

# Terms of Reference for Request for Proposals

## First Fleming Fund Country Grant to Indonesia

### 1 Overview of this grant

This is a Request for Proposals (RFP) for the Fleming Fund Country Grant to address critical gaps in surveillance of antimicrobial-resistant bacteria in Indonesia. It has been created in response to a Request for Support from the Government of Indonesia (GoI). The grant will be funded by the UK Department of Health and Social Care (DHSC), under its Fleming Fund Grants Programme, which is managed by Mott MacDonald, the Management Agent.

This Fleming Fund Country Grant for Indonesia will focus on strengthening the Antimicrobial Resistance (AMR) and Antimicrobial Use (AMU) surveillance systems in both the human and animal health sectors. It will facilitate a stronger One Health (OH) approach to surveillance, bringing together multi-sectoral stakeholders to share surveillance data and gain a better understanding of AMR and AMU.

This grant will align with the national AMR policy framework and with the investments made by GoI, other donors and stakeholders in this area. In both the human and animal health sectors, the grant will invest in the improvement of national AMR and AMU surveillance coordination and information management, as well as in the reinforcement of both the reference and surveillance site laboratories. In addition, the grant will contribute to further develop and support the coordination with ministries and between technical institutions involved in AMR/AMU surveillance.

The Grantee (or Lead Grantee, if a consortium) will be responsible to Mott MacDonald for all aspects of the grant including the management of any sub-grantees in the consortium, and their performance, technical delivery and financial accountability. The Grantee will be expected to sign the Grant Agreement with Mott MacDonald and will be expected to enter into sub-granting arrangements with partners on the same back-to-back terms.

The Grantee will need to work in close coordination with the GoI's National Antimicrobial Resistance Coordinating Committee (NARCC), as well as Mott MacDonald and other stakeholders, as needed. The Grantee will also be required to harmonise efforts on this Country Grant with other types of grants under the Fleming Fund Grants Programme, namely Regional Grants and the Fleming Fellowship Scheme.

This grant is expected to last 23 months. Grant applications should be in the region of £7-8 million, including all capital, procurement, recurrent costs, and overheads and management costs.

### 2 Overview of the Fleming Fund

#### 2.1 Introduction

The UK Government has established the Fleming Fund to respond to the global threat of drug-resistant infections due to bacterial Antimicrobial Resistance, also known as AMR. The Fleming Fund will be a critical tool in achieving the resolution of the 68th World Health Assembly, 2015 (WHA A68/20), and in realising the 'Political Declaration of the High-Level Meeting of the United Nations General Assembly (UNGA) on Antimicrobial Resistance, 2016'. These recognise that urgent cross-sectoral rationalisation of antimicrobial use, and prevention and control of infections in humans, animals, food, agriculture, and aquaculture sectors,

are key to tackling AMR and call for: innovative research and development; affordable and accessible antimicrobial medicines and vaccines; improved surveillance and monitoring; increased governance on antimicrobial use; and increased international cooperation to control and prevent AMR.

The Fleming Fund aims to address critical gaps in surveillance of antimicrobial-resistant bacteria in low- and middle-income countries (LMICs) in Asia and Sub-Saharan Africa. Countries in these areas are set to bear the highest burden of drug resistant infections. A Global Action Plan on Antimicrobial Resistance (GAP-AMR) has been developed by the World Health Organization (WHO), which acts as the blueprint for a multi-stakeholder global response to averting a global health crisis caused by AMR.<sup>1</sup>

The Fleming Fund comprises a number of workstreams (see [www.flemingfund.org](http://www.flemingfund.org) for more information). One workstream provides support to the Tripartite Alliance – the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE) and the World Health Organization (WHO) – as part of the OH approach. Through funding to the Tripartite Alliance, the Fleming Fund has contributed to the development of National Action Plans (NAPs) in Sub-Saharan Africa, South and South East Asia, and to the building of the evidence base and guidance for AMR surveillance. This work will be critical for the overall success of the Fleming Fund Grant Programme and underpins the delivery of the portfolio of Country and Regional Grants and the Fleming Fellowship Scheme, as these will target capacity gaps identified in NAPs. The Fleming Fund also funds initiatives in academic institutions to develop guidance on the development of AMR surveillance systems.

The Fleming Fund Grants Programme is the largest stream of financial support available through the wider Fleming Fund. The DHSC has appointed Mott MacDonald as the Fleming Fund Management Agent for the Fleming Fund Grants Programme. Mott MacDonald is a global company with expertise in multi-sectoral international development and fund management. On behalf of the UK Government, Mott MacDonald is responsible for funding allocation and oversight of all investments made across the whole portfolio of grants in different activities and in different countries.

The aim of the Fleming Fund Grants Programme is to improve the ability of recipient countries to diagnose drug-resistant infections, with an emphasis on bacterial infections, and to improve data and surveillance to inform policy and practice at national and international levels. The overall goal is to avert the human and economic burden of AMR.

The geographic focus of the Fleming Fund Grants Programme is 20-24 LMICs from Sub-Saharan Africa, and South and South East Asia, including Indonesia. It can provide financial support up to 2021 to participating countries via three funding channels:

- Country Grants
- Fleming Fellowship Scheme Grants
- Regional Grants

The Fleming Fund will be independently evaluated by Itad, a specialist evaluation firm appointed by the DHSC for this purpose.

---

<sup>1</sup> <http://www.who.int/antimicrobial-resistance/global-action-plan/en/>

## 2.2 Problem statement to be addressed by the Fleming Fund

The main issues to be addressed by Fleming Fund Country Grants are outlined below (*please note*: these are general issues in LMICs with regard to AMR, and may not all be relevant in the case of Indonesia):

- There are too few trained microbiologists to undertake the volume of testing required for representative surveillance on AMR.
- There are few health facilities that routinely undertake bacterial culture; still fewer facilities that meet the requirements for accreditation, or who do routine Antimicrobial Susceptibility Testing.
- There is no culture of surveillance for AMR in healthcare delivery and there are barriers to developing it.
- There is little perceived use of surveillance data on any level, including low demand for the data from policy makers.
- There is a lack of knowledge on the use and consumption of antimicrobial agents across One Health sectors.
- There is a lack of antimicrobial stewardship.
- Logistical challenges are significant: transporting samples in a safe and secure manner under challenging transport conditions; ensuring a quality assured and sustainable supply chain for reagents and consumables; and ensuring appropriate servicing of equipment are a few examples.
- Surveillance systems (national, regional and global) that do exist are often vertical in nature, are not linked, and are often unwilling to integrate.
- There are weak One Health structures and there is poor inter-sectoral collaboration.
- There is a heterogeneous picture across countries and regions in terms of starting points, political will, capability, and donor interest and engagement.
- There are poorly defined and applied quality assurance standards in laboratory testing.
- There is lack of understanding across all sectors on transmission patterns and drivers such as inappropriate use of antimicrobial drugs.

## 2.3 Fleming Fund investment areas and outputs

To address the problems above, the Fleming Fund Grants Programme invests in:

- Laboratory infrastructure enhancement;
- Human resource strengthening and workforce reforms;
- Surveillance systems strengthening;
- Building foundations for AMR surveillance data use; and
- Promoting rational use of antimicrobial medicines.

Investment in these areas is expected to achieve the following outputs:

- Improved laboratory skills for bacterial identification and Antimicrobial Susceptibility Testing (AST); and, therefore, improved data quality;
- A strengthened OH workforce with a range of relevant skills for AMR surveillance;
- Stronger AMR surveillance systems and processes at country and regional levels;
- Higher demand for AMR data at regional, country, subnational and facility levels; and
- Better knowledge of country level patterns of prescribing practice and use of antimicrobials (particularly for bacterial infection) across sectors.

Fleming Fund outputs are expected to contribute to the following country outputs:

- Increase in quality and quantity of AMR and AMU data collected;

- AMR and AMU data shared in country to support evidence-based policy and practice; and
- AMR and AMU data shared internationally to improve and inform the global response, in particular via the WHO GLASS programme for human health AMR data.

The RFPs for Country Grants have been designed to ensure that investments and activities contribute directly to outputs. Grantees are expected to adhere to and demonstrate this alignment and contribution to outputs in their applications.

## 2.4 Core principles within the Fleming Fund Grants Programme

The Fleming Fund is built on four core principles. Grantees are expected to demonstrate how they will align with these principles while implementing the grant.

- 1. Country Ownership:** The Fleming Fund Grants Programme will work closely with GoI to ensure that activities undertaken through this grant are in line with Indonesia's National Action Plan on AMR (NAP). The Grantee is expected to plan and implement activities in close consultation with GoI, keeping country priorities and needs in mind, but within limits of the scope as mentioned in this RFP. Unless there are good reasons not to do so, Fleming Fund grants will chiefly invest in the public sector to support development of national public health systems.
- 2. One Health:** The Fleming Fund recognises that the problem of AMR is a great danger to human health and cannot be controlled without a OH approach. A specific set of OH investment parameters has also been developed and are summarised below. This approach is aligned with key documents and guidelines from OIE<sup>2</sup> and FAO<sup>3</sup> as well as the Global Action Plan.
  - a. Collaborative multi-sectoral governance of AMR:** Leadership and resourcing of AMR surveillance and mitigation measures in all sectors that contribute to the emergence of AMR.
  - b. Integrated AMR and antimicrobial use and consumption surveillance in all sectors:** Surveillance in humans, livestock, aquaculture, crops, food and the environment to produce information that is interpreted by multi-sectoral teams to help understand factors associated with AMR emergence within and between sectors.
  - c. AMR mitigation policies and programmes prioritised across multiple sectors:** Evidence-based policies and programmes for AMR mitigation measures that are prioritised across the relevant sectors, based on information generated through AMR, AMU and AMC surveillance in all sectors.

