



Department
of Health &
Social Care

The Fleming Fund Annual Review

January to December 2021

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Abbreviations list

Abbreviation	Term
AMC	Antimicrobial Consumption
AMR	Antimicrobial Resistance
AMR CC	AMR Coordination Committee
AMS	Antimicrobial Stewardship
AMU	Antimicrobial usage
ATLASS	Assessment Tool for Laboratory and Antimicrobial resistance Surveillance Systems
CwPAMS	Commonwealth Partnerships for Antimicrobial Stewardship
DHSC	Department of Health and Social Care
FAO	Food and Agriculture Organization
FCDO	Foreign and Commonwealth Development Office
GHS	Global Health Security
GIZ	German Corporation for International Cooperation
GLASS	Global Antimicrobial Resistance and Use Surveillance System
GRAM	Global Research on AMR
GSMS	Global Surveillance and Monitoring System (WHO)
HMG	Her Majesty's Government (UK)
ICDDR, B	International Centre for Diarrhoeal Disease Research Bangladesh
LMICs	Low- and Middle-Income Countries
MA	Management Agent
M&E	Monitoring & Evaluation
MEL	Monitoring Evaluation and Learning
MA	Mott MacDonald
MPTF	Multi-Partner Trust Fund
NAPs	National Action Plans
NGO	Non-governmental organisation

Abbreviation	Term
NHS	National Health System (UK)
ODA	Official Development Assistance
ODI	Overseas Development Institute
OECD	Organisation for Economic Cooperation and Development
PMO	Programme Management Office
RAG rating	Red, Amber, Green rating
SF Medicines	Substandard and Falsified Medicines
TAG	Technical Advisory Group
ToC	Theory of Change
VfM	Value for Money
WHO	World Health Organization
WOAH	World Organisation for Animal Health (previously OIE)

1. Summary and overview

Project Title: Fleming Fund Annual Review

Project Value: £265m (phase 1: 2017–2021), £210m (phase 2: 2022–2025)

Review period: January 2021 to December 2021

Project Start Date: 2016

Project End Date: 2025

Summary of Project Performance¹

Year	2018	2019	2020	2021
Project Score	Amber/Green	A	A	A
Risk Rating	N/A	N/A	N/A	Amber/Red

¹ Scored based on the FCDO programme scale (see [Annex A](#))

1.1 Outline of project

The Fleming Fund is a UK Official Development Assistance (ODA) programme managed by the Department of Health and Social Care (DHSC) committed to tackling antimicrobial resistance (AMR) within DHSC's wider Global Health Security (GHS) programme. By 2022, the Fleming Fund will have helped 24 low- and middle-income countries (LMICs) to establish the foundations of sustainable surveillance systems for antimicrobial resistance, consumption (AMC) and usage (AMU).

The majority of the Fund's work is delivered through our Management Agent (MA), Mott MacDonald through a portfolio of [country grants](#), [regional grants](#) and [fellowships](#). The number of active country grants was reduced to 21 in 2021 due to in-country conflict or lack of Value for Money (VfM). The Fleming Fund also provides support to a significant number of additional LMICs through [global projects](#) thanks to delivery partners including the World Health Organization (WHO), Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (WOAH) (previously OIE), and from 2022 the United Nations Environment Programme (UNEP), who also work together as a collaborative Quadripartite, alongside a number of other specialist organisations working in the field of AMR.

The expected outcomes from this programme include an increase in relevant, high-quality data being shared and used nationally and globally. This would provide the basis for changes in policy and practice to increase the rational use of antimicrobial medicines and reduce the number of drug resistant infections.

The Fund aims to improve laboratory capacity and diagnosis as well as data and surveillance of AMR at a country level through a One Health approach, covering human health, animal health, and the environment. By supporting countries in West Africa, East and Southern Africa, South Asia, and South-East Asia to develop One Health AMR National Action Plans (NAPs) and implement the surveillance aspects of these, the programme supports delivery of the [2015 World Health Assembly Global Action Plan objectives](#), the recommendations of the [UK's 2016 O'Neill Review on AMR](#), the [Inter-Agency Coordination Group on AMR recommendations](#), as well as the UK's own [AMR NAP 2019 to 2024](#).

Contributions to these key international objectives and outcomes are captured in the Theory of Change (ToC), but in particular Fleming Fund outputs contribute to the following Global Action Plan outcomes:

- improved awareness and understanding of AMR
- strengthened knowledge through surveillance and research

- ensured sustainable investment in countering AMR
- optimised use of antibiotics.

The Fleming Fund also contributes to broader work on health systems strengthening in LMICs by supporting improvements to diagnosis, surveillance and use of quality health data in decision making. These actions contribute to improved health information systems and laboratory strengthening and help to ensure that essential antimicrobial medicines are safe and effective.

This report will provide a summary of progress and recommendations. More detail on progress over phase 1 and plans for phase 2 can be found in our [Phase 1: A Summary report](#) and the phase 2 Business Case.

1.2 Summary of progress

The Fleming Fund has made good progress against all outputs, achieving 4 of the 8 recommendations from the 2020 Annual Review. Four milestones were carried over to 2022 due to the delay in HM Treasury's Spending Review and the resultant lack of certainty needed to begin phase 2 planning and negotiations. The programme has exceeded expectations in building a culture of learning and sharing data, despite ongoing travel difficulties linked to COVID-19. This has helped to raise the profile of AMR on the world stage. Key achievements include:

- the WHO finalising and deploying the [One Health Tricycle protocol](#), enabling countries to implement National Integrated Surveillance Systems on AMR;
- supporting the WOAAH to collect and report on quality data, which allowed the WOAAH to analyse and report the decrease of AMC/U in animal health;
- supporting nearly 23,000 training attendees on AMR/C/U through regional and country grants. Popular topics included microbiology, quality of data, epidemiology and biosafety;
- the Global Research on Antimicrobial Resistance (GRAM) project completing its analysis on the global burden of AMR in 2019 and disseminating information to world leaders at the G7 Health Ministers' meeting.

Key Achievement: GRAM project analysis of the global burden of AMR

The GRAM project completed its [analysis on the global burden of AMR](#), which established that AMR is a leading cause of death globally. Nearly 5 million deaths were estimated to be associated with AMR in 2019, with 1 in 5 occurring in children under the age of 5.

The project first reported the findings to the G7 Health Ministers' meeting in June 2021. The paper was submitted to the Lancet in 2021 and then published in January 2022. A donor-led marketing campaign linked to the paper generated over 7,000 new items and 8,000 social media posts discussing the report.

Over 500 global health stakeholders attended the [online launch event](#), raising awareness amongst decision makers across the world. The Fleming Fund plans to continue the campaign with individual countries' burden level results in phase 2. An evaluation is ongoing.

1.3 Recommendations from 2020

The full recommendations are available in the [2020 annual review](#).

