

ANNUAL REPORT 2022

INTERNATIONAL CENTRE FOR ANTIMICROBIAL RESISTANCE SOLUTIONS



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ACKNOWLEDGMENTS

ICARS would like to extend its thanks to all of our partners and collaborators around the world, whose time and support are instrumental to ICARS' ongoing success.

For questions or enquiries, please contact ICARS at contact@icars-global.org

Cover photo: Testing samples at the Laboratory, Georgia, 2022

Back photo: Tilapia farm project site, Vietnam, 2022

To cite the report, please use the following: The International Centre for Antimicrobial Resistance Solutions (2023). ICARS Annual Report 2022.

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2022 YEAR IN REVIEW

In 2022, ICARS matured as an organisation as the seeds sown over the past three years have taken root and started to flourish. After transitioning to an independent organisation in November 2021 and establishing the international Board of Directors, 2022 was a year of significant development for ICARS. As our inception phase draws to a close, many projects are moving on the ground, the first positive results are emerging, our global profile is growing, and our multidimensional network of partners has moved from concept to reality.

We have witnessed an exponential increase in demand for the ICARS model of engagement from Low- and Middle-Income Country (LMIC) ministries which led to several new projects approved across Africa, Asia, Europe, and Latin America. To meet the growing demand, we refined our co-development process to better support LMIC teams from project development through to implementation, and we built an application portal on our website to better guide teams through the process.

In addition, some of our previously approved projects have embarked on the first and second year of implementation. Each project is the result of a dynamic exchange between ICARS, LMICs' ministries, local research institutions and a range of stakeholders – and we have learnt a lot about how best to facilitate interaction between these cross-sectoral teams. In 2022, we also concluded our first project in Colombia in partnership with Porkcolombia and the UK Department of Health and Social Care as part of the Global AMR Innovation Fund (GAMRIF). The project showed that a subsidised diagnostic network is cost-effective in swine production and identified key barriers to its uptake – these findings will inform the fine-tuning of national policy and best practice for farmers in Colombia and beyond.

At ICARS, we believe that our ambitious mission can only be achieved in close partnership and alignment with other key stakeholders, to provide complementarity and avoid duplication of resources. With the launch of a new strategy for 2022-26, and

a clear vision for the next five years, we boosted our outreach efforts and committed more resources to the continuous initiation and development of strategic partnerships with governments and foundations, as well as strengthened our collaborations with civil society organisations, the private sector, other agencies, and international organisations. We have also initiated new collaborations with a range of partners including the School of Public Health at the University of the Western Cape, South Africa and Radboud University Medical Centre, Netherlands. In early 2023, we look forward to kick-starting these two collaborative projects that will create concrete guidelines and facilitate training to support AMR mitigation efforts in LMICs long into the future.

In 2022, we were delighted to welcome, Georgia, India, Kyrgyzstan, Vietnam and Zambia as our first Mission Partners supporting the vision and mission of ICARS and committing to mitigate AMR nationally and throughout their region.

To support our advocacy efforts, ICARS participated in a range of conferences, campaigns, webinars, meetings, and events, wrote features and papers, and raised the profile of our important work both on- and offline. With a focus on showcasing the importance of context-specific, cost-effective, and country-owned AMR solutions, ICARS has put great effort into showcasing our model and advocating for more resources being channelled into LMIC-led initiatives.

We have entered into 2023 with ambitious plans to take ICARS' development even further, and are thrilled to welcome our new Executive Director Dr Sujith J. Chandy in April 2023. Our passionate and dedicated team spanning science, policy, partnerships and operations is set to grow bigger to respond to the rising demand from LMICs and the need to bridge science and policy to tackle AMR.

In this third annual report we are proud to present our key achievements over the past year and explore the wide range of activities we are engaging in across our interconnected strategic pillars.



*HENRIK WEGENER,
Chair, Board of Directors*



*SUJITH J. CHANDY,
Executive Director
(from 1 April 2023)*



*HELLE KRARUP,
Acting Executive Director
(17 November 2021
– 31 March 2023) &
Director of Operations*

ICARS AT A GLANCE

32

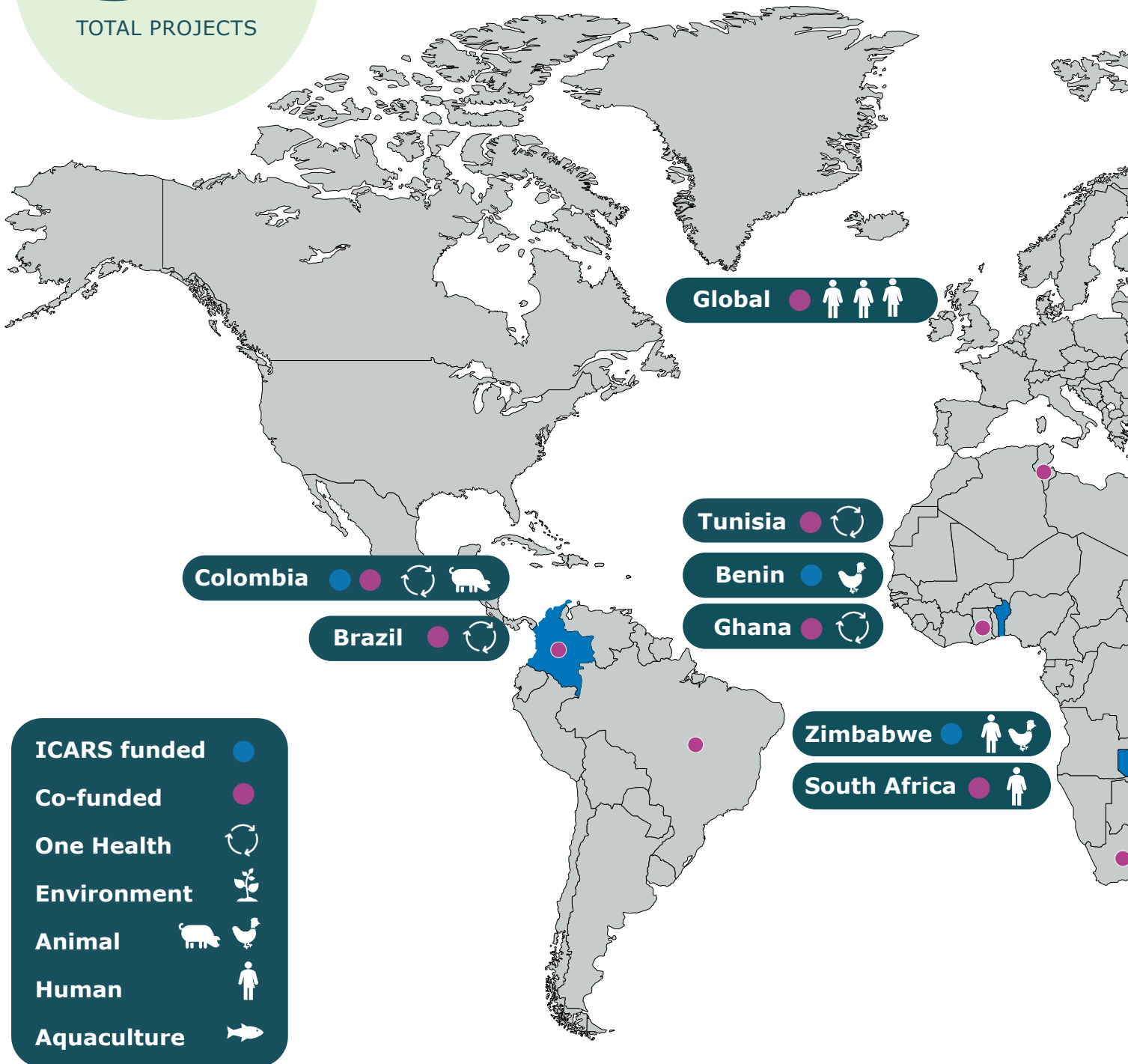
TOTAL PROJECTS

75

PROJECT PARTNERS

16

COUNTRIES



28

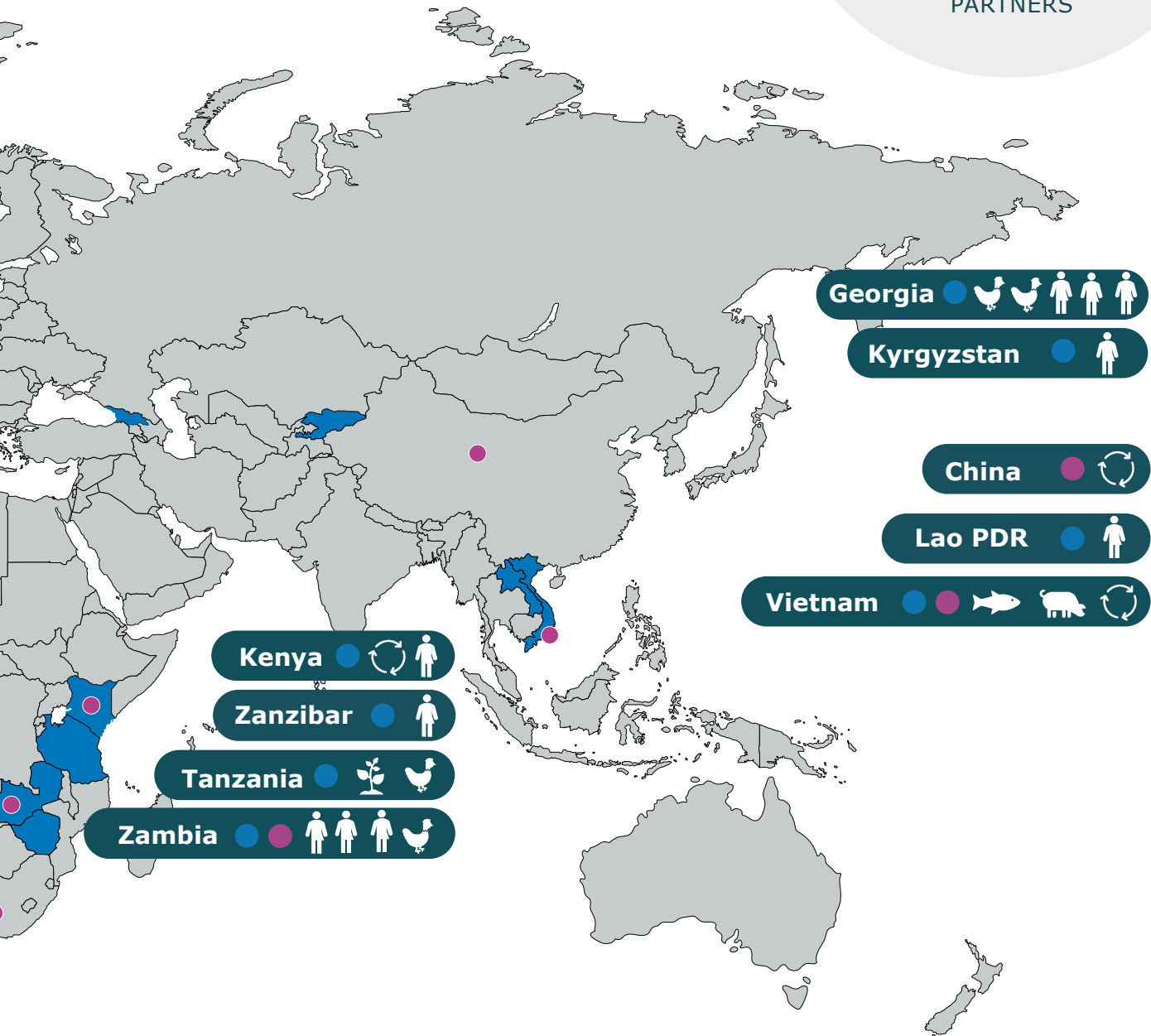
TEAM MEMBERS

15

NATIONALITIES

10.9m

USD FUNDING RECEIVED FROM ALL SOURCES, INCLUDING IN-KIND CONTRIBUTIONS FROM PARTNERS



WHY ICARS?