The applicants should explicitly propose activities in the application to demonstrate how they will achieve the above.

- 3. Alignment of Approach:** The Fleming Fund Grants Programme will seek to invest in areas which complement and build on work done to date, rather than create new systems. Grant applicants will need to demonstrate that they understand GoI investments and other actors' work in the field of improved laboratory capacity (both within and outside the sphere of AMR surveillance), improved disease surveillance, and the One Health approach. The Fleming Fund Grants Programme will assess grants for duplication of efforts and/or the development of parallel systems. To the extent possible, applicants will need to demonstrate how their proposals add value to existing and planned investments and systems.

---

<sup>2</sup> OIE Standards, Guideline and Resolution on Antimicrobial resistance and the use of antimicrobial agents;

<sup>3</sup> The FAO Action Plan on Antimicrobial Resistance, 2016-2020.

- 4. Sustainability:** The Fleming Fund Grants Programme will focus assistance on national systems with a view to long-term sustainability. Investment size and scope should, as far as possible, be aligned with national government spending so that systems created with Fleming Fund grants are sustainable within the public health system. We also recognise that the public good of conducting AMR surveillance means medium- to long-term support, and it is expected that countries that demonstrate good performance will have access to additional funds to provide ongoing support. Applicants should explain how they will undertake actions to achieve sustainability on a long-term basis.

## 2.5 Fleming Fellowship Scheme

The Fleming Fellowship Scheme is part of the broader Fleming Fund Grants Programme and is also managed by Mott MacDonald. Fellowships will provide grants to fund an 18-month programme of structured learning, mentoring and skills development for 13 fellows in Indonesia (see annex 2). Rather than duplicate basic training, the Fellowships will focus on building advanced skills and leadership to promote the application of best practice in identified 'Beneficiary Institutions'. Beneficiary Institutions are organisations that add strategic value and complementarity to achieve the Fleming Fund's aims in the country, and who are likely to derive sustainable benefit from the Fellowship activities, such as AMR reference laboratories, national epidemiology units, hospitals and/or national drug administration agencies.

The initial focus will be on strengthening the quality of laboratory diagnostic data and the analysis and use of AMR and AMU surveillance data in Beneficiary Institutions. The scheme will support individuals and institutions to build the sustainability of programmes that seek to address AMR. The data they generate will be applied to deliver evidence-based approaches to tackling AMR, for example to improve antimicrobial stewardship.

In close discussions with GoI, Mott MacDonald has identified priority areas to be supported through Fellowships and the Beneficiary Institutions under the Fellowship Scheme. Details are attached as annexure 2 to this RFP. Each Fellow will be matched with a 'Host Institution' from a list of institutions which have already been identified by Mott MacDonald.

Mott MacDonald will select Fellows through a separate process. Following selection, each Fellow, together with their Beneficiary and Host Institutions, will develop a budgeted work plan which will be agreed and funded by the Fleming Fund through the Host Institution. Activities will include mentoring, secondments, participation in collaborative projects and specialised training that will support the Fellows within their workplace. These institutions will also support Fellows' workplaces to allow Fellows to implement what they have learned.

We expect this process to run in parallel with the selection of the Grantee for the Country Grant, which will enable the Grantee and the Host Institutions to align their work programmes. Though Grantee for the Country Grant should not budget for any activities associated with the Fellowship Scheme as these will be managed by the Host Institution.

## 2.6 Fleming Fund activities in Indonesia to date

To develop the Country Grant for Indonesia under the Fleming Fund Grants Programme, Mott MacDonald carried out visits to the country in September 2018, November 2018 and February 2019 to undertake discussions with GoI and other stakeholders. During these visits, Mott MacDonald met senior government officials, external development partners, technical experts, and undertook visits to select AMR surveillance sites and laboratories in both human, animal health and aquaculture sectors, to understand the current AMR and AMU situation in the country, the programmes that are being implemented, and the current human and

animal health laboratory infrastructure and capacities for supporting AMR surveillance. The discussions identified major gaps and needs for strengthening AMR and AMU surveillance in humans and animals which will be supported by the Fleming Fund Country Grant for Indonesia.

### 3 The current AMR situation in Indonesia

#### 3.1 National Action Plan on AMR

Indonesia has established a multisectoral committee (NARCC) and has developed a NAP to provide a roadmap to combat AMR. The NARCC meets biannually and the Chair of NARCC is the Secretary General for the Ministry of Health. The NAP includes five key strategies, aligned with the strategic objectives of the Global Action Plan and covering human, animal, agriculture, aquaculture and environment sectors. These are:

1. Improve awareness and understanding of antimicrobial resistance through effective communication.
2. Strengthen the knowledge and evidence base through surveillance and research.
3. Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures.
4. Optimise the use of antimicrobial medicines in human and animal health.
5. Prepare the economic case for sustainable investment and increase investment in new medicines, diagnostic tools, vaccines and other interventions.

The NAP is due to expire this year and there is a plan to develop a new one.

#### 3.2 One Health

Indonesia has confirmed its commitment to advance OH collaboration, with five ministries issuing a joint communique on the implementation of OH in the country, to respond to emerging disease threats and address global health challenges including AMR. The Ministry of Agriculture (MOA), the Ministry of Health (MOH), the Ministry of Environment and Forestry (MOEF), the Ministry of Marine Affairs and Fisheries (MMAF), and the Coordinating Ministry of Human Development and Culture (Kemenko PMK) recognised that health security is a shared responsibility that cannot be achieved by a single actor or sector of government.

The NARCC is the implementation agency for the NAP and draws its powers and mandate from a Presidential Decree. The NARCC provides the platform for programme planning and implementation through a supporting structure consisting of technical working groups for individual strategic objectives. The NARCC consists of experts from different ministries, with representation of non-governmental agencies, cooperatives, civil society representatives, media, and international agencies (WHO/FAO/OIE).. By way of its multi-sectoral composition, it ensures adequate integration of AMR containment efforts into the existing health system, public health and disease-specific programmes, animal health and food production sector, and other environmental initiatives.

#### 3.3 AMR Surveillance – human health

Indonesia has identified AMR as an important area for public health action and enrolled in GLASS on 28 January 2019. There is no formal surveillance network yet established, and the country is the process of identifying laboratories for the AMR surveillance network. The proposed AMR National Reference Laboratory (NRL) will be based at BBLK Surabaya, which currently functions as an NRL but predominately for tuberculosis, with an additional AMR NRL at BBLK Jakarta. It has also been proposed to set up a National Coordinating Centre (NCC) with a focal point at the National Institute of Health Research and Development

(NIHRD). Several sites are being considered as potential sentinel surveillance sites: all of these can conduct AMR surveillance (with varying levels of capability) for WHO (GLASS) priority pathogens. Over the next few years, the country plans to increase the number of laboratories that submit AMR data, to expand their healthcare acquired infection surveillance programme and to develop robust hospital-based AMR stewardship programmes.

### 3.4 AMR Surveillance – animal health

The MOA through the Directorate General of Livestock Services (DGLS) is responsible for controlling livestock production including animal health and quality of livestock products. The regulations are based on Animal Health and Animal Husbandry Law No.18, 2009, which stipulated the authority to control animal health and livestock production, including veterinary public health. In order to control AMR and residue of veterinary drugs in livestock products, the initiatives were focused on 2 main aspects: strengthening of veterinary drugs control and improving the quality of livestock products.

Although there is no regular programme for monitoring and surveillance of AMR, some studies on resistant bacteria have been conducted in Indonesia: for example, a study was conducted to monitor AMR in sentinel bacterial isolated from poultry meat in West Java. In addition, there is a programme supporting awareness on AMU governance, good farm practices and creating awareness on AMR in addition to AMU surveillance. FAO is also funding a pilot AMR surveillance programme in broilers, supports an AMU surveillance programme coupled with a Knowledge Awareness and Practices (KAP) survey, and has helped to develop a database on AMU.

### 3.5 Laboratory capacity – human health

Indonesia has an extensive and well-established healthcare system. The hospital network of Indonesia consists of over 2,800 healthcare facilities across government, private and military facilities. Microbiology laboratories are available at hospitals up to the level of provincial hospitals but not at lowest level hospitals. At most of the laboratories, significant isolates from blood, cerebrospinal fluid (CSF), urine and sterile fluid cultures are identified to species level, although this is not universally the case. Most of the laboratories up to provincial level have automated blood culture systems and automated bacterial identification and AST equipment. However, none of the laboratories have a LIMS and only a few enter their results into WHONET. Requisitions for investigations and communication of results is mainly done in paper format and, while general laboratory capacity is good, the main issue is central reporting and analysis of data.

### 3.6 Laboratory capacity – animal health (terrestrial and aquatic animals)

Laboratories in the animal health sector are established under three Directorates. Animal Health and Veterinary Public Health Directorates have been established under Director General of Livestock Services and eight (8) Disease Investigation Centres (DIC) have been established under Directorate of AH. A laboratory for veterinary public health is also established at each AH DIC laboratory. AMR surveillance activities in healthy animals (active surveillance) are conducted at 8 DIC VPH laboratories. The eight DICs are Wates, Subang, Lampung, Banjarbaru, Denpasar, Maros, Medan and Bukittinggi. The NRL for AMR surveillance in the animal health sector is BPMSPH, Bogor; this laboratory is established under the Directorate of VPH. The Indonesian Veterinary Research Institute (BBALITVET) in Bogor is another laboratory that has a capacity to perform AMR surveillance and the laboratory comes under the Directorate General of Indonesian Agency for Research and Development. All DICs are able to culture bacteria and carry out AST. Current AMR active surveillance activities (FAO funded) are done at the BPMSPH.