1. **Recommendation 1: partially achieved.** The Fleming Fund has developed a new Theory of Change and will finish consultation on a new Results Framework in Q3 2022. Both will be ready for use in phase 2.
2. **Recommendation 2: partially achieved.** Due to COVID-19 travel complications and the development of the phase 2 Business Case and grant agreements, the Fleming Fund decided not to conduct country visits for this Annual Review. Travel permitting, country visits will resume with the additional objective of supporting future Annual Reviews.
3. **Recommendation 3: achieved.** Social media platforms and other innovative communication methods were trialled for a pilot launch of the Open University online modules as recommended. The course was promoted in social networks, country coordination meetings, in the Fleming Fund monthly newsletter, and through the Management Agent's (MA) Consultancy Service Team database of 20,000.
4. **Recommendation 4: achieved.** The MA completed a review its approach to Value for Money (VfM) as recommended. The World Bank and Organisation for Economic Cooperation and Development (OECD) welcomed the Fleming Fund framework for assessing costs and benefits of AMR surveillance piloted in Uganda. The Fleming Fund and MA have also developed a plan for gender and tools for Value for Money

(see more at section 7), including making gender and equity one of the Fleming Fund principles for phase 2.

5. **Recommendation 5: achieved.** The recommended lessons learned exercise on FIND, the global alliance for diagnostics, has informed the phase 2 strategy on substandard and falsified medical products.
6. **Recommendation 6: achieved.** The monitoring matrix was reviewed and now includes a new indicator for fellows to track their improvement during the Fellowship scheme. The scheme itself has been reviewed and suggested improvements will be reflected in the development of the design of the Fellowship scheme in phase 2.
7. **Recommendation 7: partially achieved.** The revised phase 2 approach to sustainability and political economy analysis has made good progress. The Technical Advisory Group (TAG) has provided steers for the MA to include in their implementation plans for phase 2. This has resulted in plans for individual country strategies, exit plans and revised sustainability tools in the next phase.
8. **Recommendation 8: partially achieved.** The Fleming Fund has closely monitored the MA's spend over 2021. COVID-19 continued to impact forecasting accuracy and financial performance. Despite positive progress towards reduced variations against the baseline forecast in 2021 this remains a live issue that requires ongoing monitoring. The programme team will continue to carefully monitor spending and work with the MA to ensure forecasting accuracy is substantially improved and is timely.

1.4 Major lessons and 2021 recommendations

Recommendation 1: Develop and disseminate phase 2 Theory of Change (ToC) narrative with partners to support project coherence and finalise the revised diagram. Ensure partner proposals are aligned to the ToC, such as basing their own ToC on it. The programme team aim to complete this work by December 2022.

Recommendation 2: Draw on the phase 1 GRAM evaluation lessons to enhance the approach to sharing burden data with decision makers at global, regional and country level. This work will take place during the phase 2 implementation stage and reviewed at the end of 2022.

Recommendation 3: Work jointly with the DHSC Global AMR team to revise the Fleming Fund coordination and engagement plan and communications strategy to target stakeholders with the ability to use AMR/C/U data to influence local, regional and global decisions on AMR in autumn 2022.

Recommendation 4: Work with the Fleming Fund Independent Evaluator to review the impact of remote delivery across the Fleming Fund. Ensure lessons and good practice are incorporated into phase 2 proposals and review progress in December 2022.

Recommendation 5: Review Fleming Fund's approach to asset management in the context of Foreign, Commonwealth and Development Office (FCDO) rules and new DHSC assets policy. Where there are deviations, the approach to asset management will be adjusted to ensure alignment. Where this is not possible, and exceptionally, a risk-based decision not to align to these policies must be documented. Assess progress by end of 2022.

Recommendation 6: Support the economic and business cases for investment in phase 2 by: a) reviewing the economic fellowship scheme in line with the principle of country ownership, with a decision made by the end of 2022; b) supporting the rollout of the Framework for assessing costs and benefits of AMR surveillance as a core component of the country grants throughout phase 2, revising progress in December 2022.

Recommendation 7: Improve financial forecasting and reporting, including: a) working with the GHS programme management office to increase the accuracy and effectiveness of finance management tools. This work will be reviewed in December 2022; b) working with the MA and other FF partners to effectively monitor spend and improve the accuracy of forecasting.

Recommendation 8: Conduct country visits to a set of priority countries to strengthen relationships, enhance oversight of implementation, deliver on assurance requirements and support results monitoring, revising progress at the end of 2022.

Recommendation 9: Further embed adaptive management approaches into phase 2 delivery by: a) supporting the inclusion of adaptive management into grant agreements and monitoring progress (for example quarterly reviews) by autumn 2022; b) implementing the lessons from the regional grants on the role of early reviews of grant performance trajectory and optimism bias. This ongoing work should be reviewed at the end of 2022.

2 Theory of Change

Figure 1: Original Theory of Change (phase 1)