VISION

We envisage a world where drug-resistant infections no longer pose a threat to the health of humans and animals, the environment, global food security and economic prosperity.

MISSION

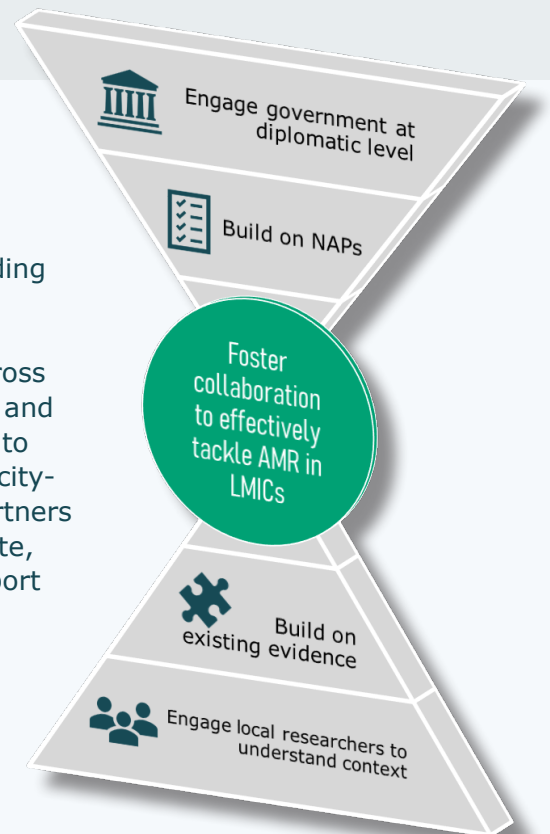
To partner with Low- and Middle-Income Countries' ministries and research institutions to co-develop and test cost-effective, context-specific AMR solutions with potential for scale-up across the One Health spectrum, building on National Action Plans, and informed by intervention and implementation research.

WHY?

Although extensive research has revealed successful solutions for mitigating antimicrobial resistance (AMR), there is a critical gap in translating these evidence-based solutions into action. Many countries have developed AMR NAPs, but in low-resource settings the challenge remains of how to best prioritise and implement solutions to mitigate AMR. ICARS specifically addresses the challenge of AMR NAP implementation in LMICs by its unique value proposition of working with government ministries and in-country research institutions using the intervention and implementation research continuum and ensuring comprehensive stakeholder engagement.

HOW?

Using top-down and bottom-up approaches, ICARS provides funding and technical expertise to co-develop and adapt context-specific, evidence-based, and cost-effective solutions with potential for sustainable scale-up and transferability of findings within and across countries and regions. ICARS works top-down with governments and policymakers and bottom-up with practitioners and stakeholders to identify and address AMR priorities. This is accompanied by capacity-building to deliver projects at a country level. ICARS not only partners with LMIC governments but works together with public and private, national, and regional stakeholders to avoid duplication and support uptake of the evidence generated.



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OUR STRATEGY

The ICARS strategy is based on the following interconnected pillars:

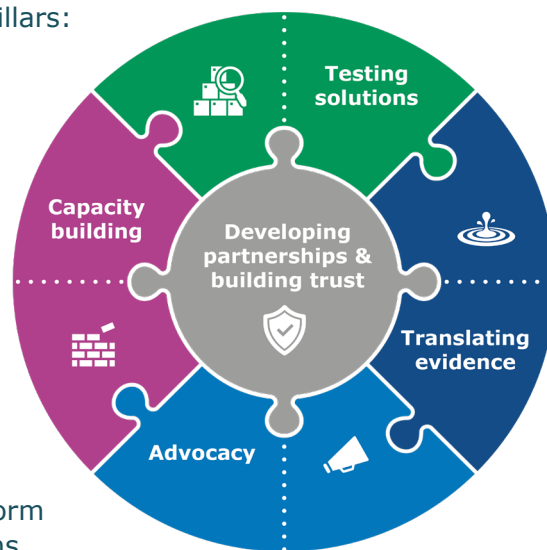
Pillar 1: Develop and test context-specific solutions for AMR mitigation

Pillar 2: Support the translation and uptake of existing evidence and innovation into policies, programmes, and practice

Pillar 3: Advocate for context-specific, country-owned AMR mitigation solutions

Pillar 4: Support targeted capacity and capability building

Cross-cutting pillar: Remain a trustworthy partner and platform for delivering context-specific and country-owned AMR solutions



Kyrgyzstan, 2022: Facilitating appropriate antibiotic use in respiratory tract infections

To demonstrate the broad scope of ICARS' efforts, this report has been structured according to the five pillars in our strategy. In practice, however, much of our work spans multiple pillars and does not exist in isolated, vertical columns. To illustrate the interconnectedness of the pillars we share three cross-cutting case-studies at the end of the report.

To remain a nimble and responsive organisation, it is also critical that we acknowledge and learn from the challenges we face. Throughout the report we reflect on key challenges we encountered in 2022 and steps we have taken to navigate through them.

OUR ACHIEVEMENTS

1 DEVELOP AND TEST CONTEXT-SPECIFIC SOLUTIONS FOR AMR MITIGATION

In partnership with LMICs ministries and national research organisations, ICARS co-develops research projects that test AMR solutions and support countries' AMR NAP implementation. ICARS is involved across the entire project lifespan: from the initial interaction with the relevant ministry to identify an AMR challenge, the co-development of an intervention and/or implementation research project, during the implementation and testing of solutions, and through to the dissemination of evidence and practice for uptake and scale-up. All ICARS projects include behavioural, economic and policy components to enhance proof-of-concept and inform scale-up. ICARS works towards channelling evidence from its projects into LMIC systems, policies, programmes, or practices both within the countries conducting the projects as well as to other countries.

OUTPUT 1.1 PRODUCE NEW EVIDENCE-BASED AND CONTEXT-SPECIFIC SOLUTIONS FOR AMR MITIGATION IN LMICS VIA A PORTFOLIO OF PROJECTS

In 2022 we approved six new projects...



BENIN / 149,988 USD / 2022 - 2023

Reducing the import of antimicrobial resistance through day-old chicks and eggs: an integrative study to support the implementation of a microbiological certification system (MicS)



KENYA / 580,003 USD / 2023 - 2026

Antimicrobial stewardship (AMS) to improve surgical antibiotic prophylaxis (SAP) and AMS in county level hospitals



LAO PDR / 612,380 USD / 2023 - 2026

Interventions to improve antibiotic use in pregnancy, childbirth and children in Lao – an interrupted time series evaluation



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VIETNAM / 631,050 USD / 2023 - 2026



Developing and testing intervention studies to reduce AMU and AMR in intensive aquaculture



ZIMBABWE / 594,925 USD / 2023 - 2026

Piloting messages on AMR among selected communities and stakeholders in Zimbabwe to establish their potential for achieving behaviour change in the AMR response

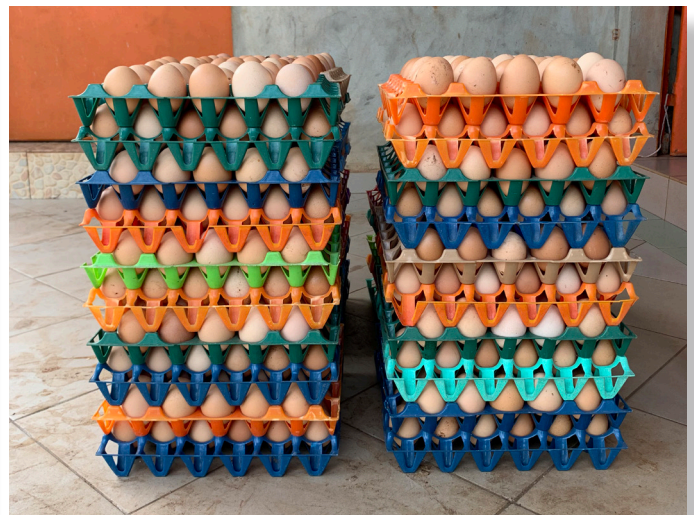


ZIMBABWE / 596,872 USD / 2023 - 2026

Strengthening infection, prevention and control (IPC) and biosecurity practices in peri-urban and rural poultry-keeping households to reduce transmission of zoonotic AMR due to gram-negative bacteria



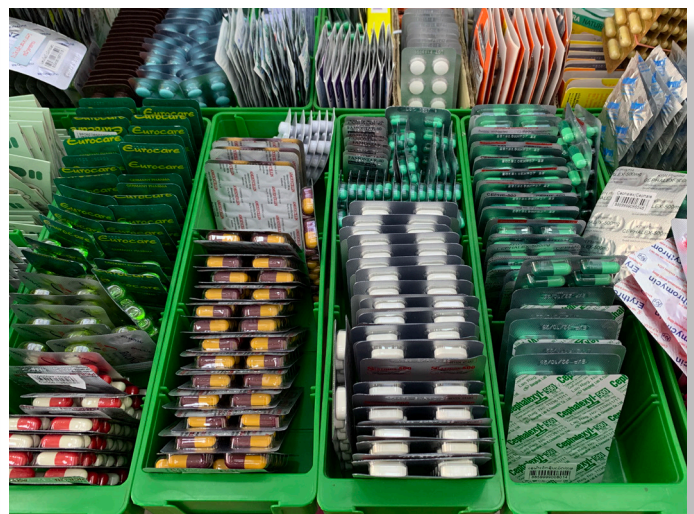
Zimbabwe



Benin



Vietnam



Lao PDR

OUTPUT 1.2 GENERATE SUPPORT FOR THE UPTAKE, IMPLEMENTATION AND SCALE-UP OF SOLUTIONS IN LMICS

...and continued implementation of ten projects

As well as developing new initiatives, we have invested resources and expertise to ensure that projects in their implementation phase have a successful start. One particular focus across many of the projects was on research protocol development and baseline data collection. In October, ICARS advisors hosted a webinar on protocol and survey tool development for animal health teams from Colombia, Georgia, Tanzania, and Zambia. The well-attended participatory session provided training on questionnaires and available tools for poultry projects, and was well received by different project teams who found the cross-country discussions and learnings useful.