Aquaculture health and drug control (i.e. use in aquatic aquaculture) activities fall under the jurisdiction of the MOMAF. The ministry has a good network of 15 diagnostic laboratories around the country and all 15 laboratories can do AST with disc diffusion. Nine of these also have capacity for broth dilution. In the network, there are three key laboratories specialised in different disciplines; these are Lampung for Mari culture, West Java (Balai Besar Perikanan Budidaya Air, Tawar Sukabumi) for Fresh water fishery and Central Java laboratory (Balai Besar Perikanan Budidaya Air, Payau Jepara) for Brackish water fishery. The reference laboratory is based in Serang and is also identified as the Station for Investigation of Fish Health and Environment. The reference laboratory is well-equipped and has capacity for sequencing. AMR surveillance activities in aquaculture began in 2016 including AMR and AMU surveillance.

### 3.7 Rational use of drugs

In the human health sector, Indonesia has adopted national guidelines on empirical antimicrobial therapy for select clinical conditions. It also has a process of hospital accreditation which includes the requirement for a hospital based antimicrobial resistance control committee. Indonesia has also banned over the counter sale of antimicrobials without prescription. There is limited information on AMU/AMC in Indonesia: while a few hospitals collect AMU data, at present there are no systems in place to collate and use this information nationally.

The control and administration of veterinary drugs are conducted by the Sub-directorate of Veterinary Drugs Control which belongs to Directorate of Animal Health of the Directorate General of Livestock Services. The Veterinary Drugs Commission was established to provide advice on policy related to veterinary drugs, and the Veterinary Drugs Assessment Committee's role is to conduct technical assessment on administration of veterinary drugs.

## 4 Grant Duration, Funds, Objectives and Outputs

### 4.1 Duration and phasing of the grant

The grant is expected to start mid-2019, and will last for approximately 23 months, ending by September 2021. The activities in of the grant will be divided into two phases: an inception phase, expected to last up to six months, followed by an implementation phase which will cover the remainder of the grant. The table in Section 4.2 illustrates which outputs are expected to be delivered in which phase.

Proposals for the grant require a detailed budget and workplan for the inception phase. On the same budget and workplan template (which will be shared separately as a part of the Application Pack) proposals for the grant should also include an indicative budget and workplan for the implementation phase and should be detailed to the extent possible.

During the inception phase, the Grantee will:

- Complete the project set up including hiring of the team, office set up etc.
- Complete or begin work on the outputs, as outlined in the table in section 4.2
- Collaborate with the Fleming Fellows and their Host Institutions to understand the Fellowship workplans.
- Agree an MOU with the Government of Indonesia, if required.

The remainder of the outputs should be completed during the implementation phase, as outlined in the table in the section below.

At the end of the inception phase, the Grantee will furnish a detailed work plan and budget (including procurement) for the implementation phase, including a clear planned activity at each laboratory/surveillance site. This plan needs to be endorsed by GoI and will need to be signed off Mott MacDonald for release of subsequent funding. The plan should also include standard indicators to be used to measure success (see Section 9).

## 4.2 Grant Objectives and Outputs

The objectives and outputs for this Country Grant are summarised as follows, with more detail provided in Section 7. It is expected that applicants will respond to this RFP by developing and proposing activities that are costed, accompanied by appropriate indicators (see Section 9). All inputs must be permitted under the list of Eligible Funding Items, as outlined in Annex 1. For human health, the Country Grant is intended to support / improve implementation of the WHO GLASS programme and Grantees should refer to the roadmap for GLASS participation produced by the London School of Hygiene and Tropical Medicine (<https://amr.lshtm.ac.uk/wp-content/uploads/sites/12/2016/11/AMR-Surveillance-Protocol.pdf>).

Objective/Output	Inception (Initial six months)	Remaining Period
<b>Activities related to project set up, Kick off/inception meeting during the inception phase</b>	X	
<b>Objective 1: Strengthened Multisectoral One Health AMR and AMU surveillance</b>		
<b>Output 1.1</b> A functional, multisectoral, policy-level decision making body (referred to as Inter-Ministerial Steering Committee (IMSC) in the NAP) is in place	X	X
<b>Output 1.2</b> The Multi-Sectoral Technical Working Group on AMR and AMU Surveillance is created and operates according to an agreed TOR	X	X
<b>Output 1.3</b> Strengthened information sharing across sectors to support programme and policy recommendations		X
<b>Objective 2: Strengthen AMR and AMU surveillance in humans</b>		
<b>Output 2.1</b> National Coordinating Centre (NCC) to be established at the National Institute of Health Research and Development (NIHRD) to manage and share AMR/AMU surveillance data (collect, analyse, report and utilize) nationally/internationally		X
<b>Output 2.2</b> Human health sector technical working group functions as per agreed TOR	X	X
<b>Output 2.3</b> Bacteriology Division of BBLK, Surabaya and BBLK Jakarta functions as a National AMR Reference Laboratories	X	X
<b>Output 2.4</b> Sentinel surveillance sites generate and send quality AMR surveillance data to the National Coordinating Centre (NCC)	X	X
<b>Output 2.5</b> A selected number of sentinel surveillance sites provide mentorship and supportive supervision to other sub-sentinel sites		X
<b>Output 2.6</b> NIHRD has a biorepository for AMR strains and uses whole genome sequencing to answer specific AMR / surveillance questions.		X
<b>Objective 3: Strengthen AMR and AMU surveillance in poultry</b>		
<b>Output 3.1</b> Animal Health Sector (AH+VPH) AMR and AMU Surveillance Technical Working Group (TWG) functioning on TOR agreed with NARCC	X	X

Objective/Output	Inception (Initial six months)	Remaining Period
<b>Output 3.2</b> A two-year AMR surveillance plan in terrestrial animals is in place, prepared based on analysis and expert review of the findings from data that is already available	X	X
<b>Output 3.3</b> Assessment of priorities and needs of laboratories for AMR surveillance completed and documented and DIC-level surveillance activities are strengthened.	X	X
<b>Output 3.4</b> Strengthen BPMSPH ability to carry out National AMR Surveillance Laboratory functions such as advanced AST testing and AMR data analysis and interpretation		X
<b>Output 3.5</b> Strengthen AH DIC Wates' ability to carry out National AMR Surveillance Laboratory functions as decided in output 3.1		
<b>Output 3.6</b> Strengthened LIMS connecting all surveillance sites		X
<b>Output 3.7</b> Enhanced AMC and AMU surveillance and data management capacity		X
<b>Objective 4: Strengthen AMR and AMU surveillance in aquaculture</b>		
<b>Output 4.1</b> Strengthen Centre for Inspection of Fish Disease and Aquaculture Environment (CIFDAE) to implement AMR surveillance in aquaculture and AMC/AMU surveillance	X	X

### 4.3 Funding envelope

Grant applications should be in the region of GBP 7-8 million for the full grant period, including all capital, procurement, overhead and management costs.

The Fleming Fund wishes to see value for money (VfM), and all applicants will be expected to demonstrate their understanding of VfM. The Guidance Notes for the Grant Application Form provide further information on different dimensions to be considered as part of a VfM approach.

### 4.4 Procurement

#### 4.4.1 Laboratory equipment and consumables

An indicative procurement list for laboratory equipment and consumables for the grant was compiled following visits by Mott MacDonald team in February 2019 (Positioning Activities). The procurement list will be included as part of the Application Pack for information purposes.

The Grantee will need to work with further selected laboratories (to be confirmed by GoI during the inception phase) to finalise detailed specifications for equipment and consumables, and a procurement plan and budget should be developed by the end of the inception phase. Pending approval from Mott MacDonald and GoI, the Grantee will be expected to undertake the procurement of laboratory equipment and consumables. The choice of procurement route will be finalised post grant signing, subject to assessment by the International Procurement Agency (IPA), a partner of Mott MacDonald in the Fleming Fund Grants Programme providing advisory services. The Grantee will be expected to work with IPA as necessary to optimise the procurement process. Some items (e.g. automated blood culture analysers, automated antimicrobial susceptibility testing platforms, and mass spectrometry instruments) may be procured centrally by IPA.

The Grantee will also be expected to:

- assist with the import and delivery of any equipment procured by IPA;
- work closely with suppliers to ensure that delivery of items is sequenced appropriately;
- maintain an asset register of all items that are defined as assets by the programme;
- regularly monitor the items that have been procured by Fleming Fund Grants Programme throughout the course of the grant to ensure: i) items are being used as intended; and ii) items are being maintained appropriately; and
- report any misuse or misappropriation of assets to Mott MacDonald.

#### 4.4.2 Renovation of laboratories

Laboratories will require varying degrees of refurbishment under this Fleming Fund Country Grant. The Grantee will need to undertake the renovation works and procurement of necessary goods that are required for the renovation of the laboratories (e.g. benches, air-conditioning units, flooring, generators etc.).

The Grantee should undertake relevant detailed site assessments for refurbishment in the inception phase and should include the costs in the budget and proposal for the implementation phase, which will need to be subsequently be agreed and signed off by Mott MacDonald. This process should use the site assessment tool provided by the Management Agent, although other tools may be used in addition if further information is required by the Grantee. All applicants should make sure that sufficient personnel costs are included both for sites assessments and subsequently for the design work required for renovation and management of renovation of laboratories, both of which would need to be coordinated very closely with the GoI. Grantees should also explain how they will manage the renovation of laboratories and provide details of any experience undertaking renovation work.

For all items procured under renovations, the Grantee will be responsible for:

- maintaining an asset register of all items that are defined as assets by the programme;
- regularly monitoring the items that have been procured by Fleming Fund Grants Programme throughout the course of the grant to ensure: i) items are being used for intended use; and ii) items are being maintained appropriately; and
- reporting any misuse or misappropriation of assets to the Management Agent.

As with the laboratory equipment and consumables, the detailed procurement plan and budget will need to be reviewed and agreed by Mott MacDonald and GoI, and the choice of procurement route will be subject to assessment by the IPA.