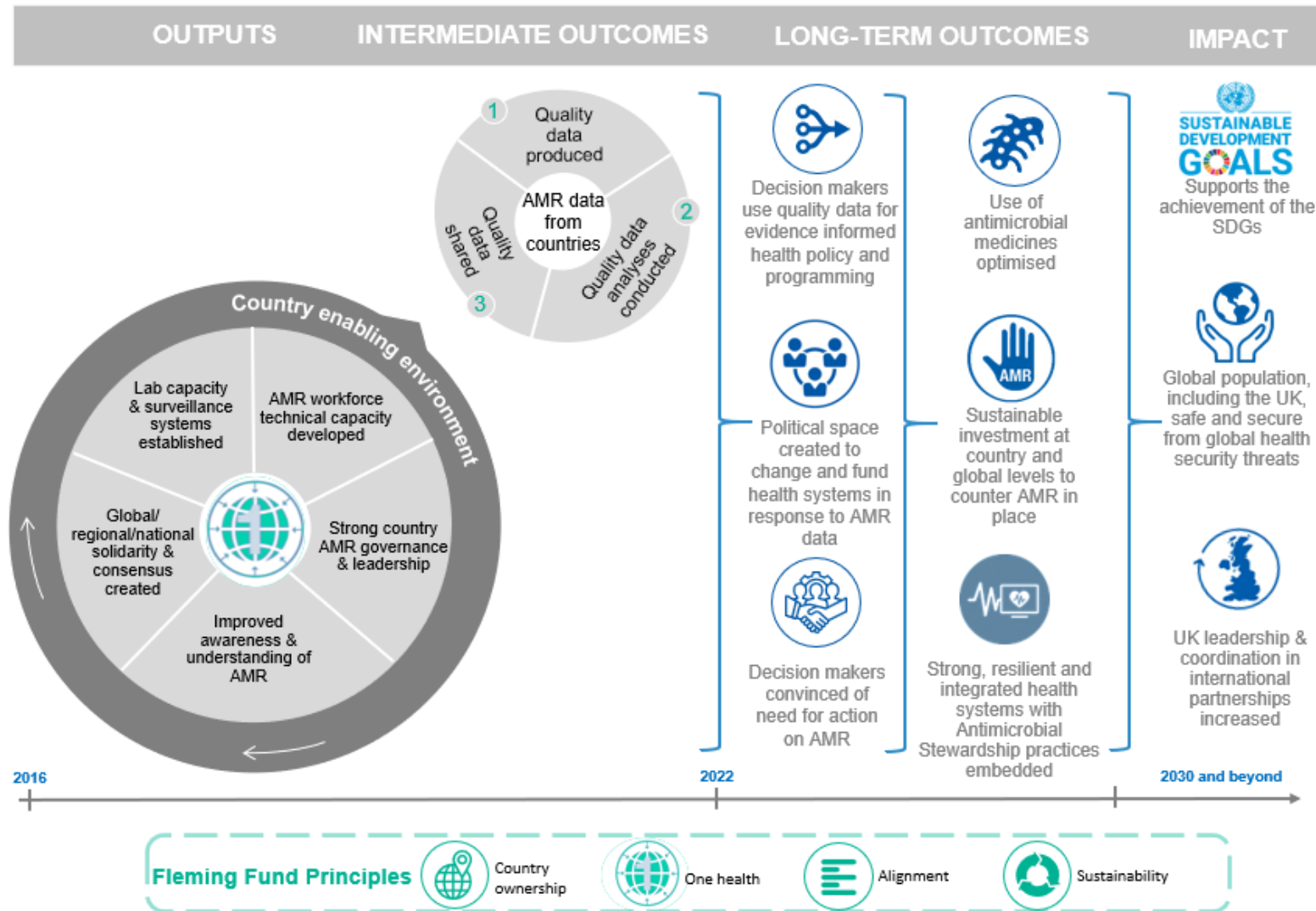
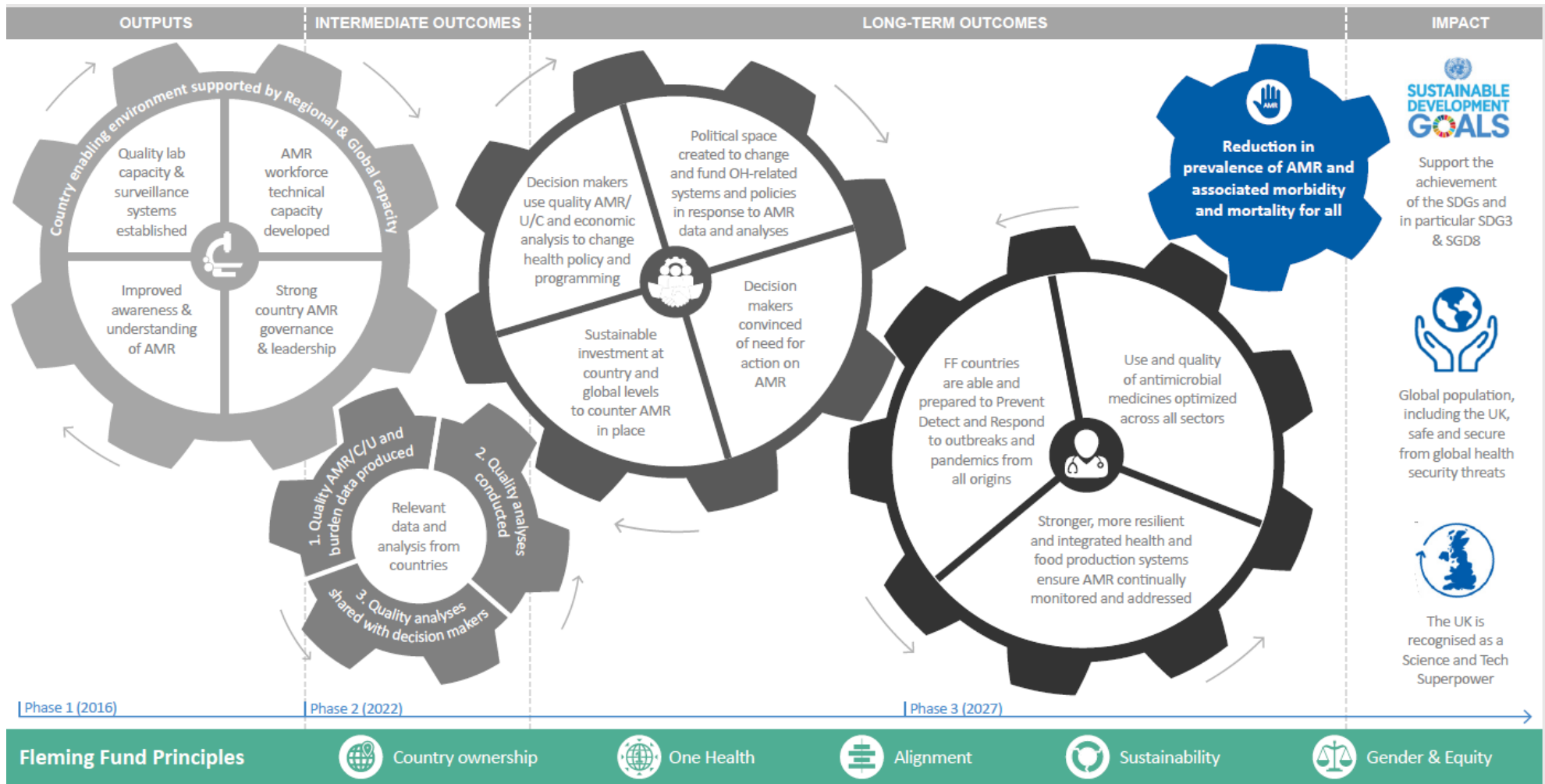


Figure 2: Revised Theory of Change (phase 2)



2.1 Summary of changes

The Fleming Fund has developed a new Theory of Change (ToC) (see above, figure 2) for phase 2 of the programme to reflect both the progress made in phase 1 and the new strategic shifts in phase 2. The visual use of cog wheels shows how outputs intend to lead to intermediate and long-term outcomes. The inclusion of a more detailed timeline, the new principle of "gender and equity" and specific descriptions of outcomes reflect the Fleming Fund's short-, medium- and long-term goals.

The new ToC has been tested with partners, who will align their phase 2 proposals to support achievement of the revised outputs and outcomes. Phase 2 outcomes will be assessed against the new ToC, as well as the new Results Framework which is currently under development. However, the project's progress in 2021 has been assessed against the original ToC (see above, figure 1).

Recommendation 1: Develop and disseminate phase 2 Theory of Change (ToC) narrative with partners to support project coherence and finalise the revised diagram. Ensure partner proposals are aligned to the ToC, such as basing their own ToC on it.

2.2 Progress towards outcomes and impact

Overall, the Fleming Fund has made good progress against phase 1 outcomes. Improved laboratory capacity and input into global surveillance systems have contributed to an increase in the quantity and quality of produced and shared AMR/C/U data from Fleming Fund countries. Evidence of longer-term outcomes is already beginning to show, such as the ability of healthcare systems to prepare for both AMR and other health threats.

For example, regional grant 5 AMR Whole Genome Sequencing centres helped to sequence around 13,000 genomes, the data of which was shared in public databases worldwide. This work then contributed to the discovery of the Omicron variant, showing that Fleming Fund activities on AMR can be flexed to deal with other health threats.

However, COVID-19 continued to influence grantees' capacity to meet their previous goals, in particular the Fellowship scheme as fellows were required to spend more time responding to the pandemic (see [project performance section](#) for more detail). The Fleming Fund aims to ensure grantees have the capacity to deliver remote working where possible, as well as provide grantees with the flexibility to adapt to unforeseen circumstances in phase 2 (see [MEL section](#) for more detail).

Grantees are reaching a stage where they are able to publish data analysis based on studies funded at least in part by the Fleming Fund. The most notable of these is the GRAM project's analysis of the global burden of AMR, whose findings were shared with

the G7 (see [page 5](#) of this report). Thanks to the analysis of data and its dissemination to key decision makers, the Fleming Fund has created a good foundation to achieve the longer-term outcome of ensuring decision makers are convinced of the need for action on AMR and the use quality data for evidence-informed policy.