COLOMBIA / 548,986 USD / 2022 - 2025



Reducing antimicrobial use through improved provision of colostrum and use of vaccines in weaning pigs in Colombia



GLOBAL / 100,000 USD (plus 50,000 co-funding from IDRC) / 2022 - 2023

Strengthening gender equality and social inclusion in LMICs across the AMR intervention and implementation research continuum



GEORGIA / 499,960 USD / 2021 - 2024

Optimising use of antibiotics for Surgical Antibiotic Prophylaxis (SAP)



Georgia / 524,464 USD / 2022 - 2025

Reducing the use of antibiotic growth promoters (AGPs) on poultry farms



KYRGYZSTAN / 524,260 USD / 2022 - 2025

Facilitating appropriate antibiotic use in respiratory tract infections in children



TANZANIA / 564,699 USD / 2022 - 2025

Mitigating the spread of antimicrobials and resistant microbes through treatment of manure



TANZANIA / 564,637 USD / 2022 - 2025

Optimising vaccination and biosecurity regimes to mitigate AMR in commercial poultry production



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VIETNAM / 605,000 USD / 2021 - 2024

Reduction of colistin use in Vietnamese pig production



ZAMBIA / 559,654 USD / 2022 - 2025

Optimisation of antimicrobial use in bloodstream infections (BSIs) and urinary tract infections (UTIs) in various health sector settings in Zambia



ZAMBIA / 558,168 USD / 2022 - 2025

Combating antimicrobial resistance and antimicrobial residues in the Zambian poultry sector

Pillar 1 reflection: Procurement can be a challenge



A challenge that has generated delays to some of our projects has been aligning project timelines with national guidelines for procurement. ICARS grant agreements stipulate the need to work within national structures and avoid developing processes that cannot be sustained, but following such guidelines can be cumbersome and time-consuming. To address this and mitigate delays as much as possible, we work with country teams to initiate procurement from the moment a grant is awarded. Even so, the first years of implementation have revealed the ongoing challenges of ordering and securing key equipment, particularly when items need to be sourced internationally. This can be frustrating for project teams who are eager to start working.



A farmer administers vaccines, Tanzania



Testing for bacterial infection, Kyrgyzstan

OUR ACHIEVEMENTS

2 SUPPORT THE TRANSLATION AND UPTAKE OF EXISTING EVIDENCE AND INNOVATION INTO POLICIES, PROGRAMMES, AND PRACTICE

While a wealth of tools and methodologies have proved successful in mitigating AMR, such evidence is primarily produced in high-income settings with limited adaptability to LMICs and minimal engagement from practitioners and policymakers. ICARS works to translate existing evidence into action and supports the uptake of innovations and evidence in partnership with LMIC government ministries and other in-country stakeholders. By analysing and reviewing reports of previous efforts and publications from completed research, we assess the suitability of interventions to meet national and regional needs, including cost-effectiveness. Our projects aim to identify enablers and barriers to uptake, build mutual trust between stakeholders, and create the additional evidence needed to close the gap between evidence and its practical implementation in LMICs.

OUTPUT 2.1: IDENTIFY EXISTING EVIDENCE AND ENGAGE SCIENTISTS AND STAKEHOLDERS IN THE DEVELOPMENT OF PROJECTS TO SUPPORT UPTAKE OF EXISTING EVIDENCE IN LMICS

In 2022 we approved two new projects...

Global/South Africa – Responsive Dialogue (Co-funded by Wellcome)

After a competitive Request for Proposals process, ICARS and Wellcome selected the University of the Western Cape, School of Public Health to undertake a new project to develop guidelines to facilitate Responsive Dialogues to tackle AMR in LMIC settings. Drawing on the lessons learnt from Responsive Dialogue pilots in Malawi, Thailand, and Zambia, this newly announced project will build on the Responsive Dialogues Toolkit to develop guidelines and complementary training modules for facilitating Responsive Dialogues on addressing AMR. The purpose of the guidelines is to make the process for facilitating 'Conversation Events' – which are at the core of the Responsive Dialogues approach - clearer, more accessible, streamlined, and relevant to a range of stakeholders in LMIC settings.



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Zanzibar – C-Reactive Protein (CRP) test and antimicrobial stewardship in hospitals for paediatrics

Clinical data from two hospitals in Zanzibar reveal a notable AMR burden among neonates and children with febrile illness and diarrhoea. Although 75% of children were prescribed antibiotics, only a quarter of treatments were justified. The predominant pathogens causing diarrhoea were resistant to commonly used antibiotics, which lead to prolonged hospital stays, morbidity and mortality. The project aims to optimise antibiotic use in admitted neonates and children by achieving a 30% reduction of inappropriate antimicrobial use through compliance with antimicrobial stewardship programmes over three years of implementation, and to develop a standard for future roll-out in all secondary and tertiary hospitals in Zanzibar.

...and continued implementation of an existing project

Zambia – Improving the management of urinary tract infections in women using innovative community engagement approaches

At the start of 2022, the Eden University School of Pharmacy began implementing a project to improve the management of urinary tract infections using innovative community engagement approaches. With co-funding from Wellcome, the project is using the 'Responsive Dialogues' framework and toolkit. The approach aims to address the gap between local realities and policies by facilitating dialogue between community members and discussing solutions that could enable change in attitudes, behaviours, policies, and practices on the use of antimicrobials. Learn more about the project and its interconnectedness with other initiatives in cross-pillar case study 3.



Mtendere community participants conducting a drug bag exercise to identify commonly used antibiotics during the pilot of the Responsive Dialogue project, Lusaka. Photo credit: Jabulani Zimba

OUTPUT 2.2: PARTNER WITH LMIC STAKEHOLDERS ON PROJECTS TO SUPPORT ADAPTATION AND UPTAKE OF SOLUTIONS

...concluded our project led by Porkcolombia and co-funded by GAMRIF

Starting in October 2021, a nine-month project led by Porkcolombia investigated the challenges and enablers for increasing the use of a laboratory network to support disease diagnostics at pig farms in Colombia. Using mixed research methodologies under the framework of implementation research, the multidisciplinary team conducted 75 semi-structured interviews in 39 farms, across 14 regions and gathered 40 stakeholders from 27 farms for focus group discussions. In addition, the team hosted inter-institutional roundtables, and conducted a cost-benefit analysis of the laboratory network. The synthesised data from both the qualitative and quantitative research will be used to support policy development, improve implementation practices, and enhance uptake of the diagnostic network.

...and launched six ICARS co-funded JPIAMR One Health projects



BRAZIL / 295,217 EUR / 2022 - 2025

Microbiota intervention strategies limiting selection and transmission of antibiotic resistance burden (MISTAR)



CHINA / 299,600 EUR / 2022 - 2024

Novel interventions for eliminating mobile AMR genes from human and animal microbiomes (MOB-TARGET)



COLOMBIA / 109,297 EUR / 2022 - 2025

Farm interventions to control antimicrobial resistance (FARM-CARE)



GHANA / 249,908 EUR / 2022 - 2024

Removal of AMR genes and bacteria from wastewater using modular advanced treatment solutions (HOTMATS)



TUNISIA / 270,320 EUR / 2022 - 2025

Interventions to control the dynamics of antimicrobial resistance from chickens through the environment (ENVIRE)



VIETNAM / 500,000 EURO / 2022 - 2025

Decreasing CRE transmission between hospitals, communities & domesticated animals (I-CRECT)



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Pillar 2 reflection: Stakeholder engagement is crucial to AMR uptake



The completed project in Colombia made evident the important role of stakeholder engagement and tailored messaging to position the need for evidence testing and uptake. Establishing dialogues with a broad range of stakeholders, in the case of Colombia across farm personnel levels, can reveal novel information about how different actors operate in the same space. By understanding the different drivers of action, you also come closer to being able to position the issue in a way that people can understand and respond to. In Colombia, positioning a diagnostic network as a critical component of sustainable farming and good herd health management was more important than emphasising the ways in which diagnostics can reduce antimicrobial use, and thus AMR. Stakeholder engagement is a key aspect of the ICARS model, and in future we will ensure that translation of evidence includes the adaptation of messages to meet the needs of local people.



China



Vietnam



Tunisia

OUR ACHIEVEMENTS

3 ADVOCATE FOR CONTEXT-SPECIFIC, COUNTRY-OWNED AMR MITIGATION SOLUTIONS

Aside from engaging with national and international players to identify gaps and scope opportunities to develop and test context-specific AMR solutions, we also work to raise awareness of, and mobilise international commitment for, solutions informed by intervention and implementation research to deliver on AMR NAPs. Through strategic outreach and participation in events and conferences we aim to influence funders and policymakers to prioritise and increase their investment in this area of research, especially in LMICs where the burden of AMR is greatest.

OUTPUT 3.1: ADVOCATE AND HELP MOBILISE POLITICAL COMMITMENT FOR LMIC GOVERNMENTS TO PRIORITISE CONTEXT-SPECIFIC SOLUTIONS INFORMED BY INTERVENTION AND IMPLEMENTATION RESEARCH TO MITIGATE AMR

In 2022, we participated in several high-level events including...

- **The 3rd High-level Ministerial Meeting on AMR in Oman, November 2022** - The event attracted a range of high-level participants including ministers of health, agriculture, animal health, the environment, and finance, as well as policymakers and representatives from the private sector, civil society, research institutions, and multilateral organizations. In the closing session of the conference, ICARS' Acting Executive Director and Director of Operations, Helle Krarup, presented to attendees how ICARS works with Low- and Middle-Income Countries to co-develop context-specific, evidence-based, and sustainable AMR solutions.
- **Symposium on Antimicrobial Resistance, October 2022** - ICARS' Scientific Director, Robert Skov, presented at the event co-hosted by the Danish Embassy in London, the Danish Health Authority, and the Novo Nordisk Foundation. The intersectoral event brought together experts and stakeholders to share experiences and facilitate an international knowledge-exchange on addressing AMR using One Health approaches.
- **World AMR Congress, September 2022** - ICARS joined the annual gathering of more than 1000 stakeholders held in Washington DC. Dr Ghada Zoubiane, Head of Partnerships and Stakeholder Engagement at ICARS, spoke on a panel entitled "Collaboration for access in high impact countries - bringing products and tools to the right patient, place, and problem". She highlighted the need for a sustainable ecosystem of innovation, where both access to antibiotics complemented with stewardship efforts are developed and tested in local settings.



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...organised a regional event to advocate for ICARS and encourage south-south learning

The ReAct Africa and South Centre conference in July, co-funded by ICARS, brought together more than 140 participants from 30 countries. ICARS hosted a session on the importance of sustainable AMR interventions, featuring presentations from the project teams of four research projects in Tanzania and Zambia. The visibility of ICARS at the conference, and the opportunity to present our model of working in partnership with countries, led to four additional African countries including local and regional civil societies reaching out to suggest potential projects that we could co-develop with ministries.

...joined the European Commission funded consortium to establish the One Health AMR European Partnership

The consortium, headed by the Joint Programming Initiative on AMR (JPIAMR) and hosted by the Swedish Research Council, aims to develop the European Partnership's research and innovation priorities for AMR 2025-2032. The consortium will produce annual calls for research proposals and supporting activities funded by the Partnership members and the European Commission. ICARS takes part in two work packages of the consortium. Firstly, on the drafting and iterative consultation processes of the Research and Innovation Objectives, the document that will guide the scientific scope of the calls for proposals. Here, ICARS leads the chapter on "Interventions for Prevention and Mitigation", as well as the cross-cutting issue "From research to uptake: the role of implementation/management science". Secondly, ICARS is a key contributor to the European Partnership's stakeholder engagement and coordination mechanisms, leading the mapping of and engagement strategy towards global initiatives on AMR.



Head of Partnerships and Stakeholder Engagement, Dr. Ghada Zoubiane speaks at the ICARS session on sustainability of AMR interventions at the annual ReAct Africa and South Centre Conference, Lusaka, Zambia

OUTPUT 3.2: ENCOURAGE INVESTMENTS AND INFLUENCE RESEARCH FUNDERS, UN AGENCIES AND OTHER STAKEHOLDERS TO SUPPORT CONTEXT-SPECIFIC SOLUTIONS USING INTERVENTION AND IMPLEMENTATION RESEARCH FOR THE MITIGATION OF AMR

...continued our partnership with the Global AMR R&D Hub

ICARS has worked closely in partnership with the Global AMR R&D Hub to strengthen efforts to translate evidence into action to mitigate AMR in Low- and Middle- Income Countries (LMICs). The collaboration is harnessing the power of the Global AMR R&D Hub's Dynamic Dashboard to explore the current landscape of Operational and Implementation Research within LMICs and connect AMR interventions with concrete outcomes. In doing so, the partners hope to be able to develop a pathway from knowledge to shaping policy, programmes, and practice, as well as providing recommendations to research funders on how best to support intervention and implementation research to tackle AMR in LMICs.