For this grant all applicants should insert a budget of GBP £1,500,000, which will serve as a placeholder budget until detailed assessments can be undertaken by the Grantee in the inception phase to ascertain a more detailed budget for procurement of laboratory equipment, consumables, and renovation of the laboratories.

## 5 Key partnerships, alignment and coordination

The Country Grant must be delivered in a way which supports the national effort, and which takes account of current capacity levels, absorptive capacity, and alignment with other stakeholders working in Indonesia. The Grantee must also ensure that activities complement and build on work done to date and avoid duplication and development of parallel systems.

In the human health sector, the delivery approach and inputs must be closely aligned with national priorities, as stated in the NAP and other related policy and strategy documents. There must also be close alignment

with inputs being provided by other development partners supporting AMR/AMU-related activities. This means that the Grantee, in addition to working closely with national stakeholders, must work closely with the development partners involved in AMR during both the inception and implementation phases. Allocation of grant resources should support the national effort in a transparent way by specifying resource allocation in a workplan and budget that has been jointly developed by government officials and the Grantee, where possible.

In the animal health sector, the delivery approach and inputs must be aligned with the NAP. Building a relationship with the One Health Partnership would also be useful to contribute to AMR information sharing in this forum.

Much of the success of this grant, in particular Objective 1, depends upon the ability of the Grantee to bring stakeholders from multiple sectors together and facilitate joint working. Close collaboration with a wide range of stakeholders at different levels in the GoI is central to the success of this grant. The Grantee will also need to build and leverage partnerships with several AMR stakeholders beyond those in Government, to include academic, training and research institutions, the private sector, and other development partner-supported programmes.

The Grantee must particularly bear in mind the need to enable sustainability of AMR surveillance beyond the life of the grant. Applicants are expected to describe concrete strategies to promote the sustainability of outputs in their proposals.

## 6 Complementing other grants from the Fleming Fund Grants Programme

The Country Grant is expected to work effectively and synergistically with other grants under the Fleming Fund Grants Programme at the regional level. This relates to both the Fleming Fellowship Scheme (see Section 2.5) and Regional Grants.

The Regional Grants Programme will focus on strengthening networking and data sharing on AMR at the regional level. The Grantee is expected to liaise, through Mott MacDonald, with such grants to maximise the sharing of AMR data and learning at the regional and global levels.

It is expected that 13 Fleming Fellowships (6 in the human health sector, 4 in the animal health sector and 3 in aquaculture) will be appointed in Indonesia. Successful applicants will receive specialised training in AMR epidemiology, AMR and AMU data management and analysis, laboratory quality management, and advanced laboratory technical skills.

Fellows are expected to become technical leaders in AMR and AMU surveillance in Indonesia, and it is hoped that they may play a role as mentors and active trainers in capacity building activities that will be implemented through this Country Grant. The Grantee is therefore expected to work, wherever possible, in collaboration with the Fleming Fellows.

Indicative terms of reference for all the Fellowships, currently being finalised, are attached in Annex 2.

## 7 Detailed Objectives and Outputs

### 7.1 Objective 1: Strengthened Multisectoral One Health AMR and AMU surveillance

Outputs and activities under this objective will focus on strengthening multi-sectoral coordination of the implementation of Indonesia's NAP. Subsequent sharing and reviewing of AMR and AMU surveillance results across sectors should lead to an integrated understanding of the epidemiology of AMR in Indonesia, leading to identification of prioritised knowledge gaps that will guide future surveillance and research activities. Despite the challenges at national level, collaboration and information sharing does occur between sectors. Specific outputs to address objective 1 are presented below.

#### **Output 1.1 A functional, multisectoral, policy-level decision making body (referred to as the Inter-Ministerial Steering Committee (IMSC) in the NAP) is in place**

The Grantee will undertake activities to encourage the GoI to set up a high level IMSC which can make policy level decisions on AMR and AMU related issues. Currently, there is a multisectoral coordinating committee (NARCC) in place, but it lacks policy level decision-making authority. The Grantee will support in setting up of a multisectoral, policy making body on AMR, as mandated by NAP, in close discussion with GOI.

The Grantee will provide administrative support for the effective functioning of IMSC and will provide technical assistance to this policy-level body to make recommendations on AMR programmes and policy, and on priorities for future surveillance and research. In addition to this, the Grantee will also provide administrative support to NARCC to conduct regular meetings with representation from other ministries/sectors.

By the end of the grant, the following should be achieved:

- Activities undertaken to support setting up of a high level Inter-Ministerial Steering Committee with input from relevant ministries (i.e. Health, Livestock (Agriculture), Environment, Fisheries)
- Support is provided to allow IMSC, once established, to meet regularly.
- NARCC meets regularly, and has representation from relevant ministries (i.e. Health, Livestock (Agriculture), Environment, Fisheries) and expert from Universities etc., and functions effectively so as to make recommendations to IMSC on AMR related policies.
- As the current national action plan (NAP) only runs until 2019, the Grantee will assist the NARCC in the form of technical assistance and administrative support (such as organising meetings), to update Indonesia's National AMR Action Plan.
- Support provided to NARCC to develop an economic case for sustainable investment on activities related to AMR containment

#### **Output 1.2 Multi-Sectoral Technical Working Group on AMR and AMU Surveillance is created and operating according to an agreed TOR**

Under this output, the grantee will provide support to establish a multi-sectoral Technical Working Group, as mandated under the NAP. This TWG will undertake AMR surveillance data analysis and review through a multi-sectoral approach to develop hypotheses regarding AMR drivers in each sector. The TWG will also be expected to undertake the review process leading to identification of potential links between AMR and AMU patterns observed in humans and terrestrial animals, aquaculture, agriculture and the environmental sectors, and to propose subsequent targeted surveillance and/or investigations to test these hypotheses.

The Grantee will provide assistance to NARCC to establish the TWG, and by providing administrative assistance to the TWG to meet regularly and will provide technical assistance to the TWG to undertake data analysis on AMR and AMU. By the end of the grant, we expect the Grantee to achieve following:

- A multi-sectoral TWG is set up with input from relevant ministries (i.e. Health, Livestock, Environment, Fisheries) and other stakeholder such as Universities etc), with ToRs for the multi-sectoral TWG have been agreed
- A functional multi-sectoral TWG is in place and meets at least twice a year to discuss AMR, AMU and AMC surveillance design, results and future planning.
- An integrated OH approach to AMR and AMU surveillance is implemented in one or two selected geographic areas where samples are collected from humans, terrestrial animals, aquaculture species within the area and AST is conducted for a common set of bacteria (at least *E.coli* and *Salmonella*) and antimicrobials.
- Sector-specific results of AMR and AMU surveillance are shared by sector-specific TWGs, during discussions held at multisectoral TWG meetings. These discussions and reviews lead to recommendations that are submitted to IMSC to influence policy decisions.
- A multi-sectoral national AMR and AMU symposium is held towards the end of the grant (all sector-specific results and recommendations from AMR and AMU surveillance programmes are presented at the end of the grant period to highlight the importance of the OH approach in tackling AMR).
- Government of Indonesia may set up Intra-country Regional AMRCCs in sentinel surveillance region to support One Health surveillance across sectors at sentinel area and to support in the training / mentorship to lower laboratories and development and dissemination of SOP for AMR surveillance and AST. In case such Regional AMRCC are established, the Grantee will provide support to such regional AMRCC in the form of logistics, technical and administrative support.

### **Output 1.3 Strengthened information sharing across sectors to support programme and policy recommendations through**

Establishing a platform to collect and manage AMR and AMU surveillance data and information is a primary requirement for a surveillance system. The Grantee will be expected to support establishment of a National Coordinating Centre (NCC) to be primarily responsible for collecting all HH AMR surveillance data in order to report to GLASS. In addition to its reporting role, the NCC could support collecting results from AMR surveillance conducted in other sectors and sharing these results with the NARCC.

Further Grantee may provide support to improve access and use of cross-surveillance data across human, animal, and environment sectors, by setting up a system to coordinate and/or integrate surveillance data to provide a more complete picture of antimicrobial resistance, use and residues that can facilitate analysis of trends over time and across human, animal, and environment sectors. This will help the NCC to access and use data across sectors and generate a compilation report which highlights the trends and patterns of AMR and AMU across sectors

By the end of the grant, we expect that through the support provided by the Grantee, the following is achieved in ways that are specifically designed to support improved and more effective programme and policy recommendation:

- Functional NCC is established with strengthened IT capacities with networking support.
- NCC will have shared information on results from surveillance with multisectoral TWG to facilitate their recommendations.

## 7.2 Objective 2: Strengthen AMR and AMU surveillance in humans

NARCC has assigned BBLK Surabaya and BBLK Jakarta as the NRLs to assist the surveillance sites in the collection of quality assured AMR and AMU data, and have suggested 12 HH surveillance sites to be covered under this Fleming Fund Country Grant. Four of these have been proposed as the priority AMR surveillance sites (Table 1). The remaining 8 surveillance sites should be determined during the inception phase by the Grantee in close discussions and consultation with Gol.

A list of priority specimens and priority pathogens following WHO's GLASS recommendations and incorporating national priorities has been developed (Table 2). The surveillance site laboratories should be supported to enable them to isolate and identify these organisms from blood, urine, stool and genital samples as appropriate, to perform AST, and report results to clinicians in a timely manner, and to the National AMR Focal Point as per the surveillance system requirements.