3. Detailed output scoring

The programme achieved or surpassed milestones for over 70% of outputs and remained on track to achieving several more within Q1 of 2022. The Fleming Fund will assess risk rating in a different manner for 2022 milestones as the programme is implementing a Results Framework in phase 2 (see [MEL section](#) for more information).²

3.1 Overall programme

Output number: 1

Output score: A

Impact weighting: 15%

Indicator(s)	Milestone for the review	Progress
1.1 FF projects achieving green or amber-green RAG rating for quality, timeliness and finance on average across the year (All)	70%	<ul style="list-style-type: none"> Not achieved <p>Although the project achieved an average quality RAG of 84%, Finance and timeliness, which both averaged at 54% over the period.</p>
1.2 Percentage of FF supported Human Health surveillance sites showing progress through the LSHTM roadmap functions and stages (MA)	65% (101/156)	<ul style="list-style-type: none"> Achieved <p>66% of surveillance sites (106/161) showed progress.</p>
1.3 Percentage of FF supported Animal Health surveillance sites showing progress through the LSHTM roadmap functions and stages (MA)	65% (51/78)	<ul style="list-style-type: none"> Achieved <p>65% of surveillance sites (49/75) showed progress.</p>

The number of human health sites changed due to the removal of sites from Ghana, Sri Lanka and Timor-Leste, and the addition of sites in Laos, Pakistan and Senegal. The

² Scored based on the FCDO programme scale (see [Annex A](#))

number of animal health sites changed due to the removal of sites from Ghana, Sri Lanka and Laos, and the addition of sites in Indonesia and Uganda. All sites assessed received over 9 months of support.

COVID-19 continued to impact the financing and timeliness of Fleming Fund projects, as projects were put on hold or flexed to support the global pandemic. More on this is detailed in section 4 of this report.

3.2 Standardisation of data/ quality of surveillance/ quality improvement

Output number: 2

Output score: B

Impact weighting: 5%

Indicator(s)	Milestone for the review	Progress
2.1 a) Number of AMS checklists completed (CwPAMS extension)	95% of new grants awarded	<ul style="list-style-type: none"> Achieved 100% (14 Health Partnerships)
2.1 b) Percentage of grants held AMS checklist meetings where AMS interventions have been identified and an action plan drafted (CwPAMS1, CwPAMS extension)	50%	<ul style="list-style-type: none"> Surpassed CwPAMS 1: 71% (10/14) CwPAMS extension: 100% (20/20)
2.3 Number of countries implementing Tricycle using FF funding (WHO)	6	<ul style="list-style-type: none"> Delayed 3
2.4 Number of countries supported to implement and/or adapt regional guidelines and regulatory approaches relevant to addressing AMR (FAO)	10	<ul style="list-style-type: none"> Not achieved 7

CwPAMS' culture of sharing and learning underpins much of the success within the grant. Extension partnerships and refining processes, such as delivery chain mapping, have built learnings into future delivery.

Burkina Faso, Nigeria and Senegal experienced delays in receiving laboratory supplies and will begin implementing Tricycle in 2022.

3.3 Strengthening capacity and workforce on AMR

Output number: 3

Output score: A+

Impact weighting: 10%

Indicator(s)	Milestone for the review	Progress
3.1 Number of ODI Fellows placed (ODI)	7	<ul style="list-style-type: none"> Not achieved <p>1 ODI Fellow placed 2 fellowships in HITAP Thailand ended in 2021.</p>
3.2 Number of Professional Cohort 1, Cohort 2 and Policy Fellows selected cumulatively (MA)	80% (171/213)	<ul style="list-style-type: none"> Surpassed <p>178 (83%) Fellows total: 128 C1 Fellowships filled 28 C2 Fellowships appointed 22 Policy Fellowships appointed</p>
3.3 Percentage of learners who attempt and pass a quiz at the end of a module (MA)	75%	<ul style="list-style-type: none"> Surpassed <p>88% (294/335)</p>
3.4 Percentage of stakeholders attending virtual programme trainings (GESI and PPS) demonstrating improved understanding after training (CwPAMS)	80%	<ul style="list-style-type: none"> Surpassed <p>PPS: 90.5% 68 respondents found the training useful (21) or extremely useful (47). GESI 95%</p>
3.5 Percentage of fellows (Cohort 1), who are completing fellowships in 2021, reporting improvement in 80% of dimension / domains in their self-assessments (MA)	80%	<ul style="list-style-type: none"> Surpassed <p>100% of Uganda, Laos and Nigeria fellows reported improvement.</p>
3.6 Number of completed fellowship webinars by end of December 2021 (MA)	7	<ul style="list-style-type: none"> Surpassed <p>12 webinars completed</p>
3.7 Number of countries where AMR and AMU data generation platforms are piloted at Subnational level (FAO).	10	<ul style="list-style-type: none"> Achieved <p>10 pilot countries</p>

Policy fellows creatively adapted their AMR activities to fit with their increased workload despite the challenges of COVID-19. Three graduated in 2021 with more upcoming in 2022. However, the number of ODI economic fellows was lower than expected. This was partly due to COVID-19, which prevented the visits needed to agree placement of an AMR fellow with national governments. The economic fellowships were not successfully aligned to individual country priorities, contributing to the discontinuation of many fellowships. A review of the economic fellowship, considering its usefulness, would help to determine next steps.

3.4 Laboratory Equipment and Assessment

Output number: 4

Output score: B

Impact weighting: 15%

Indicator(s)	Milestone for the review	Progress
4.1 Number of countries where centrally procured equipment is delivered, installed and supplier training of users completed (MA)	16	<ul style="list-style-type: none"> • Not achieved/delayed 13
4.2 Number of countries where follow-up ATLASS assessments have been undertaken (FAO)	10	<ul style="list-style-type: none"> • Not achieved 2

The FAO's Assessment Tool for Laboratory and Antimicrobial resistance Surveillance Systems (ATLASS) was particularly successful, as it has been applied in all 12 focus countries. However, follow-up assessments must be made in person to measure laboratory and national surveillance system improvements. Due to COVID-19, external assessors were only able to travel to 2 countries involved.

Despite the impact of COVID-19 and global supply shortages, Mott MacDonald was able to deliver, install and supply training for centrally procured equipment in 13 of the original target countries. The remaining 3 target countries will receive the equipment and training in Q2 2022.

3.5 Governance

Output number: 5

Output score: A+

Impact weighting: 5%

Indicator(s)	Milestone for the review	Progress
5.1 Number of countries piloting the WHO AMR NAP costing and budgeting tool and producing prioritized and costed NAP activities (WHO)	5	<ul style="list-style-type: none"> Achieved 5
5.2 Number of countries where the national body in charge of the country AMR strategy receives AMR data report(s) generated by human health surveillance sites at least once a year (MA)	16	<ul style="list-style-type: none"> Surpassed 18
5.3 Number of countries where the national body in charge of the country AMR strategy receives AMR data report(s) generated by animal health surveillance sites at least once a year (MA)	10	<ul style="list-style-type: none"> Surpassed 14

According to the Management Agent, Bangladesh, Bhutan, Indonesia, Laos, Malawi, Nepal, Nigeria, Pakistan, Timor-Leste, Vietnam, Senegal, Tanzania, Uganda, Zambia, Zimbabwe, Kenya, Myanmar and Sri Lanka's human health surveillance sites generated AMR data reports at least once a year.