...maintained our secondment to the WHO AMR Division

The quadripartite collaboration between WHO, Food and Agricultural Organization of the United Nations (FAO), World Organization for Animal Health (WOAH) and United Nations Environmental Programme (UNEP) are joining efforts to develop a One Health priority research agenda on AMR.

In 2020 ICARS committed to support this strategic agenda which will guide countries in the design and impactful implementation of One Health AMR National Action Plans. The agenda addresses the key question of how to optimally prevent, control and mitigate AMR across sectors. As part of this collaborative agreement, since February 2021, ICARS' Senior Scientific Advisor, Tine Rikke Jørgensen, has been seconded to the WHO AMR Division. Since joining the team she has coordinated the development of the "One Health Priority Research Agenda on AMR" that will be published by the Quadripartite in 2023.

CROSS-CUTTING OUTPUT 3.1 AND 3.2

...grew our global profile in the virtual space

Through strategic and coordinated efforts, our engaged audiences across ICARS' channels grew substantially in 2022. The number of visitors to our website more than doubled, with 3.6K users from 149 countries. The same trajectory of growth occurred on social media. By the end of 2022, through participation in campaigns, engaging with partners, and posting topical news and resources, ICARS' audiences on Twitter (2912) and LinkedIn (5072) more than tripled to a combined audience of almost 8000 people.



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Pillar 3 reflection: Partnerships take time to build and maintain



Partnerships strengthen our efforts and increase our impact, but they do not form overnight. Building trusting and productive relationships with national, regional, and international partners is a critical component of the ICARS model, and a determining factor in ICARS' long-term sustainability. As a young organisation, we have poured a lot of energy into navigating the AMR landscape and connecting with potential partners to learn about their future initiatives, and together brainstorming possible future collaborations and complimentary agendas. While we have had a lot of success with securing and announcing partnerships, those public-facing projects represent just a small portion of the ongoing conversations we are having with multiple other actors, ministries, and research organisations. With the development of our strategy for 2022-2026 came a more strategic approach to partnership outreach and an increase in human resources to support this work. A further dimension worth reflecting on for pillar 3 is the challenge of communicating complexity, a common hurdle for AMR advocacy. Articulating AMR to a range of stakeholders and cross cutting programmes is a challenging but critical requirement if you are demanding investment or prioritisation. To address this challenge, we have refined our messaging on how and why we do the work we do and developed a range of resources tailored to different audiences to make the case for context-specific AMR solutions.



Helle Krarup at the 3rd High-level Ministerial Meeting on AMR in Oman



Robert Skov and Sabiha Essack at the World One Health Congress, Singapore



Robert Skov at the International Vaccine Institute's symposium on AMR, Infectious Disease and Vaccine Development, Seoul



World AMR Congress, Washington

OUR ACHIEVEMENTS

4 SUPPORT TARGETED CAPACITY AND CAPABILITY BUILDING

Capacity and capability building is essential to the process of creating a critical mass of governments, central agencies, and research personnel equipped with the knowledge, skills, and competencies to implement AMR solutions that advance NAP implementation. Under this pillar, ICARS facilitates capacity and capability building of project teams including LMIC policymakers, champions, prescribers, dispensers, consumers, and users of antimicrobials, amongst others, through relevant training and engagement as well as strengthening of human, veterinary and environmental health systems to address AMR.

OUTPUT 4.1: PROVIDE TRAINING AND SHARE KNOWLEDGE ON BEST PRACTICES TO LOCAL RESEARCHERS AND POLICYMAKERS IN PARTNER COUNTRIES TO SUPPORT NAP IMPLEMENTATION THROUGH INTERVENTION AND IMPLEMENTATION RESEARCH

In 2022, we launched a partnership with Radboud University Medical Center, Nijmegen, the Netherlands...

The partnership, marked via a joint Memorandum of Understanding, aims to create synergies, and add value to existing efforts to sustainably mitigate AMR in LMICs. Our first collaborative project, set to start in 2023, aligns with our shared recognition of the need for Antimicrobial Stewardship Programme (ASP) implementation-oriented support for LMICs. Together we have identified that the Dutch AMS Masterclass & SPICE expert consultancy developed and delivered by Radboud UMC is an important resource that can assist in changing behaviour and practice in human use of antimicrobials and help build national capacity for expanding and maintaining antimicrobial stewardship programmes. The programme will be adapted to different LMIC contexts, together with experts from ICARS and partner countries.

...co-funded a Training of Trainers (ToT) lab course for project teams

Individuals from the International Livestock Research Institute (ILRI) in Kenya, and the National Centre for Disease Control in Georgia, were funded via ICARS' projects to attend training at the European Committee on Antimicrobial Susceptibility Testing (EUCAST) Laboratory in Växjö, Sweden. The AST course, co-funded by ICARS, provides a valuable opportunity to bring people together to exchange knowledge and skills, and to build the capacity of attendees to later deliver the training within their own country settings. The course in June was later followed up with a workshop held at ILRI in November. An open-access webinar series has also been developed, which is hosted online and available to all.



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...joined AMR leaders in the lab to learn about AMR testing and interpretation

ICARS team members from diverse professional backgrounds participated in an introductory session on AMR testing and interpretation at the University of Copenhagen. The session brought people who work on AMR at the policy level in LMICs closer to the procedures and technical challenges of assessing samples for AMR. For ICARS team members the course provided hands-on learning to better understand the different techniques to provide better technical support to project teams.

...developed a Massive Open Online Course (MOOC) in partnership with the British Society of Antimicrobial Chemotherapy

The course on antimicrobial stewardship for Surgical Antibiotic Prophylaxis (SAP) includes a general module (launched December 2022) and will feature two further modules adapted to the Georgian context. These specific modules in the MOOC will support the implementation of our existing stewardship project in Georgia (see cross-pillar case study 1). By creating teaching materials that can be accessed by health care professionals involved in the project, and others working in hospitals all over the country, the e-learning tool will increase awareness on antimicrobial stewardship and share procedures for setting up stewardship for SAP in the Georgian context. In the future, we hope to adapt the tools for use in other low resource settings.



Dr. Kristina Osbjer, ICARS Veterinary Advisor, participates in the AMR testing and interpretation training at the University of Copenhagen.

OUTPUT 4.2: STRENGTHEN HUMAN, VETERINARY, AND ENVIRONMENTAL HEALTH SYSTEMS' CAPACITY TO DELIVER ON ICARS PROJECTS IN PARTNERSHIP WITH LMICS

In 2022, we continued implementation of five capacity building projects



GEORGIA / 73,855 USD / 2022 - 2024

Use of MALDI-TOF and Rapid Antimicrobial Susceptibility Testing to manage bloodstream infections*



GEORGIA / 331,203 USD / 2022 - 2024

Strengthening Laboratory Capacity in Georgia using a MALDI-TOF MS platform*



GEORGIA / 28,535 USD / 2022 - 2023

Antibiotic residue testing in food and animal products (SLA Georgia with FVST Denmark)



KENYA / 168,586 USD / 2021 - 2023

Establishing a Center of Excellence for Antimicrobial Susceptibility Testing



ZAMBIA / 219,908 USD / 2021 - 2023

Supporting National Action Plans on AMR in Africa through contextualised tools for implementation research

**Currently on hold due to procurement issues*

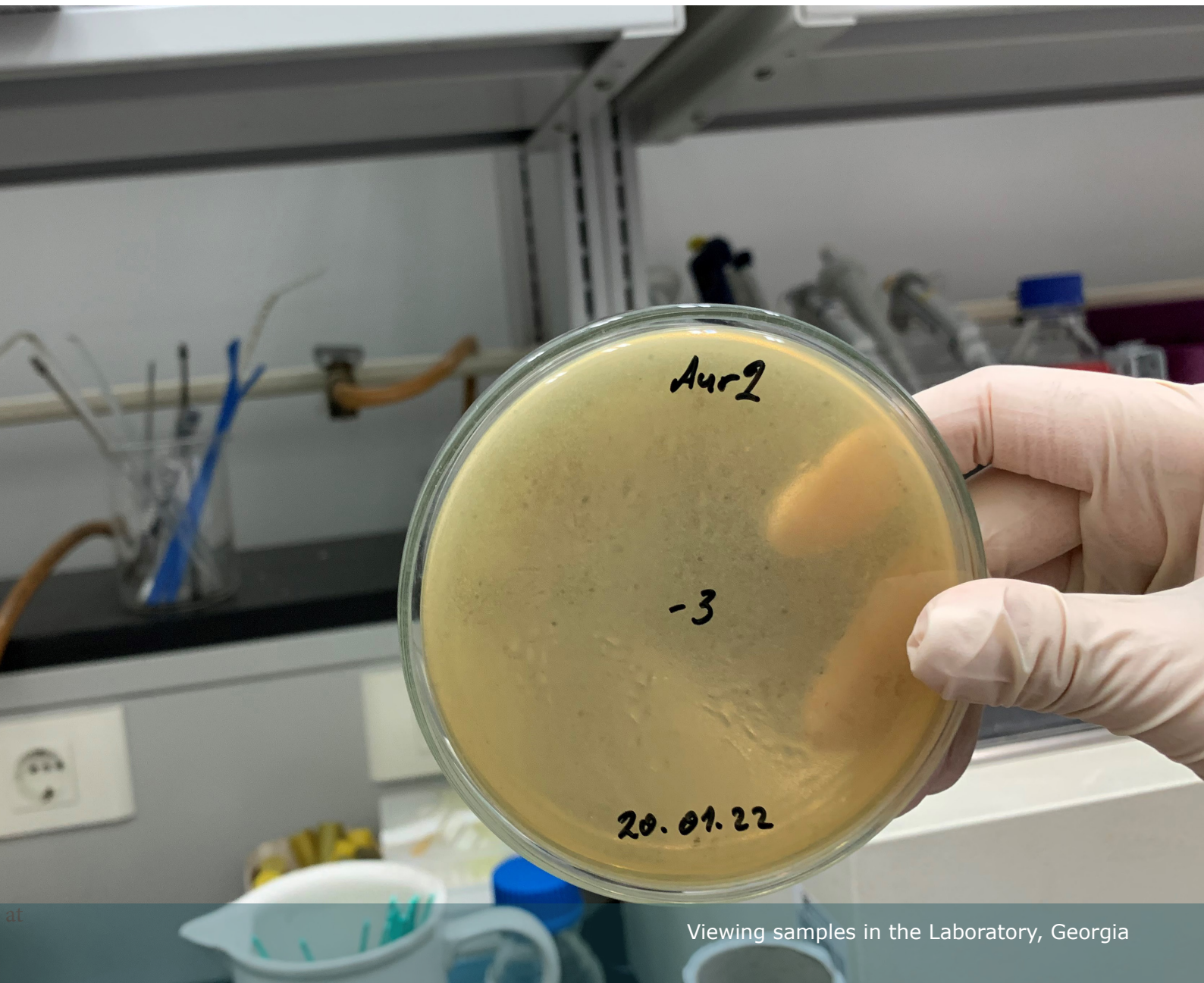


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Pillar 4 reflection: Implementation capacity



Many of the projects that ICARS is supporting draw on a variety of skills and disciplines within the country to meet the intervention and implementation research objectives. For such multidisciplinary challenges, in-country expertise is not always available, or can be challenging to bring into a project already underway. For example, finding local health economists available to support projects has been challenging in multiple projects. To address this challenge, we hosted a global open call for experts to join an economics roster to enable us to quickly identify relevant and previously vetted experts for this subject. We have also begun revising our Terms of Reference for project teams to make clearer the required composition of skills required for the different roles across teams at the onset of a project.