**Table 1: List of NCC and HH AMR reference laboratories and surveillance sites to be strengthened through the first Fleming Fund Country Grant**

Name	Type	Location
1. BBLK Surabaya	AMR Reference Laboratory (Geographical Distribution Central and Eastern Indonesia)	Surabaya, East Java
2. BBLK Jakarta	AMR reference laboratory (Geographical Distribution Western Indonesia)	Jakarta Special Capital Region
3. NIHRD	NCC	Jakarta Special Capital Region
4. Hasan Sadikin Hospital	Surveillance site	Bandung, West Java
5. Adam Malik hospital	Surveillance site	Medan, North Sumatra
6. Rumah Sakit Persahabatan	Surveillance site	Jakarta Special Capital Region
7 RSUP Sanglah Hospital	Surveillance site	Denpasar, Bali
<i>Additional 8 AMR surveillance sites</i>	Surveillance sites	To be decided during inception phase

**Table 2: Priority pathogens for surveillance in human health**

	Pathogens	Sample	Collection sites
<b>GLASS priority pathogens</b>	<i>Escherichia coli</i>	Blood, urine	All sites
	<i>Klebsiella pneumoniae</i>	Blood, urine	All sites
	<i>Acinetobacter baumannii</i>	Blood	All sites
	<i>Salmonella spp</i>	Blood, stool	All sites
	<i>Shigella spp.</i>	Stool	All sites
	<i>Staphylococcus aureus</i>	Blood	All sites
	<i>Streptococcus pneumoniae</i>	Blood, CSF	All sites
	<i>Neisseria gonorrhoeae</i>	Urethral swab / cervical swab	All sites

### **Output 2.1 National Coordinating Centre established at NIHRD to manage and share AMR/AMU surveillance data (collect, analyse, report and utilize) nationally/internationally**

Very recently, the NIHRD has been designated as the NCC. As NCC, NIHRD will provide an oversight of AMR surveillance implementation at a national level against key performance indicators. The strategic functions may include other aspects of tackling AMR, for example strategic oversight of infection prevention and control (IPC) policy, development and use of standardised treatment guidelines. The Grantee should undertake activities to strengthen the NCC in terms of infrastructure, human resources development, data analysing and data storing equipment and software to increase its technical capacity to operate as the overall coordinating body for AMR surveillance.

By the end of the grant following should be achieved:

- NCC is leading and coordinating AMR and AMU surveillance data storage with formal analysis, including of risk factors.
- Epidemiologists at NCC and designated staff at surveillance sites are trained to analyse AMR data collected from surveillance sites and NRL.
- NCC is providing feedback on nationally collated resistance data on priority pathogens to the surveillance sites.
- NCC produces a report showing the results from analysis of the AMR surveillance data
- NCC provides guidance and information on clinical, epidemiological, and laboratory data collection and reporting.

### **Output 2.2 Human Health sector technical working group functions as per agreed TOR**

Formal TOR for the technical Working Group (TWG) need to be finalised in agreement with the NARCC. The Grantee should provide technical assistance to the TWG and provide logistics support for regular meetings and documentation support. The following key deliverables should be achieved by the end of the grant:

- Functional TWG for HH in place, with an agreed TOR, conducting quarterly meetings.
- Prescription based study AMU survey is done within a selected hospital cluster.
- Indonesia National Agency of Food and Drug Control and other agencies such as universities etc are supported to do an AMC study.
- AMR, AMC and AMU surveillance results regularly analysed and discussed.
- Priorities for further surveillance/research identified and costed.
- Results shared and discussed with other relevant technical working groups leading to improved AMR policies and practice.

The Grantee should also provide technical assistance to the TWG to develop protocols and data collection tools, analyse data and generate policy level recommendations on AMC and AMU.

### **Output 2.3 Support Bacteriology Divisions of BBLK Surabaya and BBLK Jakarta to function as National AMR Reference Laboratories**

BBLK Surabaya and BBLK Jakarta have been identified as the AMR reference laboratories for the priority pathogens listed in Table 2, and have been mandated to provide leadership and technical support for the laboratories in the AMR surveillance network. The primary functions of BBLK Surabaya and Jakarta are to promote good microbiological laboratory practice within the surveillance network, and to serve as a resource and coordination point to harmonise laboratory testing and to collaborate with the animal health sector.

By the end of the inception phase,

The Grantee should complete assessments of BBLK Surabaya and Jakarta using the needs assessment tools provided by Mott MacDonald, under technical guidance and supervision from Mott MacDonald. This assessment will inform the details of the actions required to make them fully functional as NRLs. The Grantee, in discussion with the NARCC and BBLK Surabaya and Jakarta, will be expected to support renovation, strengthen information technology, equipment procurement and training as needed. The Grantee will need to develop and support the implementation of equipment maintenance contracts.

By the end of the grant we expect following to be achieved:

- NRLs undertake supportive supervision and quality assurance of the surveillance sites.
- NRLs provide technical support and training for the laboratory workforce to generate quality-assured AMR data at surveillance sites (pathogen isolation, identification, AST and data entry using WHONET).
- NRLs update relevant laboratory guidelines and quality documents and disseminate to surveillance sites. This can include assistance in development of SOPs and bench aids suitable for use by surveillance site laboratories.
- NRLs are enrolled into an EQA programme, and in turn establish a national EQAS for other sentinel surveillance site laboratories.
- NRLs provide confirmatory testing of organism and susceptibility, plus additional phenotypic characterisation of the mechanisms of AMR for unusual resistance patterns for isolates referred by surveillance sites.
- A sustainable and bio-secure means of transporting QC and EQA strains from the reference laboratories to surveillance sites, and for referred isolates from the surveillance sites to the reference laboratory, is established,
- A secure biorepository of isolates is established at a site identified by GoI to support the biorepository at NIHRD. This includes procurement of necessary equipment, developing protocols for sample storage (including SOPs for determining which isolates are stored), establishing an inventory system, and developing protocols for accessing and using archived materials.
- A collection of routine and extended<sup>4</sup> QC ATCC reference strains is maintained at NRLs
- NRLs are equipped to reach Biosafety Level 2 (see CDC BMBL 5th edition<sup>5</sup>). The Grantee will aid in this by the procurement of equipment, training, controlling laboratory access.
- HHTWG/NARCC monitors and evaluates functioning of NRL in AMR surveillance implementation by periodic supervision, at least 2 times/year

#### **Output 2.4 Sentinel surveillance site laboratories can generate and send reliable quality AMR surveillance data**

In the inception phase, the Grantee will undertake detailed assessments of 12 surveillance sites, as mentioned in the table 1, using the needs assessment tools which will be provided by Mott MacDonald. In addition, Mott MacDonald will provide technical guidance and supervision for assessment to the Grantee.

Assessment of the laboratories during the inception phase will inform the details of the actions required to make the surveillance site laboratories fully functional. The Grantee, in discussion with the NARCC, BBLK Surabaya and BBLK Jakarta, and Regional AMRCC (if established) will be expected to support renovation, information technology, equipment procurement and training at the laboratories as needed. The Grantee

---

<sup>4</sup> Following EUCAST or CLSI international standard

<sup>5</sup> Biosafety in Microbiological and Biomedical Laboratories 5<sup>th</sup> Edition – HHS Publication No. (CDC) 21-1112 – Revised December 2009

will need to develop and support the implementation of equipment maintenance contracts in each laboratory.

As the sites vary in capability, the level and type of support offered is expected to vary between them. The Grantee will draw up a plan of support for the laboratories including renovation, procurement, biosafety and biosecurity, and will get it endorsed by Gol, and approved by Mott MacDonald before initiation of the implementation phase.

By the end of the grant we expect that the following results will be achieved:

- Surveillance site laboratories are equipped to a standard level (Biosafety level 2).
- Surveillance site laboratories are producing high quality bacteriology results, which are reported to the referring clinicians in a timely manner.
- Clinicians are using the laboratory appropriately and providing adequate clinical details.
- Laboratories have appropriate Quality Management Systems in place, including:
  - Certification and maintenance of equipment
  - IQC and EQA materials provided at each site
  - Laboratories are participating in the national EQA programme established by BBLK Surabaya and achieving satisfactory results.
- All laboratories have appropriate Biosafety and Biosecurity systems in place.
- AST is performed using a validated international method (EUCAST or CLSI, including use of approved reagents / antimicrobial disks) at all surveillance sites.
- Blood culture contamination rates are monitored, with corrective interventions (e.g. clinical staff training) for sites with a contamination rate >5%.
- Basic clinical and demographic data is collected and linked with laboratory data, with due regard to patient anonymity / confidentiality.
- AMR surveillance is carried out by Sentinel surveillance hospital and laboratories with support by Regional AMRCC, including the generation of data analysis and interpretation, if Regional AMRCC is established
- Surveillance sites are sending regular (minimum monthly) epidemiological and laboratory AMR data to NCC.

Engagement with clinical staff will be necessary across all sites to ensure appropriate sampling of patients, collection of metadata and appropriate response to culture results. Laboratories will need to report results in a timely manner in order to inform patient care, and clinical staff should also be responding to culture results appropriately.

### **Output 2.5 A Selected number of sentinel surveillance sites provide training and mentorship to sub-sentinel sites**

Due to the limited number of sentinel sites and the large population of Indonesia, the sentinel sites and Regional AMRCC (if established) will be required to function as reference laboratories for sub-sentinel laboratories as the surveillance network expands. A Training of Trainers (Tot) model should be established by which initial sentinel laboratories can promote good practice for other laboratories joining the network. The Grantee should undertake activities to assist initial sentinel sites to develop their capacity in this regard.

By the end of the grant we expect the following will be achieved:

- Selected sentinel sites will provide regular training to laboratories at district level.
- A sustainable and bio-secure means of transporting QC and EQA strains will be established from the sentinel to sub sentinel surveillance sites, and for referred isolates from the sub sentinel laboratories to surveillance sites.