Bangladesh, Bhutan, Indonesia, Nepal, Pakistan, Vietnam, Laos, Timor-Leste, Zambia, Tanzania, Uganda, Malawi, Nigeria and Kenya's animal health surveillance sites generated AMR data reports at least once a year.

The NAP costing process has been greatly improved thanks to the WHO's new costing and budgeting tool. This provided realistic implementation plans in pilot countries (Sierra Leone, Jamaica, Paraguay, Somalia and Turkey) that are easier to enact sustainably. The tool was launched via 2 global webinars in October 2021.

3.6 Antimicrobial Consumption (AMC) Data

Output number: 6

Output score: A+

Impact weighting: 15%

Indicator(s)	Milestone for the review	Progress
6.1 Percentage of WOH members continuing to engage with the WOH AMU global database (WOAH)	80% per round	<ul style="list-style-type: none"> Surpassed 85%
6.2 Percentage of members supplying quantitative data to AMU global database under reporting option 3 (WOAH)	50% per round	<ul style="list-style-type: none"> Surpassed 56%
6.3 Number of FF countries piloting the WOH information and alert systems (WOAH)	5	<ul style="list-style-type: none"> Achieved 5
6.4 Number of countries in FF regions enrolled in the GLASS-AMC module and submitting consumption data (WHO)	12	<ul style="list-style-type: none"> Surpassed 23 countries enrolled 14 countries submitting data

In 2021, the Fleming Fund successfully held first integrated data call for AMR and AMC. This saw the enrolment of a large number of countries from Africa, South East Asia, and the Western Pacific. The WHO has worked to integrate data from countries in the Western Pacific Regional Antimicrobial Consumption Surveillance System (WPRSCSS) regional initiative in the Global Antimicrobial Resistance and Use Surveillance System (GLASS) to help share information as widely as possible.

Nepal, Eswatini, Malawi, Senegal and Zimbabwe are currently piloting the WOH information and alert systems.

3.7 Substandard and Falsified (SF) Medicines data

Output number: 7

Output score: A

Impact weighting: 5%

Indicator(s)	Milestone for the review	Progress
7.1 Number of countries using tailored IT model to conduct market surveys (WHOSF)	2	<ul style="list-style-type: none"> Delayed 1 2 more to use tailored IT models in 2022, bringing number to 3
7.2 Number of countries reporting SF antimicrobials to the WHO GSMS (WHOSF)	25	<ul style="list-style-type: none"> Surpassed 80

The WHOSF have upgraded their Global Surveillance and Monitoring System (GSMS) system to include more languages and make the system interface more user-friendly. This successfully resulted in more than 3 times the target number of countries reporting SF antimicrobials. Due to COVID-19 travel restrictions preventing on-site training, the use of IT models to conduct market surveys has been delayed to 2022.

3.8 AMR data

Output number: 8

Output score: A+

Impact weighting: 15%

Indicator(s)	Milestone for the review	Progress
8.1 Number of FF countries submitting data into GLASS (MA/WHO)	15	<ul style="list-style-type: none"> Surpassed 17 2 submitted implementation data only
8.2 Percentage of Fleming Fund supported countries producing improved data for GLASS (MA)	80% (minimum 16 countries)	<ul style="list-style-type: none"> Achieved 89% (16/18)

The number of Fleming Fund countries submitting data to GLASS has increased by 45% this year (from 13 to 19 countries), far more than expected. Ghana, Nigeria, Malawi, Kenya, Tanzania, Uganda, Zambia, Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka, Myanmar, Timor-Leste, Indonesia and Laos submitted all required data. Sierra Leone and Papua New Guinea submitted implementation data only.

Of those countries, Bangladesh, Bhutan, Ghana, Indonesia, Kenya, Laos, Malawi, Nepal, Nigeria, Pakistan, Papua New Guinea, Tanzania, Timor-Leste, Vietnam, Zambia and Zimbabwe produced improved data for GLASS.

3.9 Global Burden of AMR data

Output number: 9

Output score: B

Impact weighting: 10%

Indicator(s)	Milestone for the review	Progress
9.1 Number of articles on historical AMR burden submitted to a peer review journal cumulatively (GRAM)	11	<ul style="list-style-type: none"> Delayed 10 papers submitted (cumulative). Local modelling study delayed due to extensive reviews and revision of the global burden of bacterial AMR in 2019 paper.

Given the importance of the report on the global burden of bacterial infection, the publication of the paper was delayed to January 2022. However, its successful global dissemination (with a reach of over 12.1m people via social media) has ensured we exceed expectations in terms of dissemination of the report at global level.

Recommendation 2: Draw on the phase 1 GRAM evaluation lessons to enhance the approach to sharing burden data with decision makers at global, regional and country level. This work will take place during the phase 2 implementation stage and reviewed at the end of 2022.

The GRAM project's publications included the high impact studies, such as the [global burden of AMR study](#) and an [analysis of global AMC](#) both of which were published in the Lancet.

3.10 Awareness and Advocacy

Output number: 10

Output score: A+

Impact weighting: 5%

Indicator(s)	Milestone for the review	Progress
10.1 Average number of page views per news article per month uploaded to the Fleming Fund website in 2021 (FF)	75	<ul style="list-style-type: none"> • Surpassed 114.8
10.2 a) Number of regional grants completing dissemination activities according to plan for 2021. (RG)	70%	<ul style="list-style-type: none"> • Delayed 30% (3/10) 3 grants met the target 2 grants expected to complete activities in early 2022 5 grants had slower than expected delivery
10.2 b) Number of regional grants reaching 60% or more of the target audience for their dissemination activities (RG)	60%	<ul style="list-style-type: none"> • Surpassed 90% (9/10)

The COVID-19 pandemic affected dissemination activities and there was a slower inception than originally anticipated, though workplans were not subsequently adjusted and so the original baselines were not realistic. However, the regional grants were extremely effective, with all but one surpassing the target for audience reach. The remaining grant had a high number of participants, but an even higher target audience of 500+ attendees, which was a very ambitious milestone for this year.

4. Project performance

The Fleming Fund have developed a [phase 1 report](#) to provide a summary of project performance, successes and common issues from 2017 to 2021.

Overall, the Fleming Fund established close partnerships with grantees and successfully communicated achievements to key AMR stakeholders in 2021. The positive relationship with WHO Substandard and Falsified (SF) medical products team allowed grantees to collaborate with other Fleming Fund activities (CwPAMS, GRAM, FAO) on cross-cutting areas. This effectively embedded SF medicines surveillance in several Fleming Fund projects. Other partners have successfully adapted communications depending on the audience. The GRAM project successfully published their paper on antibacterial resistance, disseminating vital findings to a wide range of stakeholders, from global decision makers such as the G7, to academics and country-level influencers.

The Commonwealth Partnerships for Antimicrobial Stewardship grant (CwPAMS) also ran a campaign for World Antimicrobial Awareness Week. Individuals could participate in 8 different activities throughout the week to promote good practice in antimicrobial stewardship, catering for a variety of audiences. Secondees have helped to synergise the Fleming Fund and Tripartite organisations' One Health approach for tackling AMR by helping to develop key strategies, frameworks and proposals.