Viewing samples in the Laboratory, Georgia

OUR ACHIEVEMENTS



CROSS
CUTTING
PILLAR

A TRUSTWORTHY PARTNER AND PLATFORM FOR DELIVERING CONTEXT-SPECIFIC AND COUNTRY-OWNED AMR SOLUTIONS

The purpose of this crosscutting pillar is to ensure that ICARS operates as a well-functioning organisation that can attract and retain the best of talent and is considered trustworthy by its partners and worthy of investment by donors.

With the transition to an independent organisation in 2021, including the establishment of an international Board of Directors, important bricks in the organisational structure were laid. In 2022 we further strengthened our governance as we developed and implemented additional policies and procedures, recruited our incoming Executive Director, and expanded our team across science, partnership, and operations. We also launched our strategy towards 2026, welcomed Mission Partners to ICARS and continued our efforts to expand our partner base with additional Strategic Funding Partners and Funding Partners. The Board of Directors has been instrumental throughout these efforts as it has brought a wealth of knowledge and experience.

OUTPUT X.1. OPERATE AS A WELL-FUNCTIONING ORGANISATION WORKING AT AN INTERNATIONAL LEVEL, WITH THE ABILITY TO ATTRACT AND RETAIN THE BEST OF TALENT WHILE MAINTAINING AN AGILE STRUCTURE SEEKING PARTNERSHIPS WITH A RANGE OF STAKEHOLDERS.

In 2022, we launched our strategy for 2022-2026...

In August we launched our first official strategy that will run until 2026. The strategy builds on the interconnected pillars that have guided our work since ICARS' inception, draws on the lessons learnt, and projects ICARS into the future with a roadmap detailing our planned activities per pillar.

.....recruited our incoming Executive Director

In November 2022 we had the pleasure of announcing Dr Sujith J Chandy as our incoming Executive Director. As the Executive Director, he leads ICARS' further development and expansion with a stronger team spanning across science, partnerships and operations and work closely with the Board of Directors. He brings with him a wealth of experience and a clear vision for ICARS' future. Sujith joined ICARS on 1 April 2023.



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...ensured a well-functioning Board of Directors

Despite COVID-19 limiting the ability to meet in person the Board held five online meetings with productive discussions led by the Chair, Henrik Wegener. In April 2023 the Board will meet in person and visit ICARS' headquarters in Copenhagen for the first time. We are pleased that the Board evaluation for 2022 emphasized respectful and productive dynamics, and that our Board members consider themselves both equipped and motivated to steer the strategic development of ICARS. The evaluation also identified potential areas for improvement, such as additional mechanisms to monitor and evaluate the performance of ICARS, which we look forward to exploring further in 2023.

...further developed our monitoring and evaluation (M&E) processes

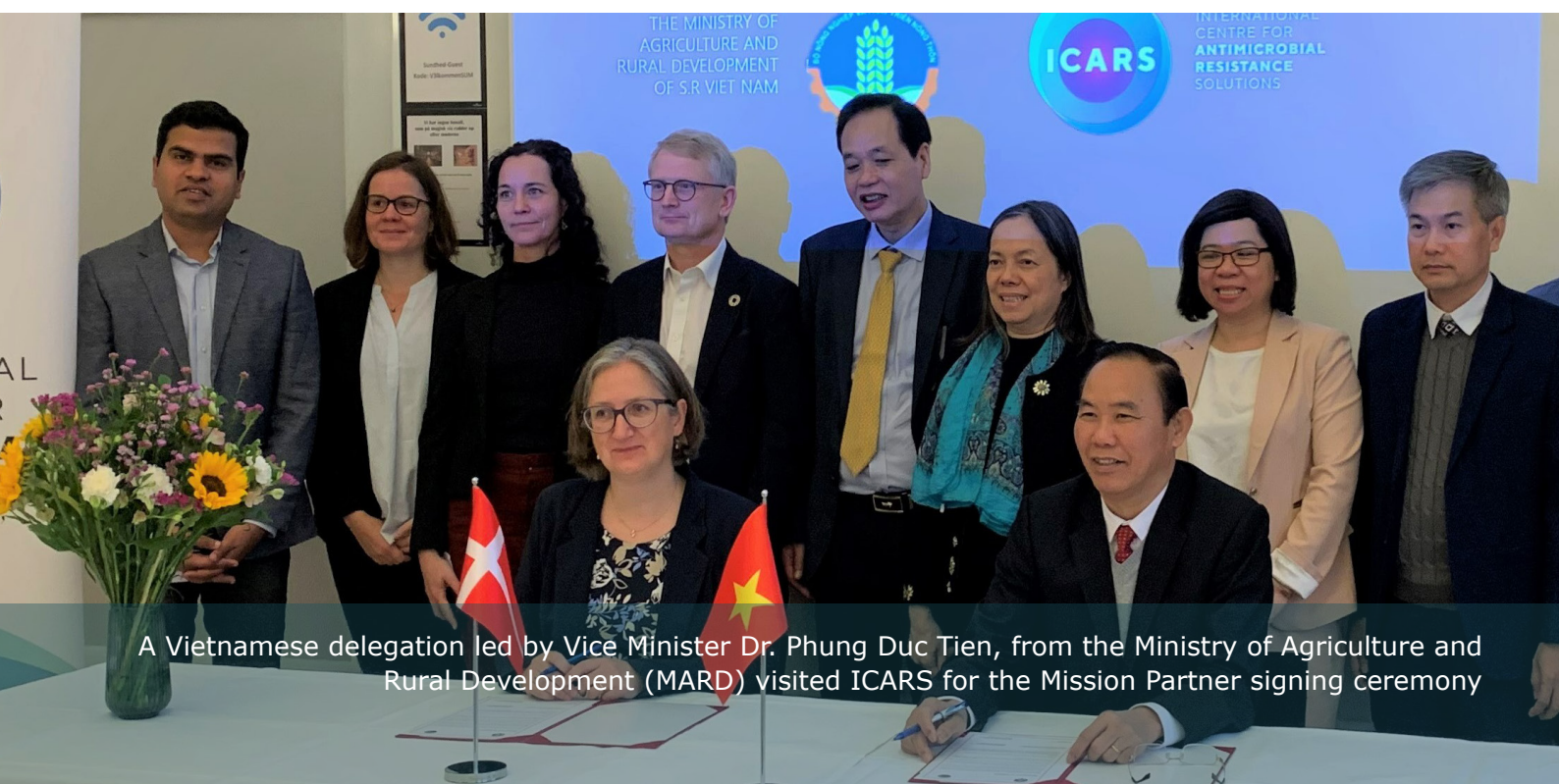
Throughout 2022, we have worked on implementing and further developing our M&E setup. All funded projects are required to report on project progress and project spending on a quarterly basis. The reporting is aimed at sharing and documenting information about project progress, possible challenges and risks, and ways to overcome these. On this basis, we assess progress against set plans and objectives and if satisfactory disburse further project funding.

...expanded the ICARS Team

To meet the increasing interest from LMICs to partner with ICARS, in 2022 we expanded the ICARS Team with four new members across science and operations. In total, ICARS now has a team of 28 dedicated people with 15 different nationalities. In 2023 we expect to continue to grow as we extend our portfolio of partnerships and associated projects and activities.

...extended the ICARS family with five Mission Partners

To facilitate even closer and more strategic collaboration with our country partners beyond specific research projects, in 2022 we welcomed Georgia, India, Kyrgyzstan, Vietnam and Zambia as ICARS' first Mission Partners. As Mission Partners countries not only join as a trusted partner, but a network of like-minded countries committed to mitigating AMR. In 2023 we look forward to extending the network with more of our close country partners, and to further activate it to facilitate cross-regional learning and sharing of perspectives on the further development of ICARS.



A Vietnamese delegation led by Vice Minister Dr. Phung Duc Tien, from the Ministry of Agriculture and Rural Development (MARD) visited ICARS for the Mission Partner signing ceremony

OUTPUT X.2. ENSURE THAT ICARS FULFILS A NICHE GAP IN AMR MITIGATION WORTHY OF INVESTMENT BY DONORS

In 2022 we attracted external funding from key partners...

In 2022, the majority of ICARS' operations and projects were funded by the Government of Denmark, representing core funding amounting to DKK 60m. In addition to this core funding, ICARS secured 15.82m DKK in funding from other donors, representing the ear-marked funding for specific projects and in-kind contributions that ICARS' partners made available for the implementation of projects and other collaborative activities with ICARS. See Note 1 in the financial report for more information.

...reinforced our collaboration with the Danish government

While acting as an independent organisation it is important for us to ensure continued close collaboration with the Danish government. As the initiator of ICARS and host country the Danish government continues to play an important role in supporting our goal of attracting countries, organisations, and foundations as Strategic Funding Partners and Funding Partners. This includes the Danish embassies which provide valuable support in our efforts to build relationships with current and prospective partner countries. To facilitate further action and coordination, in 2022 we established an Interministerial Coordination Committee composed of senior ministry representatives as well as an operational working group.

Cross-cutting pillar reflection: Understanding and mitigating risks



Like every organisation, ICARS faces a number of risks and is committed to manage risks proactively at all levels. To avoid risks having a negative impact on the realisation of our mission, an important and integrated part of our daily work is to anticipate and manage risks in a manner that is transparent, inclusive, and fit for purpose. This approach applies both to the management of risks faced by the projects we support and at the organisational level where policies and procedures are in place to ensure that risks are anticipated, assessed, and responded to.



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CROSS-PILLAR CASE STUDY 1

CROSS-COUNTRY LAB STRENGTHENING AND CAPACITY BUILDING

One of our first projects which began implementation in Autumn 2021, aims to optimise the use of antibiotics for Surgical Antibiotic Prophylaxis (SAP) in 10 Georgian hospitals, by implementing an antimicrobial stewardship programme. After working with the Georgian Association of Surgeons to adapt the WHO SAP guidelines, and later rolling it out in hospitals, in 2022 we worked with the British Society for Antimicrobial Chemotherapy (BSAC) to develop a MOOC to compliment the project, the first module of which is now available on Future Learn.

Since the start of this project, several complimentary supporting activities have been developed to strengthen lab capacity in the country, for both human and animal diagnostics. One such activity proposes to establish timely and accurate identification of organisms using a MALDI-TOF platform. By improving the quality and timeliness of organism identification and introducing rapid antimicrobial susceptibility testing (RAST), the project aims to optimise antimicrobial use in health care settings. Aside from introducing the platform, another activity is investigating the feasibility of using MALDI-TOF and RAST as part of an antimicrobial stewardship programme. A deeper knowledge of the costs and benefits will inform wider scale-up of the complimentary activities in Georgia and the region.

As discussed in the reflections under pillar 1, procurement processes have posed some challenges, which has unfortunately delayed the arrival of the MALDI-TOF platform. While some aspects of the project have therefore been delayed, much cross-country learning has continued regardless.