## Output 2.6 NIHRD has a biorepository for AMR strains and uses whole genome sequencing to answer specific AMR / surveillance questions

NIHRD is in the process of building a multi-story biorepository for microorganisms. NIHRD also has a benchtop whole genome sequencing (WGS) instrument (Illumina MiSeq). This has been predominantly used for short read sequencing (for which there is good technical expertise) and a limited amount of bacterial WGS. Additional capacity building will be required to develop the WGS service for use in AMR surveillance, particularly for bioinformatics support.

By the end of the grant we expect that the following will be achieved

- NIHRD has an bacterial AMR biorepository for isolates stored under the country AMR surveillance system. The Grantee should undertake activities for procurement of necessary equipment, developing protocols for sample storage, establishing an inventory system, and developing protocols for accessing and using archived materials.
- NIHRD is able to perform Whole Genome Sequencing (WGS) for AMR isolates to answer specific AMR surveillance questions. Training and resources should be provided so that NIHRD can provide a WGS service to support the country AMR surveillance system.

### 7.3 Objective 3: Strengthen AMR and AMU surveillance in poultry

The following are the proposed laboratories that may be included in the AMR surveillance programme in Indonesia.

**Table 3: List of Laboratories for AMR Surveillance in Animals**

Name	Type	Location
<b>BPMSPH</b>	National Reference Laboratory for Animal Health	Bogor
<b>DIC Wates</b>	Surveillance Site – Poultry	Central Java
<b>DIC Denpasar</b>	Surveillance Site – Poultry	Bali
<b>DIC Maros</b>	Surveillance Site – Poultry	Sulawesi
<b>DIC Subang</b>	Surveillance Site – Poultry	West Java
<b>DIC Lampung</b>	Surveillance Site – Poultry	Sumatra

Currently, all laboratories have capacity for processing bacterial isolates. DIC Subang has been engaged in the WHO Tricycle project and other laboratories have been engaged in AMR surveillance programmes in poultry (either broiler or layer) on pilot basis.

The Grantee should support the comprehensive review of already conducted activities to identify the support to be provided to laboratories to enhance their capacity to culture bacteria, and conduct susceptibility testing, data management, reporting and analysis. The Grantee should support the development of a relevant, sector-specific TWG, and work with it to develop and implement surveillance strategies in the poultry sector for AMR and AMU surveillance as the foundation of an integrated OH surveillance system.

## Output 3.1 Animal Health Sector (AH+VPH) AMR and AMU Surveillance Technical Working Group (TWG) functioning on TOR agreed with NARCC

At present, the joint operation of different divisions within the animal health sector is less visible and there is no specific “Animal Health Technical Working Group” (AH-TWG for AMR surveillance). The Grantee is therefore expected to provide facilitation and advocacy support to establish a suitable mechanism linking all

divisions within the animal health sector. The Grantee should facilitate discussions on the distribution of reference laboratory roles among laboratories (VPH and AH), with consideration to the following options (others may also be proposed):

- BPMSH as the reference laboratory for active surveillance, and AH DIC Wates as the reference laboratory for passive surveillance
- shared reference laboratory functions, as determined by the TWG.

By the end of the inception period we expect the following to be achieved:

- A functional animal health TWG is in place and has met at least once. This TWG will include appropriate expertise e.g. microbiologists, epidemiologists, veterinarians and should also include representation from VPH and AH Directorates as well as other relevant Directorates (Aquaculture) and other stakeholders such as Universities.
- ToRs have been agreed.
- Roles of laboratories in the surveillance system will have been agreed by the TWG and the relevant ministries

By the end of the grant, we expect the following to be achieved:

- The functional animal health TWG meets at least three times a year to discuss AMR, AMU and AMC surveillance design, results, interpretation, areas for future surveillance, etc.
- This TWG shares AMR, AMC and AMU surveillance results and interpretation with multisectoral TWG at least twice a year.

### **Output 3.2 A two-year AMR surveillance plan in terrestrial animals is in place, prepared based on analysis and expert review of the findings from data that is already available.**

In the inception phase, the grantee should support a comprehensive review of the activities undertaken so far in the animal health sector on AMR surveillance. The Grantee should work in close collaboration with FAO and other international development partners involved in AMR surveillance and any other AMR-related activities. The Grantee may contract the services of a suitable consultant who has experience and qualifications to undertake such a study.

By the end of the inception phase, we expect the following to be achieved:

- AMR and AMU surveillance activities conducted by DICs and supported by GoI and FAO are reviewed, and gaps identified.
- Epidemiological analysis of already generated AMR surveillance data conducted and trends identified.
- Two-year AMR surveillance plan for terrestrial animals has been designed and priority areas to be funded during implementation phase have been identified.

By the end of the grant we expect the following to be achieved:

- Having identified priority areas for AMR surveillance during inception, an AMR surveillance protocol for terrestrial animals is designed using available guidelines and protocols, results from data analysis carried out during inception, and lessons learnt from previous surveillance activities. A baseline protocol, developed by Massey University, New Zealand, will be provided by Mott MacDonald.
- Support provided to DICs to carry out AMR surveillance, and generation of data.
- Further support is given to the Regional AMRCC (if established) for analysis and interpretation.

### **Output 3.3 Assessment of priorities and needs of laboratories for AMR surveillance completed and documented; and DIC-level surveillance activities are strengthened**

In the inception phase, the Grantee and NARCC should undertake detailed needs assessment of the sites listed above in Table 3, AH AMR reference centre/s and 5 surveillance sites, using the tool provided by Mott MacDonald, in order to draw up a support plan for the laboratories including renovation, procurement and capacity building. This should align with support provided by GoI, and other stakeholders and donors.

By the end of the inception phase, we expect that the following should be completed:

- Detailed assessment of laboratories listed here are completed using the tool provided by Mott MacDonald.
- Assessments are used to produce a costed list of renovations, equipment and consumables for agreement with GoI and Mott MacDonald.
- Plan for procurement and renovation agreed with GoI and Mott MacDonald.

By the end of the grant, we expect the following to be achieved:

- Establishment of AST capacity (disk diffusion) at 5 DICs (Wates, Denpasar, Maros, Lampung and Subang (already engaged in WHO Tricycle program), accompanied by a programme for laboratory improvement, including improved biosecurity and biosafety.
- Support those 5 selected DICs (Wates, Denpasar, Maros, Lampung and Subang) in sample collection, bacteria culture and identification, isolate transportation to the reference laboratory.

### **Output 3.4 Strengthen BPMSPH's ability to carry out National AMR Surveillance Laboratory functions such as advanced AST testing and AMR data analysis and interpretation**

BPMSPH operates under the Directorate of Veterinary Public Health and has been identified as the AMR reference laboratory that will provide leadership and technical support for the laboratories in the animal health active AMR surveillance network. In addition, the laboratory should promote good laboratory practices within the surveillance network, and serve as a resource and coordination point to harmonise laboratory testing. At present, AMR surveillance is done at a few VPH DIC laboratories on a pilot basis and isolates are sent to BPMSPH, as the NRL for animal health, to perform AST. However, it was observed that the data is not regularly analysed due to lack of resources and capacity. The Grantee and NARCC should undertake activities to strengthen BPMSPH in terms of infrastructure, human resources capacity building while strengthening data management and analysis. This will include providing suitable data storing equipment and software to increase its technical capacity to operate as the overall coordinating body for AMR surveillance in AH sector.

Activities listed here may be shared with other laboratories, further to decisions made during inception on the roles of the different laboratories in the surveillance system (output 3.1).

In order to support the laboratory, the Grantee will have to undertake the following:

- Assess which areas of epidemiological knowledge require to be strengthened.
- Provided expert training and IT capacity accordingly.

By the end of the grant, we expect the following to be achieved:

- Provide equipment, consumables and training required to perform advanced and efficient methods of AST.
- Ensure biosecurity and biosafety of the laboratory.
- Participate in an EQAS and provide EQAS to DICs.
- Support establishing the National Biorepository for isolates from the animal health sector.

- Epidemiology expert at NRL-AH are trained to analyse AMR data and can provide basic training to DIC staff as needed.
- National AMR database for the animal health sector is in place, functional and maintained.
- NRL-AH produces a report showing the results from analyses of the AMR surveillance data every 4 months and shares the results with AHTWG.
- NRL-AH provides guidance and information on clinical, epidemiological, and laboratory data collection and reporting.

### **Output 3.5 Strengthen AH DIC Wates' ability to carry out National AMR Surveillance Laboratory functions as decided in output 3.1**

AH DIC Wates operates under the Directorate of Animal Health and has been carrying out passive AMR surveillance activities including culture, identification and AST (using disc diffusion). It plans to perform broth dilution if reagents can be provided. This laboratory functions as the reference laboratory for *Bacillus anthracis* (Anthrax) and has been assessed using the FAO ATLASS tool. Unlike other laboratories visited, this laboratory has a functioning secure access system and relatively good workflow, and Diponegoro University has conducted EQA at the site. Strengthening its microbiology capacity would enhance the service provided to the livestock sector and increase the quality and possibly quantity of data generated through passive AMR surveillance. Strengthening AH DIC Wates alongside BPMSPH will provide an opportunity to harmonise SOPs, procurement methods, microbiology techniques, LIMS, etc. In addition, the laboratory should promote good laboratory practices within its network.

The Grantee and NARCC should undertake activities to strengthen AH DIC Wates in terms of infrastructure, human resources capacity building, and strengthening data management and analysis capacity.

By the end of the grant, we expect the following to be achieved:

- Provide equipment, consumables and training required to perform efficient methods of AST.
- Ensure biosecurity and biosafety of the laboratory.
- Participate in an EQAS
- A data manager has been identified and trained in data management, basic epidemiology and statistical analysis of AMR data.
- Data on AMR is shared with the National AMR database (see output 3.4) on a regular basis
- AH DIC Wates provides guidance and reports based on their analysis and that of active surveillance results to share information on AMR with key stakeholders of from the livestock sector (veterinarians, farmers, etc.)