The Mott MacDonald communications lead role was vacant for much of 2021, and the Fleming Fund DHSC communications lead role was vacant for Q4 of 2021, reducing communications capability. This contributed to the delay of the phase 1 report by a number of months, though this was finalised in early 2022. As both communications leads have been recruited in 2022, they will be able to help grantees identify their target audiences. This will be particularly important for grants such as the WHO SF team, who have struggled to gain traction with their studies and came up against in-country barriers including difficulty in coordinating policy and legal operations at country level as the in-country customs, policy and healthcare teams/departments/ministries had not shared information.

Recommendation 3: Work jointly with the DHSC Global AMR team to revise the Fleming Fund coordination and engagement plan and communications strategy to target stakeholders with the ability to use AMR/C/U data to influence local, regional and global decisions on AMR.

The inclusion of new funders for the Antimicrobial Resistance Multi-Partner Trust Fund (AMR - MPTF), including GIZ (the German Corporation for International Cooperation), is another step towards ensuring AMR surveillance continues to be sustainably funded.

The Fleming Fund should continue to build partnerships with other institutions that have strong relationships with countries interested in supporting improved AMR surveillance capacity.

There has been a real push for capacity building, increasing the long-term sustainability of Fleming Fund activities during 2021. The UK FAO Reference Centre for AMR published a joint E-learning course on understanding antimicrobial resistance in food and agriculture. Regional and country grants have focused on delivering training and upskilling local workforces.

Case Study: Capacity Building in Timor Leste

Fleming Fund investment in Timor-Leste, through Menzies School of Health Research, has strengthened laboratory capacity for the diagnosis of bacterial infections and AMR.

In the national hospital of Timor-Leste (Hospital Nacional Guido Valadares), the establishment of a consistent blood culture service has dramatically changed the way babies can be treated, providing information to clinicians from which they can make informed decisions and use targeted antibiotics. These babies now have a very good chance of surviving what would otherwise be a deadly infection.

Increased capacity has also allowed laboratories to generate data, which is shared with clinicians and public health officials to provide a clear overview of the rates of AMR for different bacteria in Timor-Leste. These data are now being used to develop national antibiotic guidelines, which will recommend antibiotic treatment for patients based on the local epidemiology and known AMR rates.

As expected, COVID-19 and various zoonotic disease outbreaks continue to impact activity that relies on face-to-face engagement, such as the delivery and installation of laboratory equipment, and the fellowship scheme. Fellows have been drawn into frontline roles that reduced the time they have to work on fellowship activities.

However, the flex to remote training and mentoring has enabled the scheme to continue in most countries. Many partners have pivoted activities to continue work on AMR whilst contributing to the pandemic response, such as the regional grants' contribution to the discovery of the Omicron variant through the use of whole genome sequencing. Despite this, several partners found it difficult to adapt to the impact of COVID-19 and to plan for future pandemics or other situations needing remote delivery. This includes delivery of training and events, but also trialling pilots in countries where partners do not currently have a presence.

Recommendation 4: Work with the Fleming Fund Independent Evaluator to review the impact of remote delivery across the Fleming Fund. Ensure lessons and good practice are incorporated into phase 2 proposals and review progress.

5. Risk

Overall risk rating: Amber/Red

Risk 1 description: COVID-19 overwhelms already weak health systems.

Mitigation strategy: Fleming Fund work contributes to health system strengthening and supports pandemic preparedness in developing countries, including flexing to support COVID-19 activities whilst achieving AMR aims.

Residual risk rating: Amber/Red

Risk 2 description: Fleming Fund country and regional investments in laboratory capacity, diagnosis and surveillance are not sustainable.

Mitigation strategy: The Fleming Fund has developed a strategy for sustainability, which has been refined for phase 2 to include the development of individual country strategies, exit planning and contextually specific objectives. The Management Agent also works with grantees to ensure country ownership of grants based on national priorities.

Residual risk rating: Amber/Red

Risk 3 description: The Fleming Fund's programme outcomes are not achieved, as collected and analysed data is not sufficiently shared or acted upon.

Mitigation strategy: AMR Coordination Committees (AMRCCs) are expected to support the collection and analysis of data at the national level and facilitate sharing across sectors as well as regionally and globally. Grant activity in phase 1 has also supported countries to share this data globally through GLASS. Policy fellows have a particular role in supporting national use of data. The Evaluation Supplier assesses prospects for the use of the data and provides recommendations for the programme to consider and adopt. The Fleming Fund intends to prioritise greater use of AMR data as part of the programme's phase 2 strategic shifts. This includes supporting further costing and implementation of NAPs and working closely with governments to build a policy environment to act on data generated.

Residual risk rating: Amber

Risk 4 description: UK investments through the Fleming Fund do not align with other international efforts to improve diagnosis and treatment of AMR, laboratory capacity and diagnosis for priority pathogens.

Mitigation strategy: The Fund continuously consults and coordinates with key donors and stakeholders, in particular global organisations, NGOs and national aid agencies. The programme team will further refine stakeholder strategy and donor mapping in phase 2

proposals, such as increased capacity to coordinate activities. However, this risk has been reduced since the start of the Fleming Fund, as the programme has established itself as a known entity over the last 5 years. This has encouraged other donors take the initiative to reach out and coordinate activities with the Fleming Fund.

Residual risk rating: Amber

6. Project management

6.1 Delivery against planned timeframe

This report assesses partner delivery across phase 1 of the Fleming Fund to provide an overview of achievements and lessons learned since 2017 ahead of new phase 2 plans. The Fleming Fund is the first ODA-funded programme to tackle AMR in LMICs at such a large scale. The delivery objectives set out in the 2017 Business Case have been revised and improved throughout the programme using an adaptive management approach. As many grants were due to end in 2021, the project team has agreed extensions accordingly. These extensions will allow grantees to achieve outputs delayed by the COVID-19 pandemic before starting phase 2 activities, but also provide a smooth transition from phase 1 into phase 2 despite the delay in the Spending Review and subsequent Business Case approval. The additional time will be used to agree robust grant agreements that are ambitious and achievable, while guaranteeing that grantees do not have to wind down activities in the event that phase 2 funding is delayed.

6.2 Performance of partnerships

When setting up the Fleming Fund at the start of phase 1, the pre-grant phase of country engagement with national governments proved to be a critical, high value period in supporting country leadership and action on AMR, taking on average an unexpected 12 months from engagement to beginning grant activity. There was a high administrative burden, such as when UN agencies were involved in negotiations, or multiple departments were involved in signing Memorandums of Understanding (MoU).

Despite these delays, exacerbated by COVID-19, the Fleming Fund's wide range of delivery partners have made significant progress towards the goals set out in the 2017 Business Case. The Management Agent helped to successfully establish grants in 21 countries based on detailed country analysis, as well as setting up 12 regional grants for specific areas of interest. The WHO, FAO and WOAHA have supported a substantial increase in the number of LMICs participating in AMR and AMC data collection with the support of Fleming funding and activities in countries. The Tripartite also continued to develop global tools for AMR surveillance, such as the [Tricycle One Health protocol](#) and [ATLASS](#) with Fleming Fund support. However, some partners continued to struggle to

balance responsibilities linked to zoonotic disease outbreaks and COVID-19 with their Fleming Fund activities (see output scoring and project performance for more detail).

Partners regularly incorporate learnings into their activities and share these lessons widely with relevant stakeholders. CwPAMS take a health partnership approach, with UK National Health Service institutions and other technical experts collaborating with their counterparts in 8 Commonwealth countries to implement effective antimicrobial stewardship strategies in hospitals, improve the knowledge and practice amongst health workers around antimicrobial stewardship, infection, prevention and control, and orient health workers on standardised tools and guidance.