In June 2022, project teams from the National Centre for Disease Control (NCDC) lab in Georgia, and the International Livestock Research Institute (ILRI) in Kenya attended training at the European Committee on Antimicrobial Susceptibility Testing (EUCAST) Laboratory in Växjö, Sweden. The course, co-funded by ICARS, provided a valuable opportunity to bring people together to exchange knowledge and skills on antimicrobial Susceptibility Training (AST), and to build the capacity of attendees to later deliver the

training within their own country settings. Since the training in Sweden, the team from NCDC has provided training for staff from the State Laboratory of Agriculture (SLA) to support the Georgian poultry project and a group of Kyrgyz microbiologists to support the human health project in Kyrgyzstan. This training was later followed by a workshop held at ILRI in November 2022 for 24 participants, including three ICARS project participants engaged in other ICARS supported projects.

Strengthening lab capacity in Georgia is not only limited to human health. To support the project aiming to reduce the use of antibiotic growth promoters in Georgian poultry farms, staff from SLA came to Denmark to learn about residue testing.



Individuals from ILRI and NCDC attend training at the EUCAST Lab in Sweden

CROSS-PILLAR CASE STUDY 2

TACKLING AMR IN THE SWINE INDUSTRY IN COLOMBIA

In 2022, ICARS reached an exciting milestone, the conclusion of our first project which used qualitative and quantitative research methodologies to understand the barriers and enablers for pig producers to access and utilise a subsidised diagnostic network. The project, co-funded by the UK Department of Health and Social Care as part of the Global AMR Innovation Fund (GAMRIF), generated key findings to support policy development, improve implementation practices, provide evidence on cost-benefits for the diagnostics network, enhance the diagnostic network and improve access to quality diagnostic services for the pig farmers.

Since ending, the project has already influenced the development of national guidelines and the team continues to plan for dissemination and uptake of findings. As a result, a series of cross-project coordination meetings have been set up with the other two complimentary ICARS projects still in implementation in Colombia. This horizontal knowledge exchange is intended to optimize impact through lesson-sharing and joining up networks of researchers and stakeholders working to reduce AMR in the swine industry.

One of the complementary projects, launched in April 2022 with co-funding from ICARS via the Joint Programming Initiative on AMR (JPIAMR), builds upon the established notion that stress is a major driver for pig disease, which in turn contributes to AMU and therefore AMR spread within farms. The project aims to test the effect of limiting the common practice of mixing and re-mixing pigs from different litters and administering antibiotics across diseased and healthy pigs to reduce stress in piglets. Since kick-off the team have been preparing all scientific and administrative requirements to start data collection during the second quarter of 2023.

Another Colombian swine project aims to reduce piglet diarrhoea and antimicrobial use in piglets by improving management practices, providing colostrum, and implementing routine vaccination schemes. In 2022, the project has refined the intervention protocol and selected intervention farms, collected baseline production and socio-economic data on farms, and sampled diarrhoea piglets for the identification of pathogens of digestive diseases on farms.



ICARS team meet with the Porkcolombia team in Colombia

CROSS-PILLAR CASE STUDY 3

COMMUNITY ENGAGEMENT IN ZAMBIA

At the start of 2022, the Eden University School of Pharmacy began implementing a project to improve the management of urinary tract infections using innovative community engagement approaches. With co-funding from Wellcome, the project is using the 'Responsive Dialogues' (RD) framework and toolkit. The RD approach aims to address the gap between local realities and policies by facilitating dialogue between community members and discussing solutions that could enable change in attitudes, behaviours, policies, and practices on the use of antimicrobials.

In the first year, the Zambia RD project has hosted four rounds of conversation events in Lusaka and Ndola (the final round will be hosted in Livingstone in 2023) and gathered insights from a range of stakeholders including healthcare workers, teachers, pharmacists, hospital staff and other community members. These events have shed light on the complex social factors that influence engagement with antibiotics and health-seeking behaviour in relation to UTIs. Furthermore, the participants from each of the conversation events have co-created solutions to tackle the challenge of AMR in the context of UTIs which have been presented to relevant stakeholders, with a national event to follow in 2023. The project findings will be synthesised and published in autumn 2023 after the project concludes.

This Responsive Dialogue project is closely connected with two other ICARS projects. By creating community-informed solutions and interventions that are policy relevant, the project will also generate evidence to support our project aiming to optimise antimicrobial use in BSIs and UTIs by introducing a stewardship programme in selected healthcare facilities. With the overlapping focus on UTIs, it will provide a direct channel for feeding back community insights into healthcare settings.

In addition, the learnings from the RD pilot in Zambia will be channelled into a new project which aims to build on the toolkit by developing complementary training modules and guidelines. These extra tools will make the process for facilitating 'Conversation Events' – which are at the core of the RD approach – clearer, more accessible, streamlined, and

relevant to a range of stakeholders in LMIC settings. This project will use participatory and multidisciplinary approaches, drawing on a diverse project team based at the School of Public Health, University of the Western Cape, South Africa, and key stakeholders from health, agriculture, and environment sectors – embracing the One Health concept to address AMR priorities.

Horizontal learnings across projects and transferability of findings are central to ICARS mission. The above activities span across pillar 1 and 2 testing solutions and translating evidence, and their interconnectedness creates greater potential for broader impact. Behind each of our projects exists a network of partners and relationships connecting countries, regions, and sectors – complementary projects provide avenues for leveraging these wider networks during co-development, implementation, dissemination, and beyond.



Chilenje participants during one of the conversation events in Lusaka.
Photo credit: Framaja Photography

STATEMENT BY THE MANAGEMENT ON THE ANNUAL REPORT

The Executive Management and the Board of Directors have today considered and approved the annual report of the International Centre for Antimicrobial Resistance Solutions (ICARS) for the financial year 1 January – 31 December 2022. The annual report has been prepared in accordance with the State Accounting Rules and ICARS statutes.

In our opinion, the annual report gives a true and fair view of ICARS's financial position as per 31 December 2022 and of the results of ICARS's operations and cash flows for 2022. Further, it is our opinion that the management's review includes a true and fair account of the development in the operations and financial circumstances of ICARS.

Copenhagen, 25 April 2023

Executive Management:



Sujith J Chandy,
Executive Director

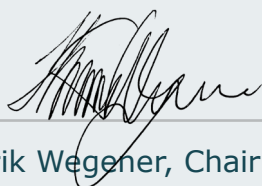


Helle Engslund Krarup,
Director of Operations

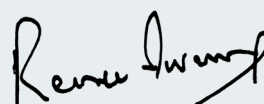


Robert Skov, Scientific Director

Board of Directors:



Henrik Wegener, Chair



Renu Swarup, Vice-Chair



Jimmy Smith, Member



Isatou Jallow, Member



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INDEPENDENT AUDITOR'S REPORT

To the Board of Directors of International Centre for Antimicrobial Resistance Solutions (ICARS)

**This is an English translation of the Danish Auditor's report. The Danish language version shall prevail on any question of interpretation or otherwise.*

Audit report on the financial statements

Conclusion

We have audited the financial statements of ICARS for the financial year 1 January to 31 December 2022 which includes the accounting practices applied, profit and loss account, balance sheet, statements of movements in equity and notes to the accounts. The financial statements are prepared according to the State's accounting rules.

In our opinion, the financial statements are, in all material respects, correct, and prepared in accordance with the State's accounting rules.

Basis for opinion

We conducted our audit in accordance with international standards on auditing and the additional requirements applicable in Denmark as well as the standards for public audits, as the audit is being carried out on the basis of the provisions of the Danish Auditor General Act, Section 2 (1) (3). Our responsibilities under these standards and requirements are described in more detail in "the Auditor's responsibilities for the audit of the financial statements" section of the audit report. We are independent of ICARS in accordance with the International Ethics Standards Board for Accountants' International Guidelines on Ethical Conduct of Auditors (IESBA Code) and the additional ethical requirements applicable in Denmark, and we have fulfilled our other ethical obligations in accordance with these requirements and the IESBA Code. We believe that the audit evidence obtained is sufficient and appropriate to provide a basis for our opinion.

Highlighting of matters relating to the audit

We draw attention to the fact that estimated figures have been included as comparative figures in the profit and loss account. These estimated figures have not been audited, as the accounts show, and therefore we do not express any assurance regarding them.

Management's responsibility for the financial statements

The management is responsible for the preparation and fair presentation of the financial statements in accordance with the State's accounting rules. The management is also responsible for such internal control as it determines is necessary to enable the preparation of financial statements that are free from material misstatements, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing ICARS's ability to continue as a going concern, disclosing, where applicable, matters related to going concern and preparing the financial statements on a going concern basis, except where management either intends to liquidate ICARS, to cease operations, or has no realistic alternative but to do so.

Auditor's responsibility for the audit of the financial statements

Our goal is to gain a high degree of assurance that the financial statements as a whole are free from material misstatements, regardless of whether these are due to fraud or error, and to submit an audit report with an opinion. A high degree of assurance is a high level of assurance, but is not a guarantee that an audit performed in accordance with international standards on auditing and the additional requirements applicable in Denmark, as well as the

standards for public audits, as the audit is performed on the basis of the provisions of the Danish Auditor General Act, Section 2 (1) (3), will always detect a material misstatement when if these exist. Misstatements can occur due to either fraud or errors and can be considered material if it could be reasonably expected that individually or in aggregate they would have an impact on the financial decisions that the users of the financial statements make based on the statements.

As part of an audit conducted in accordance with international standards on auditing and the additional requirements applicable in Denmark, as well as the standards for public audits, as the audit is performed on the basis of the provisions of the Danish Auditor General Act, Section 2 (1) (3), we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risk of material misstatements in the financial statements regardless of whether these are due to fraud or error, and we structure and carry out audit actions in response to these risks and procure audit evidence that is sufficient and appropriate to form the basis for our opinion. The risk of not discovering material misstatements caused by fraud is higher than it is for material misstatements due to errors, as fraud may involve conspiracies, document forgery, intentional omissions, misdirection, or the overriding of internal controls.
- Gain an understanding of the internal controls relevant to the audit in order to prepare audit actions that are appropriate to the circumstances, but we do not use this understanding to express an opinion on the effectiveness of ICARS' internal controls.
- Examine whether the accounting practices that are used by the management are appropriate and if the accounting-related estimates and associated information prepared by the management are reasonable.
- Form an opinion on whether the management's preparation of the financial statements on the basis of the going concern accounting principle is appropriate and whether on the basis of the gained audit evidence there is significant uncertainty associated with events or circumstances that can create reasonable doubt about ICARS's ability to continue operations. If we decide that there are significant uncertainties, then in our audit report we must point to such uncertainties in the financial statements or if such information is insufficient, we must modify our opinion. Our opinions are based on the audit evidence that has been collected up until the date of our audit report. Future events or circumstances may, however result in ICARS no longer being able to continue operations.

We communicate with the top management team about things such as the planned scope and time of the audit and significant accounting-related observations, including observations about material deficiencies in internal control that we identify during the audit.

Opinion on management's review

The management is responsible for the management's review.

Our opinion on the financial statements does not cover the management's review, and we express no form of assurance when it comes to our opinion on it.



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In connection with our audit of the financial statements, it is our responsibility to read the management's review and in that context consider whether it is significantly inconsistent with the financial statements or the knowledge we have gained during the audit or if it otherwise seems to contain material misstatements.

Our responsibility is also to consider whether the management's review contains the information required pursuant to the State accounting rules.

Based on the work performed, it is our opinion that the management's review is consistent with the financial statements and has been prepared in accordance with the requirements of the State accounting rules. We have not found any material misstatements in the management's review.

Declaration under other legislation and regulations

Statements on critical legal audit and performance audit

The management is responsible for ensuring that the transactions covered by the financial statements are in accordance with notified appropriations, statutes and other regulations, as well as with agreements entered into and common practice. The management is also responsible for ensuring that due financial considerations are taken in terms of managing the funds and for the operation of the companies covered by the financial statements. In that connection, the management is responsible for establishing systems and processes that support frugality, productivity and efficiency.