### **Output 3.6 Strengthened LIMS connecting all surveillance sites**

At present, all AH DICs are connected through a standard LIMS (EpiLab), however, the level of usage at VPH DIC is unclear as the existing system enables reporting clinical data generated by each laboratory and the data is monitored at the Directorate level. In addition, the existing system is not enabled to report AMR surveillance data and is not linked with BPMSPH. The grantee will have to assess the capacity and functionality of EpiLab (and other LIMS if in place) in order to support the laboratories in implementing a robust LIMS that can be used by VPH and AH laboratories.

By the end of the grant, we expect the following should be achieved:

- Strengthened LIMS linking BPMSPH and all laboratories in the surveillance network.
- Staff in all laboratories are trained in data entry and a data manager, in charge of data quality, is identified and trained in each laboratory

- Epidemiologists in charge of AMR surveillance data can access the data in real time.

### Output 3.7 Enhanced AMC and AMU surveillance and data management capacity

At present, the Veterinary Drug Control Sub-directorate of Animal Health Directorate collects data from a variety of sources such as manufacturers, distributors and feed producers as a statutory requirement. However, the data is reported through paper-based methods (e.g. emailing of scanned copies of reports) which is then manually entered into the database, which is extremely time-consuming. Data analysis is done manually and only for the purpose of reporting to OIE. A few AMU studies have been piloted with the support of FAO and to date, the data collected has not been analysed. Although there is a web-based system to report data, the system is not used adequately. The Grantee should provide technical assistance to develop a data collection protocol and a template to obtain standardised and harmonised information/data on sales of veterinary antimicrobials. The Grantee should also provide technical assistance to analyse and report data on antimicrobial consumption according to animal species. Staff from BPM SOH, the national level laboratory responsible for veterinary drugs, could be involved, as adequate, in data collection.

By the end of the grant, we expect the following will be achieved:

- The existing reporting systems reviewed and the sources of data and issues pertaining to the reporting system identified.
- Strengthened AMC and AMU data reporting and management system facilitating online reporting and automatic data analytical capability is in place.
- An AMU survey aligned with the similar activities already in progress is designed and implemented.
- Technical assistance is provided to analyse and interpret survey results.
- Results and interpretation are shared with NARCC.

## 7.4 Objective 4: Strengthen AMR and AMU surveillance in aquaculture

### Output 4.1 Strengthen Centre for Inspection of Fish Disease and Aquaculture Environment (CIFDAE) to implement AMR, AMU and AMC surveillance in aquaculture.

The activities under this objective will support AMR, AMC and AMU surveillance in aquatic animals (shrimps, fish or both). The Centre for Inspection of Fish Disease and Aquaculture Environment (CIFDAE) functions as the national level reference laboratory for a laboratory network consisting of 15 field level laboratories providing services to the aquaculture sector. FAO is beginning a 5-year programme to support AMR and AMU surveillance in the aquatic health sector in 2019, and the Fleming Fund-supported programme will need to align with the FAO programme to avoid duplication. Strengthening CIFDAE to implement AMR surveillance in aquaculture as the national level reference laboratory is a key requirement. Focusing on strengthening the reference laboratory will enable future development of the network as a whole.

Name	Type	Location
CIFDAE	Centre for Inspection of Fish Disease and Aquaculture Environment	Serang

By the end of the inception phase the following should be achieved:

- A needs assessment of CIFDAE will have been carried out
- Assessments are used to produce a costed list of trainings, renovations, equipment and consumables for agreement with Gol and Mott MacDonald.
- Plan for procurement and renovation agreed with Gol and Mott MacDonald.

By the end of the grant we expect the following will be achieved:

- CIFDAE is able to perform advanced and efficient methods of AST (including testing of AST in zoonotic bacteria such as *E. coli* and *Salmonella spp* - including use of VITEK machine that is already available within the laboratory).
- AMR surveillance protocol is designed and implemented by CIFDAE and supported by Regional AMRCC (if established), including data collection.
- CIFDAE participates in an EQAS.
- CIFDAE provides EQAS for field Technical Implementing Units (TIUs).
- An inventoried and secure National Biorepository of isolates in aquatic health sector is in place as identified by Gol (possibly at University laboratories).
- A national AMR database for the aquatic health sector (using WHONET or other appropriate software) is set up and linked to the Directorate General of Aquaculture, Area and Fish Health in the Ministry of Marine Affairs and Fisheries.
- AMU and AMC surveillance protocols are designed and implemented.
- An AMC and AMU database are in place and a data manager is identified and trained adequately.
- AMC and AMU data are analysed, interpreted and results are shared with the multisectoral TWG.
- Set up a suitable system/expand the existing system linking SIFHE and all laboratories in the surveillance network to report AMR surveillance data. Using the same LIMS as for terrestrial animals should be considered.

The Grantee should provide the necessary technical assistance to develop data management and reporting protocols, so that good quality, reliable data is reported centrally for analysis and to generate policy level recommendations on AMC and AMU.

## 8 Grantee Roles and Responsibilities

The main role of the Grantee – or Lead Grantee if the successful applicant is a consortium – will be to plan and implement the 17 outputs and deliver the three objectives listed in Section 7. The Grantee will be responsible for providing the expert technical assistance and high-quality support needed to achieve agreed results. The Lead Grantee will also be responsible for financial management and controls for the grant as a whole (including the contributions of sub-grantees if applicable), and for monitoring and reporting to Mott MacDonald. Reporting of financial expenditure against budgeted activities is a requirement of the grant and Grantee(s) will need to show evidence of sufficient capabilities to undertake these responsibilities.

## 9 Measuring success

Country Grants are ultimately expected to generate results that can be tracked using a standard set of indicators that will monitor progress and achievements within and across Country Grants. A copy of the full list of indicators will be shared in the Application Pack. However, Mott MacDonald recognises that the suggested indicators may not all be applicable. Therefore, applicants are expected to select from the standard indicator set only where appropriate.

In summary, while the completion and level of attainment for all activities requires monitoring, the type/level of activity will determine the monitoring method. When developing the application, applicants should:

- Select from the proposed indicators for activities, where appropriate; or
- Identify targets and timeframe completion for 'process' type activities (i.e. where indicators provided are not applicable / too advanced).

A mix of these options is also appropriate depending on application content. In the revised and updated workplan to be submitted to Mott MacDonald at the end of the inception phase, prior to implementation, the Grantee will be expected to revisit/confirm the monitoring plan which will then be agreed with Mott MacDonald.

In addition to measuring grant performance against the objectives and outputs stated above, the grant will also be monitored on the implementation of, and adherence to, the Fleming Fund core principles described in Section 2.4, and practical implications for this will be discussed with the successful applicant.

## 10 Application requirements

### 10.1 Grant Eligibility Criteria

Potential grant applicants must satisfy the following eligibility criteria before applications will be assessed in detail. Applicants:

- Must demonstrate that they are competent organisations responding to this call for proposals.
- Must have an appropriate track-record in supporting laboratory capacity development, surveillance, capacity building and OH.
- Must have experience of programme implementation in Indonesia.
- Must demonstrate that they are registered to work within the country, including the provision of essential documents such as articles of incorporation.
- Must demonstrate an understanding of the MoU process with the Government of Indonesia.
- Must be prepared to accept the Grant Agreement terms.
- Must be able to provide the same information and assurances for all sub-grantees, where the application is from a consortium.
- Should be able to provide all information required for due diligence checks, including clear evidence of financial standing and systems of financial management and control.
- Should be able to provide evidence of suitability in the form of references from clients and donors for previous work undertaken within the last three years.
- Can be a single organisation or consortium, though the latter must clearly identify a Lead Grantee with the appropriate governance and coordination mechanisms to manage sub-grantees.
- Can be:
  - National institutes – such as a university or research institutes;
  - Non-governmental organisations (NGOs);
  - UN Agencies;
  - Private companies; or
  - Government-owned enterprises or institutions provided they can establish that they are (i) legally and financially autonomous, (ii) operate under commercial law, and (iii) are not dependent agencies of national governments.

### 10.2 How to apply

Prospective applicants must express their interest to receive the official Application Pack as per the timelines mentioned below in section 10.5. This is done by writing to [flemingfundSA@mottmac.com](mailto:flemingfundSA@mottmac.com), and should include the organisation's name, the name, phone number and email address of the main focal point.

In addition, there will be an **Applicant Information Session (AIS) in Jakarta**. Please see section 10.5 for the date of AIS. The details of the venue will be shared with applicants who have registered their interest in writing. Dial-in details will also be available for those who have registered interest after this point.

Ahead of the AIS, an example Application Pack will be shared with prospective applicants and will include an application form, budget and monitoring template, and Guidance Notes in order to orientate applicants to the process. Following the AIS, the official Application Pack will be sent out to prospective Grantees who have registered.

To apply, please complete the application form and the budget and monitoring template, in line with the Guidance Notes.

Note the key requirements set out at the beginning of the Country Grant application form:

- Your submission should be returned by the deadline indicated in the RFP.
- When submitting the application document, press “Reply All” from the Application Pack automated email that you will receive with the application documents attached. Do not send it to us from a new email, and do not modify the Subject-line. Only “Reply All” emails will register the documents in our system.
- Keep file sizes as low as possible - there is a 9MB size limit to each individual email that can be received by the grant submission software. You can submit documents by sending multiple emails attaching submission documents to each one. Please follow the instruction (above) using “Reply All” to the original email.
- Applicants should observe the word limit indicated for each question. Additional words outside the limit will be disregarded.
- All documents included as part of the proposal must be submitted in Word, Excel, and PDF format (body font: Calibri 11pt). Do not send through as zipped files.
- You should include a covering letter, signed by the person authorised to represent your organisation for the submission of this proposal.

