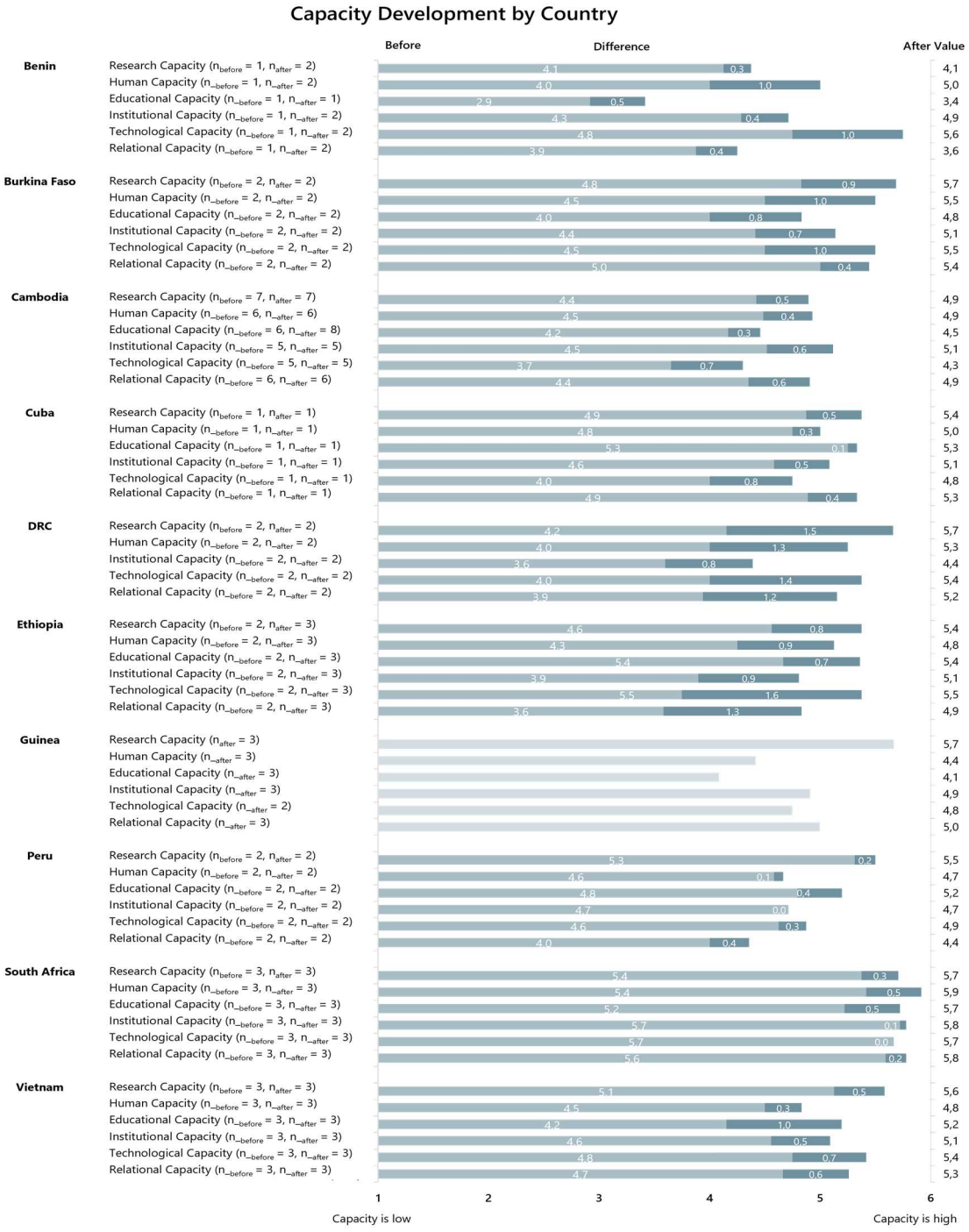
7.3.9 ITM FA4 Theory of Change and impact pathways in the country programme in South Africa



ITM FA4 Theory of Change and impact pathways in the country programme in Vietnam



7.4 Capacities before and after ITM's interventions according to country programmes[64]



[64] **Note on the Methodology:** The participants of the online survey were nominated as key knowledge holders by the respective programme coordinators at the partner institutes. This means that the respective survey participants were able to assess the different capacities and intervention aspects as representatives of their institution. Thus, representativeness of survey analysis results was acquired by the level of knowledge of the surveyed instead of the quantity of survey participants per institution. Originally, two to three key knowledge holders per partner institution were planned to participate, in order to achieve a diversified perspective. The achievement of this aim varied among the country outcomes. Specifically in Guinea, all of the participants joined the partner institutions after 2017 and with that were not able to assess the institutions' capacities before the intervention. Hence, a pre-post comparison for Guinea was not possible in the scope of the online survey. Further information on the methodology and connected limitations is provided in *Section 3 - Methods* of this report.

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