As part of our audit of the financial statements, it is our responsibility to carry out a critical legal audit and performance audit for certain areas in accordance with the standards for public audits. In our critical legal audit, we test whether there is a high degree of assurance that the selected areas and the examined transactions covered by the submission of the financial statements are in accordance with the relevant provisions of appropriations, statutes and other regulations in addition to whether they are in accordance with agreements entered into and common practice. In our performance audit, we determine whether there is a high degree of assurance that the selected systems, processes or transactions support due financial considerations when managing the funds and operations covered by the financial statements.

If, on the basis of the work performed, we conclude that there are grounds for significant criticism, we will report this in this statement.

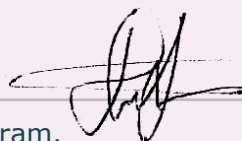
We have no significant critical observations to report in this respect.

Copenhagen, 25 April 2023

Rigsrevisionen
CVR no. 77 80 61 13



Heidi Lund,
Director



Henrik Bram,
Auditor

FINANCIAL RESULTS

The year 2022 ended on a strong note for ICARS, strengthening further the established foundation and laying the basis for future developments. Despite the challenges that presented themselves in the world economy, ICARS continued its development and growth as an independent organisation.

As reflected in the financial results presented here, in 2022 ICARS continued its activities on AMR worldwide - co-developing new projects, while the existing projects continued implementation throughout the year.

The 2022 Financial Statements of ICARS are prepared in accordance with the State Accounting Act, Order No 116 of 19 February 2018 on State Accounting and the Ministry of Finance's Financial Administrative Guidelines, hereinafter jointly referred to as State's accounting rules, and consist of the following elements:

- i) Statement of financial performance for the period ending 31 December 2022 (Figure 2)
- ii) Statement of financial position as of 31 December 2022 (Figure 3)
- iii) Notes to the financial statements.

In addition, we present here a *Statement of comparison of budget with the actual amounts for the period ending 31 December 2022* (Figure 4) that shows our financial results of our core funding received from the Danish Ministry of Health.

The 2022 financial statements are prepared based on ICARS being a going concern, based on ICARS grant and budget plans for 2022-25 in the Danish finance act.

Highlights of 2022 Financial Results

ICARS' 2022 core budget, based on the funding from the Government of Denmark, amounted to DKK 60m, of which ICARS has utilised 92%. As mentioned in the notes to the financial statements, in addition to its core funding, ICARS secured funding from other donors in the total amount of DKK 15.82m that includes in-kind contributions from ICARS' partners.

In 2022 ICARS committed grants to the total amount of DKK 35.3m, which is slightly higher than the budgeted amount of DKK 35.2m.

The total amount of grant commitments is comparable with the grants issued in 2021 and represents a steady development of ICARS as an important player in the global work on AMR-mitigation in Low- and Middle-Income Countries (LMICs) using implementation and intervention research.

Our 2022 grants comprise of the following:

- 8 new projects were funded in the total amount of DKK 27.5m.
- Additional funding in the amount of DKK 1.3m was issued to existing projects
- DKK 2.4m of grants was issued to supporting activities, such as collaboration with the Dutch University RadboudUMC for the data-driven implementation of behaviour change in antimicrobial stewardship in LMICs and collaboration with the Danish Veterinary and Food Administration for the provision of training to ICARS project teams.
- Grants in the amount of DKK 781K were issued to support projects co-development in ICARS' partner countries.
- In addition, grant funding in the amount of DKK 2.4m was added to the existing grant commitments due to the increase in the foreign exchange rates.

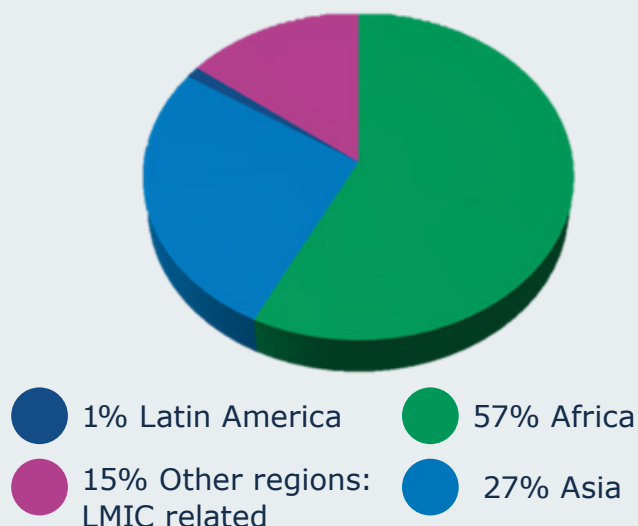
Concerning the grants issued for the co-development of the projects in partner countries, it should be noted that in 2022 the total amount of these grants was 9.5 times higher than the grants issued for the same purpose in 2021. This reflects the increasing demand for the AMR focused projects and the increasing role that ICARS plays in the area of AMR intervention and implementation research.

Figure 1 shows the geographical distribution of the 2022 spending that includes both grant commitments and other operational expenses, such as ICARS staff visits to country teams.

ICARS' planned activities in 2023 and beyond, and risk related to them:

Due to the fact that the Finance Act of Denmark containing the national budget was planned to be approved only after the formation of the new Government of Denmark following the elections in November 2022, in January 2023 ICARS signed a provisional grant agreement with the Danish

FIGURE 1: GEOGRAPHICAL DISTRIBUTION OF SPENDING



Ministry of the Interior and Health that provided a funding to ICARS for 2023 at the same level of DKK 60m as 2022. According to the 2023 Finance Act that is currently submitted to the Parliament for the approval, ICARS will receive in 2023 funding in the amount of DKK 71m. As there is strong expectations that this will be approved, ICARS 2023 budget was prepared based on this amount and was approved in December 2022 by the Board of Directors. According to the Danish Finance Act for 2023 the Danish government is planning to contribute up to DKK 240m to ICARS in 2023-26.

While we look with confidence into the future, based on the positive interest toward ICARS from partners both in LMICs and HICs, we do recognise that we still face uncertainty and risks that may be ahead of us.

The rising prices and inflation affected the whole world economy in 2022, and LMICs, where our projects are located, were affected the most. This potentially will have an impact on our projects, and we are ready to face these risks by making strategic plans on how to handle this impact within our budget without jeopardising the purpose and goals of our projects.

Furthermore, the strengthening of USD against the DKK during 2022 had an impact on our accounts, as the majority of our grants are in USD, while the core funding we receive from Danish government is in DKK. This impact is mitigated by the established processes of revaluation, including the fact that we recognise

the grant commitments in full in our books as soon as the projects and supporting activities are approved (please refer to Note 2 below). We revalue our grant commitments on a regular basis and, as mentioned above, revaluation of our existing grant commitments at the end of 2022 resulted in the increase of their value in the amount of DKK 2.4m. As ICARS' total grant commitments increase this will be an increasingly important risk for ICARS, and we will continue following this closely to consider if further mitigation measures can be put in place.

In addition, COVID-19 had an impact on some of our projects delaying their implementation. This was mitigated by our close connections with the project teams and the efforts to remedy the risks associated with these delays.

Furthermore, international crisis such as the continuing war in Ukraine demonstrates that the level of uncertainty when it comes to international collaboration has grown. This may also affect ICARS' possibilities to build its activities in the future, especially in terms of securing a broader funding base which is a defined goal in ICARS' strategy for 2022-26 and which is a determining factor for the long-term sustainability of ICARS as an independent organisation. ICARS will work closely with all partners, and especially with the Danish ministries and embassies to remedy these risks.

Finally, as illustrated by Figure 1, ICARS' current activities are to a high degree focused on countries in Africa. In the coming years the geographical focus is expected to be more balanced with additional projects in Asia and Latin America. According to our mission, ICARS partners with Low- and Middle-Income Countries, and this entails an inherent risk due to low local capacity, for instance in terms of monitoring, evaluation and financial reporting and controls. ICARS works to mitigate these risks by partnering with the local institutions throughout both the co-development and implementation process, and established quarterly reporting and payment procedures are in place to ensure that problems are identified and handled as early as possible. Also, ICARS' Finance and Grant Manager and M&E team are working to build capacity in local teams through webinars, meetings, and continued dialogue.

FIGURE 2: STATEMENT OF FINANCIAL PERFORMANCE
FOR THE PERIOD ENDING 31 DECEMBER 2022

	Reference	2022		2021	
		000 DKK	000 USD*	000 DKK	000 USD
Funding Received		61,075	8,760	57,271	8,729
Funding: received from government of Denmark (core funding)	Note 1	60,000	8,606	56,808	8,658
Core funding: Prior year surplus refund to MoH	Note 1	-2,246	-322	0	0
Funding: received from external donors	Note 1	3,320	476	463	70
Pillar 1. Develop and test context-specific solutions for AMR mitigation		35,506	5,092	35,278	5,377
Grants - research projects		26,683	3,827	31,008	4,726
Grants - co-development activities		781	112	84	13
Employee salaries and emoluments		4,945	709	2,004	305
Technical Advisory Forum		59	8	51	8
Operational costs		3,037	436	2,132	325
Pillar 2. Support the translation and uptake of existing evidence and innovation into policies, programmes and practice		6,438	923	9,044	1,378
Grants - research projects		5,248	753	7,874	1,200
Employee salaries and emoluments		980	141	585	89
Operational costs		209	30	585	89
Pillar 3. Advocate for context-specific, country-owned AMR mitigation solutions		3,752	538	2,512	383
Grants - international cooperation, communication, and participation in international events		197	28	296	45
Employee salaries and emoluments		386	55	196	30
Operational costs		1,788	256	1,099	167
		1,381	198	921	140
Pillar 4. Support targeted capacity and capability building		3,386	486	3,938	600
Grants - collaborations		2,394	343	3,164	482
Employee salaries and emoluments		769	110	503	77
Operational costs		224	32	271	41
Pillar 5. A trustworthy partner and platform for delivering context-specific and country-owned AMR solutions		7,195	1,032	5,285	806
Employee salaries and emoluments		3,238	464	2,856	435
IT support and IT systems		390	56	304	46
Facilities and equipment, supplies and maintenance (rent)		1,196	171	929	142
Legal assistance		237	34	351	53
Executive recruitment and HR support		523	75	249	38
Financial services		676	97	196	30
Corporate insurance		298	43	131	20
Board of Directors		346	50	0	0
Other operational costs		291	42	270	41
Change in previous years grant commitment value		246	35	452	69
Exchange gain / loss on grant commitments		246	35	452	69
TOTAL EXPENSES		56,523	8,107	56,511	8,613
Earned interest		-289	-41	0	0
Interest earned	Note 2	-289	-41		
Transferrable to the 2023 available funding	Note 2	4,840	694	760	116

NOTE: *DKK/USD EXCHANGE RATE OF 6.9722 (6.5612) WAS USED FOR THE CONVERSION PURPOSES IN 2022 (2021)

FIGURE 3: STATEMENT OF FINANCIAL POSITION AS OF 31 DECEMBER 2022

	Reference	2022		2021	
		000 DKK	000 USD*		
ASSETS					
Non-current assets		286	41	309	47
Non-current assets		286	41	309	47
Current assets		78,260	11,225	58,747	8,954
Receivable from DK MOH (core funding)		0	0	6,808	1,038
Projects receivable (other funders)	Note 1	1,095	157	2,814	429
Other accounts receivable		82	12	50	8
Pre-payments		206	30	112	17
Cash and cash equivalents		76,877	11,026	48,962	7,462
TOTAL ASSETS		78,546	11,266	59,056	9,001
LIABILITIES					
Non-current liabilities		37,060	5,315	28,791	4,388
Non-current liabilities on grant commitments		37,060	5,315	28,791	4,388
Current Liabilities		41,486	5,950	30,265	4,613
Current liabilities on grant commitments		32,212	4,620	23,192	3,535
Accounts payable		1,305	187	2,147	327
Deferred revenue	Note 1	1,217	175	2,930	447
Employee liabilities short-term		1,068	153	971	148
Other short-term liabilities (Accruals)		85	12	266	41
Transferrable balance to the funding of the future period	Note 2	5,600	803	760	116
TOTAL LIABILITIES		78,546	11,266	59,056	9,001

NOTE: *DKK/USD EXCHANGE RATE OF 6.9722 (6.5612) WAS USED FOR THE CONVERSION PURPOSES IN 2022 (2021)

NOTES TO FINANCIAL STATEMENTS

NOTE 1

In 2022, the majority of ICARS' operations and projects were funded by the Government of Denmark, representing core funding of ICARS.