Proposals that do not satisfy these criteria may not be accepted and may be returned.

### 10.3 Evaluation criteria

The Application Pack will include the application form, indicating the scoring and weighting for each section of the application. The Application Pack will also contain Guidance Notes explaining what we are looking for in terms of a good quality response for each question, including approach to Value for Money (VfM).

We emphasise that the ultimate purpose of these investments is to help to further strengthen and transform Indonesia's approach to AMR prevention and control in line with its own Strategic Plan. We will therefore be giving preference to those applications that have:

- A clear, well-articulated, practical and feasible approach to addressing the most important strategic bottlenecks and gaps in Indonesia's existing system.
- Drawing upon past lessons from Indonesia's own experience with AMR control and therefore contributing to the sustainable strengthening and transformation of Indonesia's already relatively good system of AMR control Technical capacity to address the different aspects of AMR covered by this Country Grant.
- Key team members proposed by the grantee and partners- with required management and/or technical experience and skills to deliver the project activities.
- Clearly laid out project management plan, consortium management plan (if proposed) and clear operational plan.
- Ability and preparedness to bring stakeholders together in an effective and productive working arrangement, promoting a OH approach.
- Demonstrate value for money which includes concepts such as total overall costs over the life of an activity and is not simply lowest cost.

- Ability to work effectively across multiple sectors.
- Ability to operate in Indonesia.

#### 10.4 Restrictions/limitations

Any conflict of interest, or potential conflict of interest, should be declared to Mott MacDonald when applicants are registering their interest to apply for the grant. If a conflict of interest, or potential conflict of interest, arises after that point the prospective Grantee must clearly declare this in their proposal.

#### 10.5 Key dates

- Publication of RFP: **10 May 2019.**
- Deadline for registering interest to attend the Applicant Information Session: **1700 IDST (GMT+7) on 20 May 2019.**
- Applicant Information Session (AIS): **Tuesday, 21 May 2019, Jakarta.**
- Deadline for registering to apply for the grant: **1700 SLST (GMT+5.5) on Thursday 23 May 2019.**
- Application submission deadline: **1700 IDST (GMT +6) on Monday 1 July 2019.**
- Anticipated start of grant: **November 2019.**

#### 10.6 Contact details and support information

Any questions on the Request for Proposals should be sent to [flemingfundSA@mottmac.com](mailto:flemingfundSA@mottmac.com). Mott MacDonald will endeavour to respond to queries within three working days.

## Annex 1: Eligible funding items

### Laboratory Infrastructure Enhancement

- Infrastructure: renovation, redecoration, electricity and water supply, environmental controls, waste and waste disposal.
- Equipment: appropriate equipment for the level of capability; biosafety and biosecurity equipment; automated culture and identification platforms; IT equipment.
- Reagents, durables & consumables: appropriate media, reagents, culture plates, etc; glassware; sample collection consumables.
- Transport and logistics: vehicles or contracted services for transport of goods, and people; safe and secure transport of specimens and samples; logistical support for surveys.

### Human Resource Strengthening and Workforce Reforms

- Training: clinical, veterinary, agricultural and One Health surveillance protocols; biosafety and biosecurity; microbiology, laboratory science and laboratory management; epidemiology and surveillance; genomics; IT training.
- Long-term support: ongoing and refresher training according to the competency and capabilities framework; Fleming Fellowship Scheme.

### Surveillance System Strengthening

- Governance: support for AMR Coordination Committees & working groups; operational planning; cross-sectorial meetings and strategy reviews; evaluation(s).
- Quality assurance and control: site visits and audits, laboratory twinning / mentoring.
- Data: transfer and storage; safety and security; analysis software and training.
- Recurrent costs: utilities, maintenance of equipment, upkeep of laboratory space, small maintenance, personnel costs.

### Building Foundations for Surveillance Data Use

- Support to build demand for AMR data: general awareness among prescribers, dispensers and agricultural consumers (i.e. farm workers, agribusiness); publication charges; workforce training.
- Evidence based strategy, policy and practice change: data / information sharing conferences, meetings and initiatives; conference attendance; IT platforms for data sharing and awareness / transparency.

### Rational use of Antimicrobial Medicines

- AMU/C surveillance: development of strategies for AMU/C surveillance; use of AMU data for appropriate prescribing / informing stewardship programmes.

## Annex 2: Possible Fleming Fellowships in Indonesia

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
<b>1.Human</b>	Bioinformatics and sequencing	NIHRD	To provide an insight into the emergence and spread of antimicrobial resistance in Indonesia	Contribute to designing future AMR surveillance				Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in humans with counterparts in AH and aqua	To be discussed at the time of agreeing on the Fellowship workplans
<b>2. Human</b>	AMR surveillance	NIHRD	Integrate results from AMR surveillance with research results to understand the priority AMR patterns and their epidemiology Keep up to date with all the available information on AMR and AMU in Indonesia	Contribute to designing future AMR surveillance			Analyse AMR data Understand data biases Interpret AMR results in consultation with microbiologist and AMU data	Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in humans with counterparts with counterparts in AH and aqua	To be discussed at the time of agreeing on the Fellowship workplans

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
<b>3. Human</b>	Laboratory fellowship	BBLK Surabaya			Identification by mass spectrometry Advanced AST including by microbroth dilution	Benchtop guidelines SOPs Quality control External quality assurance ISO accreditation – preparatory activities		Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in humans with counterparts with counterparts in AH and aqua	To be discussed at the time of agreeing on the Fellowship workplans
<b>4. Human</b>	Laboratory fellowship	BBLK Jakarta			Identification by mass spectrometry Advanced AST including by microbroth dilution	Benchtop guidelines SOPs Quality control External quality assurance ISO accreditation – preparatory activities		Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in humans with counterparts with counterparts in AH and aqua	To be discussed at the time of agreeing on the Fellowship workplans

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
5. Human	AMU Surveillance Fellowship	RSUP Sanglah Hospital, Denpasar					Design and implementation of AMU data collection in hospital and other healthcare set-tings Analysis and interpretation of AMU data and assessment of antimicrobial prescribing practices in the context of data on AMR Support appropriate antimicrobial use by clinicians.	☑Contribute to communities of practice involving the human and animal health sectors Contribute to One Health workshops, conferences, meetings or other activities focusing on advancing antimicrobial surveillance and prudent antimicrobial use	To be discussed at the time of agreeing on the Fellowship workplans
6 Human	AMU Surveillance Fellowship	Dr Soetomo Hospital, Surabaya					Design and implementation of AMU data collection in hospital and other healthcare set-tings Analysis and interpretation of AMU data and assessment of antimicrobial prescribing practice-es in the context of data on AMR Support appropriate antimicrobial use by clinicians	☑Contribute to communities of practice involving the human and animal health sectors Contribute to One Health workshops, conferences, meetings or other activities focusing on advancing antimicrobial surveillance and prudent antimicrobial use	To be discussed at the time of agreeing on the Fellowship workplans

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
<b>7. Animal</b>	Laboratory fellowship	BPMSPH			Advanced phenotypic testing for resistance	Bench top Guidelines, Quality control, ATCC strains, External quality assurance-preparatory activities, ISO accreditation		Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in animals with counterparts in HH, Aqua.	To be discussed at the time of agreeing on the Fellowship workplans
<b>8. Animal</b>	AMR Surveillance fellowship	Directorate of VPH	Integrate results from AMR surveillance with research results to understand the priority AMR patterns and their epidemiology, Keep up to date with all the available information on AMR and AMU	Contribute to designing future targeted AMR surveillance			Analyse AMR surveillance data, Understand data biases, Interpret AMR results in consultation with microbiologist and AMU data	Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in animals with counterparts in HH, Aqua.	To be discussed at the time of agreeing on the Fellowship workplans

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
<b>9. Animal</b>	AMC/AMU fellowship	Directorate of AH		Contribute to designing future AMC/AMU surveillance			Analyse and interpret AMC surveillance. For example: analysis of data from veterinary drug importers	Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in animals with counterparts in HH, Aqua	To be discussed at the time of agreeing on the Fellowship workplans
<b>10. Animal</b>	Genomic fellowship	BPM SOH			Advanced genotypic testing for resistance	Bench top Guidelines, Quality control, External quality assurance-preparatory activities, ISO accreditation		Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in animals with counterparts in HH, Aqua.	To be discussed at the time of agreeing on the Fellowship workplans
<b>11. Aquaculture</b>	Laboratory fellowship (advanced AST and Quality Management)	SIFHE			Advanced phenotypic testing for resistance	Bench top Guidelines, Quality control, ATCC strains, External quality assurance-preparatory activities, ISO accreditation		Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in fish/shrimp with counterparts in HH, AH.	To be discussed at the time of agreeing on the Fellowship workplans

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
<b>12. Aquaculture</b>	AMR Surveillance fellowship (data analysis & interpretation)	Directorate General of Aquaculture	Integrate results from AMR surveillance with research results to understand the priority AMR patterns and their epidemiology, Keep up to date with all the available information on AMR and AMU	Contribute to designing future targeted AMR surveillance			Analyse AMR surveillance data, Understand data biases, Interpret AMR results in consultation with microbiologist and AMU data	Discuss AMR and AMU surveillance results and understanding of AMR epidemiology in fish/shrimp with counterparts in HH, AH.	To be discussed at the time of agreeing on the Fellowship workplans
<b>13. Aquaculture</b>	AMC/AMU fellowship	Directorate General of Aquaculture		Contribute to designing future targeted AMC/AMU surveillance			Analyse and interpret AMC/AMU surveillance results	Discuss AMR and AMC/AMU surveillance results and understanding of AMR epidemiology in Fish/shrimp with counterparts in HH, AH	To be discussed at the time of agreeing on the Fellowship workplans