Although COVID-19 continued to disrupt collaboration, many Fleming Fund partners continue to coordinate and discuss key lessons learned. Grantees took advantage of the remote networking opportunity provided by the 2021 Interim Delivery Partners Event to collaborate on shared goals. Externally, the GRAM project and South Centre contributed greatly to raising awareness of AMR amongst decision makers. For example, the South Centre has supported local civil society organisations in the design and implementation of AMR campaigns in 7 countries, including producing material in local languages.

A key lesson learned from 2021 was the discontinuation of all but one economic fellowship due to a lack of uptake by national governments. Given the lack of commonalities between the ODI fellowship aims and national government priorities, the sustainability of the scheme will be reviewed in phase 2.

6.3 Asset monitoring and control

The Fleming Fund's Asset Management policy in 2021 remained largely the same as the policy developed in 2020 (see [2020 Annual Review](#)). Many country grants ended during the year which required transfer of assets primarily to country governments. This process was managed via the Management Agent who sought and obtained permission from DHSC to transfer grant assets. For each request, country circumstances and asset type were taken into consideration and relevant adaptations were applied following advice received from the DHSC Global Health Security programme management office (PMO) and FCDO colleagues.

For example, grant assets were transferred to the International Centre for Diarrhoeal Disease Research Bangladesh (ICDDR, B) rather than the National Government following advice from PMO and FCDO. This approach was considered preferable to avoid long delays and tax/ duty complications. In approving the transfer as proposed, consideration was given to Value for Money (receiving organisation was exempted from National tax and VAT) and securing sustainability of UK government investment in the grant (receiving organisation agreed to undertake ongoing maintenance of assets).

The PMO are currently developing an assets policy, which builds on FCDOs rules on asset management. This is broadly in line with the Fleming Fund's approach to asset management; however, where there are deviations to FCDO / DHSC policy, the Fleming Fund approach will be adjusted to ensure alignment.

Recommendation 5: Review Fleming Fund's approach to asset management in the context of FCDO rules and new DHSC assets policy. Where there are deviations, the approach to asset management will be adjusted to ensure alignment. Where this is not possible, and exceptionally, a risk-based decision not to align to these policies must be documented. Review progress by end of 2022.

7. Financial performance

7.1 Value for Money (VfM) assessment

The Fleming Fund continues to maintain strong cost controls in line with guidance on VfM and with the advice of the Independent Evaluator Itad (see [2020 Annual Review](#)). These were reviewed ahead of the development and finalisation of the phase 2 Business Case to ensure particular consideration for gender and equity.

The Fleming Fund Team has continued to support VfM through the following **Four E's/Four-tier** approach – which is used across all projects and grants:

- From the outset at the **contract negotiation** and **programme design** phase, for example use of regional hubs and competition grant processes to drive value.
- At the **grant agreement phase** – reviewing budget and allocation of resources – including monitoring administration costs closely. (economy)
- At the **quarterly review stage** – looking at workplan completion versus spend ratios. (efficiency)
- At the **end of grant stage** – assessing whether inputs are translating into outputs and outcomes. (effectiveness)
- Throughout **all stages of the grant** – ensuring benefits are distributed fairly and considering social and economic disparity. (equity)

Economy

Due to continued COVID-19 restrictions, remote events continue as the standard method of delivery across Fleming Fund projects. The Interim Delivery Partners Event and phase 2

workshops were held at no additional cost. The regional grants found strong evidence that training delivered remotely could still result in strong learning outcomes, with reduced overall costs. In line with the [2020 Annual Review](#), this is expected to shift to a "hybrid model" in 2022 to improve relationship-building and collaboration between grants.

Training sessions on VfM for the Fleming Fund team and GHS Team have been planned for 2022 to support DHSC's monitoring and control of cost. The team is also monitoring the projected impact of inflation on FF costs over 2022. The Fleming Fund will also ask partners to provide options of additional activities that meet the aims of the ToC outcomes. This will reduce the chance of partners spending less than planned in phase 2.

Efficiency

Although COVID-19 continues to impact activity, grantees have continued to adapt and improve frontline activity across the programme – which is strengthening workplan implementation. The Fleming Fund is conducting VfM reviews for every country and individual grant.

The Management Agent has built up a virtually complete picture of overheads, budget utilisation, investment by types and inputs, across nearly all country and regional grants. This has enabled the identification of many examples of cost savings and tracking/management of key unit costs and overheads throughout the life of grants.

Effectiveness

DHSC and the Independent Evaluator has assessed the Management Agent's review of Managing for Effectiveness, the recommendations of which are being implemented. The Management Agent has implemented a framework to assess the costs and benefits (see above case study) of national AMR surveillance systems based on Fleming Fund country experience to date.

Case Study: The Framework for assessing costs and benefits

The Fleming Fund wanted to understand the true cost of establishing AMR surveillance in LMICs. This would support sustainability of our grants in 3 ways:

1. improving knowledge on the costs of sustaining AMR surveillance systems – including on the broader health system
2. improving knowledge on the funding streams involved in AMR surveillance systems
3. providing a comprehensive account of the potential benefits linked to AMR surveillance

A core objective of the framework is to support the development of business cases and ultimately facilitate investment by other donors and local ministries.

A pilot was established in Uganda, led by the country grantee, with technical support from the Management Agent which evaluated the holistic costs associated with AMR surveillance and assessed the prospective benefits.

In March 2022 a draft of this Framework was presented to a stakeholder group which included the OECD and World Bank. The consensus was that this Framework had strong impact potential and should be rolled out in phase 2, while aligning to broader cost/benefit initiatives.

The Fleming Fund stopped a country grant in Sri Lanka that was viewed as having poor prospects for success and no longer represented VfM. The Fund also considered stopping its economic fellowships to enable a review of the model which was having mixed results, and was disproportionately affected by COVID-19.

The GRAM project's campaign results underwent a rapid evaluation by Portland, the communications agency, based on global level data, finding evidence that there had been a "high" level of effectiveness in the following campaign objectives:

- Raise awareness of the data and its value with policymakers, globally and in targeted regions
- Keep AMR high on the global health agenda in order to increase public pressure on policymakers.

Recommendation 6: Support the economic and business cases for investment in phase 2 by: a) reviewing the economic fellowship scheme in line with the principle of country ownership; b) supporting the rollout of the Framework for assessing costs and benefits of AMR surveillance as a core component of the country grants throughout phase 2.

Equity

There is increasing evidence that outbreaks and other health threats, including AMR, disproportionately affect women, children and those living in poverty and regions affected by conflict³. The Fleming Fund has introduced "gender and equity" as a fifth core principle, placing equity at the forefront of phase 2 activities within the programme. This is being taken forward through a gender and equity workplan, and this principle is being embedded in all phase 2 design proposals and in our evaluation approach in the next phase.

This commitment to gender and equity is already evident in the Fellowships scheme, with 49% of cohort 1 fellows being women, including the AMR surveillance and focal person for the National Public Health Authority in Kenya, who is one of only 2 people who can report to GLASS. The GRAM project will help to improve the understanding of the relative burden of AMR by sex, location and age group.