As mentioned above, based on the core funding, ICARS 2022 budget amounted to DKK 60m. Out of this amount, at the end of the 2022 there was an unspent balance of DKK 4.64m. In addition, at the end of 2022, ICARS earned interest in the bank on its cash reserves in the amount of DKK 286K. According to the 2022 agreement with Danish Government, the cumulative residual balance in the amount of DKK 4.93m, will be transferred to the available funding for 2023. The majority of this transferrable amount will increase ICARS' grant funding and will be reflected in the budget revision that will be presented for approval to ICARS' Board of Directors.

In 2022 ICARS returned to the Danish MoH the residual balance of 2021 core funding in the amount of DKK 2.25m, as the agreement for that period differed from the present conditions that allow transfer of the year-end balance to future periods.

In addition to its core funding, ICARS secured funding from other donors, representing the ear-marked funding for specific projects and contributions in-kind that ICARS' partners made available for the implementation of the projects and other activities as part of collaboration with ICARS.

Direct funding, ear-marked for specific projects, that ICARS received from the other funders are shown in Table 1.1 below. This funding, which was secured in 2022, was partially received in 2022 with the amount of DKK 852,474 receivable in 2023 based on the agreements made in 2022.

TABLE 1.1

Donor	Amount DKK	Amount	Amount Receivable in 2023 DKK	Amount Receivable in 2023	Purpose of Contribution
Contribution from Wellcome UK**	1,216,928	USD 174,540	608,464	USD 87,270	Funding for Responsive Dialogue 2.0 project
Contribution from EC / JPIAMR	390,416	EUR 52,500	244,010	EUR 32,813	Funding project 101057036 - DESIGN OH AMR
Total	1,607,344		852,474		

* Exchange Rate of 6.9722 was used for DKK/USD and 7.4365 for DKK/EUR conversion purposes.

**Contribution from Wellcome UK was recognised as deferred income/revenue in ICARS' Statement of Financial Position.

The majority of funding secured in 2021 that was receivable at the end of 2021, was received in 2022, with the balance in the amount of DKK 242K expected to be received in 2023.

As mentioned above, in addition to the funds received for specific projects (Table 1.1), ICARS also received contributions in-kind from the partners involved in the implementation of projects and other activities of ICARS.

These contributions amount to USD 1,878,072 and EUR 150,000 with the total in-kind contribution in DKK amounting to DKK 14.21m, bringing in total 2022 funding from other sources to DKK 15.82m.

NOTE 2

At the end of 2022, ICARS had a significant cash reserve amounting to DKK 76.9m (Figure 3), which is due to the fact that while we recognised the grant commitments in 2022, disbursement of funds will take place in a future period. This complies with the agreement with the Danish Ministry of Health, which states that grant commitments are created and recognised as an expense in the Statement of Financial Performance when ICARS enters into the binding agreements to provide the funding for specific projects even if the actual activities and payments take place in a future period. This allows ICARS to work with a multiple year perspective when developing projects. The cash reserve available at the end of 2022 will be disbursed within the next 1-3 years of ICARS' grant commitments of 2020-2022.

The *Statement of comparison of budget with the actual amounts for the period ended 31 December 2022* (Figure 4) shows expenditure and grant commitments exclusively related to the funding of Ministry of Health of Denmark (ICARS core funding).

The *Statement of the comparison of budget with the actual amounts* was prepared based on the same principles as the other elements of the financial statements without any exemptions and is fully aligned with them. It should be noted that the 2021 statement of comparison of the actual results with the budget was prepared based on the same principles, except for the assets which were recognised on the cash basis.

In addition to the above, it should be noted that ICARS has 6-month's notice on its current rental contract.

Additional Notes

At the end of 2022 ICARS had outstanding grant commitments in the total amount of DKK 69.3m, that included open commitments of the period 2020-2022. In the first 2 months of 2023 ICARS disbursed DKK 5.2m of these commitments.

The beginning of 2023 demonstrated the continuing volatility of the foreign exchange rates. We continue to monitor their impact along with other risks mentioned above.

FIGURE 4: STATEMENT OF COMPARISON OF BUDGET WITH THE ACTUAL AMOUNTS FOR THE PERIOD ENDING 31 DECEMBER 2022 (DKK AND USD)

Budget / Actual Spending		ICARS 2022 Budget as revised in December 2022	Salary	Operations	Grants	Total Spending
		000 DKK	000 DKK	000 DKK	000 DKK	000 DKK
Pillar 1. Develop and test context-specific solutions for AMR mitigation		35,275	5,004	2,659	26,771	34,435
	ICARS research projects	25,800			25,990	25,990
	Co-development processes	900		78	781	859
	Develop scientific strategy, scientific coordination, project management	8,425	4,945	2,582		7,527
	Technical Advisory Forum	150	59			59
Pillar 2. Support the translation and uptake of existing evidence and innovation into policies, programmes and practice		7,612	980	209	5,248	6,438
	ICARS' research projects	5,500			5,248	5,248
	Co-development processes	100				
	Mapping existing evidence and establish repository	2,012	980	209		1,189
Pillar 3. Advocate for context-specific, country-owned AMR mitigation solutions		4,160	1,732	1,729	197	3,659
	Communicate knowledge and evidence	3,510	1,732	1,419		3,151
	ICARS participation in international AMR events and Strategic Communication	650		310	197	508
Pillar 4. Support targeted capacity and capability building		4,032	769	229	2,388	3,386
	Capacity and capability building of AMR champions	1,282	769	229		998
	Capacity building in ICARS partner countries	500			158	158
	Developing AMR training materials	2,250			2,231	2,231
Pillar 5. A trustworthy partner and platform for delivering context-specific and country-owned AMR solutions		8,921	3,584	3,609		7,193
	IT support and IT systems	375		390		390
	Facilities and equipment, supplies and maintenance (rent)	1,400		1,196		1,196
	Legal assistance	375		237		237
	Executive recruitment and HR support	500		523		523
	Financial services	1,050		676		676
	Board of Directors	449	346			346
	Corporate insurance	300		298		298
	Administration and supporting services to governing bodies	4,472	3,238	289		3,527
Foreign exchange gain / Loss on prior year grant commitments				246	246	
	Exchange gain / Loss on grant commitments				246	246
Interest earned			-286		-286	
	Interest earned on bank account balance		-286		-286	
Grand total		60,000	12,069	8,150	34,852	55,070
% of Total			22%	15%	63%	100%

NOTE: *DKK/USD Exchange Rate of 6.9722 was used for the conversion purposes in 2022

	ICARS 2022 Budget as revised in December 2022					
		Salary*	Operations*	Grants*	Total Spending*	% of Budget Spending
	000 USD	000 USD	000 USD	000 USD	000 USD	
	5,059	718	381	3,840	4,939	98%
	3,700			3,728	3,728	
	129		11	112	123	
	1,208	709	370		1,080	
	22	8			8	
	1,092	141	30	753	923	85%
	789			753	753	
	14					
	289	141	30		171	
	597	248	248	28	525	88%
	503	248	204		452	
	93		45	28	73	
	578	110	33	343	486	84%
	184	110	33		143	
	72			23	23	
	323			320	320	
	1,279	514	518		1,032	81%
	54		56		56	
	201		171		171	
	54		34		34	
	72		75		75	
	151		97		97	
	64	50			50	
	43		43		43	
	641	464	41		506	
		0	35	35		68.90
			0	35	35	
		-41		-41		17.86
		-41		-41		
	8,606	1,731	1,169	4,999	7,899	92%
		22%	15%	63%	100%	

OUR TEAM



Helle Krarup
Acting Executive
Director and Director
of Operations



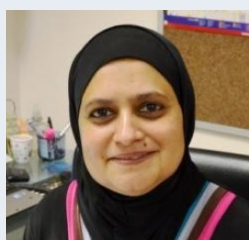
Robert Skov
Scientific Director



Ghada Zoubiane
Head of Partnerships



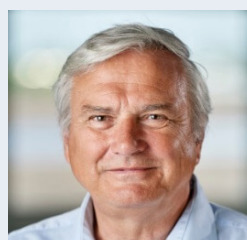
Mirfin Mpundu
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Sabiha Essack
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Research
Advisor



Anders Dalsgaard
Scientific Consultant



Per Henriksen
Senior Consultant



Tine Jørgensen*
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Erica Westwood
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Annick Lenglet
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Veterinary Advisor



Hannah Aanonsen
Student Assistant



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Lisa Haagensen
Project Manager



Britta Ankersen**
Executive Assistant



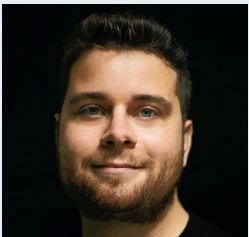
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Sephy Valuks
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Beatriz Domínguez
Project Coordinator



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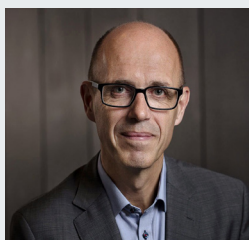


Caroline Øst
Student Assistant

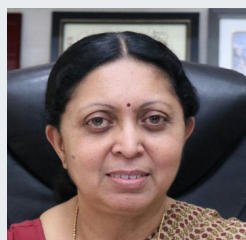
* Seconded to WHO from February 2021

** Left ICARS, June 2022

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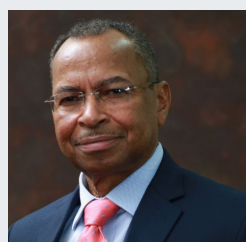
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Department of Biotechnology,
Ministry of Science & Technology



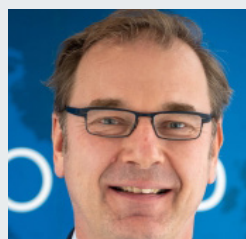
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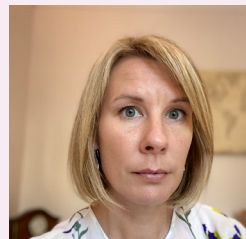


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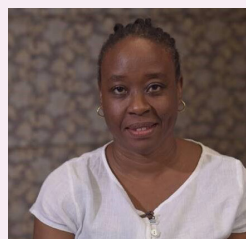
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Infectious Disease
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appointment at ILRI



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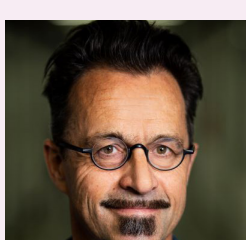
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*Left the TAF in October 2022



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