In addition, the Fleming Fund has produced a full report to assess available mechanisms for gathering metadata on all groups (socio-economic, geographic and gender). This will enable the Fund to catalyse change globally and in specific contexts, leading to more focused policy making and clinical practice on AMR for disadvantaged groups globally.

7.2 Quality of financial management

The GHS programme team have strengthened the spot check process to both prevent and monitor fraud risk. To mitigate the risk to DHSC of loss or misuse of funds across the portfolio of country and regional grants and fellowships the Management Agent (MA) contract includes a £50 million liability. At grant level, the MA's regional finance managers report irregularities and then investigate further with grantees. Often, these irregularities are the result of computational and/or unsupported errors in financial reports. All grantees undergo a rigorous assessment of financial controls, undertaken by the MA's partner EY, and periodic assessments of financial practices and procedures.

Following recommendations from the 2019 and 2020 annual reviews, the Fleming Fund has instated monthly financial reporting and meetings with the MA to discuss the financial forecast and any significant variances. The MA also determine a RAG rating for forecasted spend against an agreed set of criteria to indicate confidence in both timing of payment and amount. This has improved the Fleming Fund's forecasting, aided trouble-shooting and helps to anticipate underspend/overspend.

In 2021 we saw a reduction in the MA variance in spend against forecast when compared with previous years. However, there was still underspend at the end of financial year 21/22. Much of this is due to the impact of COVID-19 but also the ongoing challenges with

³ Tackling antimicrobial resistance together, WHO, 2018

the accuracy of financial forecasting of some grantees and Host Institutions due in part to a lack of financial capabilities in some of these organisations. The MA are working with their downstream grantees to improve financial reporting by making improvements to the reporting systems and templates and the associated guidance. The MA are also improving their ability to factor in the fluctuations in forecasts from downstream grantees and ensure this is reflected in the financial updates provided to DHSC.

These challenges are also evident in financial reporting from other partners where we saw underspends against forecasts at the end of financial year 21/22. For example, we saw underspends in the budget for the CwPAMS scheme. THET, the partner leading this activity, attributed some of this underspend to COVID-19 but also to a lack of financial expertise and capabilities in downstream grantees which made accurate forecasting and effective financial management more challenging. For 2022 and phase 2 the CwPAMS scheme will introduce further guidance to support improved financial reporting and are also considering whether additional financial management support could be provided centrally by THET.

To address anticipated underspend in financial year 21/22 due to the impact of COVID-19, the project team encouraged partners to prepare additional pipeline project activity that could be undertaken in the case of emerging underspend. In general, this has helped to reduce underspend in FY21/22, for example when the Fleming Fund redispersed funding to the WOA for value-add initiatives. The programme team will continue to work to combat optimism bias in forecasts during phase 2 in the attempt to mitigate against underspend.

Recommendation 7: Improve financial forecasting and reporting, including: a) working with the GHS programme management office to increase the accuracy and effectiveness of finance management tools; b) working with the MA and other FF partners to effectively monitor spend and improve the accuracy of forecasting.

8. Monitoring evaluation and learning

8.1 Evaluation

The Fleming Fund uses an adaptive management approach that continuously monitors and evaluates the programme for formative and summative purposes. The Global Learning on Adaptive Management initiative defines adaptive management as a response to “complex problems that will always demand contextual learning, and ... problems where

the challenges faced and/or the interventions are novel and untested, and where there is little evidence for what will work in a particular context”.⁴

In March 2021, the Independent Evaluator, Itad, submitted the third formative deliverable which focused on the fellowships scheme, regional grants and use of data during 2020. It found that:

1. the fellowships and regional grants are well conceived and expected to make important contributions to the Fund’s overarching goals;
2. there is scope to strengthen best practice, coordination and improve M&E;
3. an approach to identifying opportunities to ensure that data is used at country level is lacking.

An internal review of the fellowships scheme and secondments were also conducted to assess performance and identify lessons learnt. Recommendations from the formative deliverable and the reviews were incorporated into the phase 2 Business Case.

In June the evaluation process shifted from generating learning to enhance the quality of implementation, towards a summative judgement based on evaluation questions in line with the Theory of Change. Itad started data collection for the summative evaluation report. Due to COVID-19, Itad adopted a hybrid approach to country visits using national in-country consultants and remote supervision where travel was restricted. This will be rolled out for remaining country visits where appropriate. The summative report is due to be submitted in December 2022.

8.2 Monitoring

The Fleming Fund has made use of a monitoring matrix since its inception, as a portfolio-wide Results Framework was not in place during the phase 1 design and implementation; therefore, each Fleming Fund grant had different monitoring metrics which meant that programme-level targets were not set and results at the programme-level could not easily be determined. Moreover, the programme did not have a systematic way to track progress towards outcomes and impact-level changes. A Results Framework is currently being developed in consultation with the Independent Evaluator and learning partner Itad and our delivery partners, to monitor progress against the expected outputs, outcomes, and impact level changes in the ToC. This has been developed in alignment with best practice from DFID’s (now FCDO) 2020 SMART rules and is due to be reported against from 2023.

⁴ Ramalingam, Wild and Buffardi, 2019

In addition to a portfolio-wide results framework, DHSC Fleming Fund team will be conducting country visits to monitor progress first-hand where travel restrictions allow.

Recommendation 8: Conduct country visits to strengthen relationships, enhance oversight of implementation, deliver on assurance requirements and support results monitoring.

8.3 Learning

Together with the Independent Evaluator, the Management Agent and other delivery partners, the Fleming Fund programme team have incorporated learnings throughout phase 1 to continuously improve the programme. This has resulted in better knowledge of challenges faced and mitigation strategies for possible risks. The ToC diagram was refined in consultation with the Independent Evaluator in 2021 to reflect learning from phase 1 and the phase 2 strategic shifts. It will be used as the foundation for the MEL framework for phase 2.

Case Study: Adaptive management

The Fleming Fund and Mott MacDonald adaptive management workplan helped to identify the need to better assess possible synergies between regional and country grants and other Fleming Fund investments.

The programme team and MA successfully co-developed a series of tools to help coordination, including regional webinars and a partners portal that supports sharing of information between partners.

Meetings between all regional grantees have helped strengthen collaboration and joint planning. These have been complemented by regional webinars that have greatly supported regional grants' impact.

The Fleming Fund continued to assess lessons learned throughout 2021, whether on communications, internal team processes or global Fleming Fund partnerships. The programme team identified the need to make the programme more flexible by empowering local decision makers. This will be reflected in phase 2 by emphasising outcomes rather than outputs in the evaluation process, for example in the new Theory of Change.

Recommendation 9: Further embed adaptive management approaches into phase 2 delivery by: a) supporting the inclusion of adaptive management into grant agreements and monitoring progress (for example quarterly reviews); b) implementing the lessons from the regional grants on the role of early reviews of grant performance trajectory and optimism bias.

Annex A: FCDO Project Performance Scale

This report assesses the project and output scores against the following FCDO scale:

Score	Output Description	Outcome Description
A++	Outputs substantially exceeded expectation	Outcome substantially exceeded expectation
A+	Outputs moderately exceeded expectation	Outcome moderately exceeded expectation
A	Outputs met expectation	Outcome met expectation
B	Outputs moderately did not meet expectation	Outcome moderately did not meet expectation
C	Outputs substantially did not meet expectation	Outcome substantially did not meet expectation