INDONESIA EID PROGRAM

Strategic Review and Options Development

Final Report + Annexes

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The Department of Foreign Affairs and Trade

Australia

Contents

Executive Summary

Background

The outbreak of Severe Acute Respiratory Syndrome (SARS) in 2002, the widespread outbreaks of highly pathogenic avian influenza (HPAI) since late 2003, and the recent Ebola outbreak in West Africa have focused global attention on the impacts of emerging infectious diseases (EIDs). Indonesia is considered a high risk country for EID outbreaks. Since 2004 Australia has invested overall more than $40 million in both the human health and animal health sectors assisting Indonesia to mitigate this risk.

Most recent support has been channelled through two phases of the Australia-Indonesia Partnership for Emerging Infectious Diseases (AIPEID) – Phase 1 from 2010 to 2015 and phase 2 from 2015 to 2018. The second phase of the AIP-EID program adopted the One Health approach and aimed to work synergistically in both the animal health and human health sectors. With the Phase 2 AIPEID program finishing in June 2018, it is timely to review the program and consider options for further support in the health security area.

Purpose of the review

The primary purpose of this review is to make recommendations on options for Australia's future bilateral programmatic support in the area of health security in Indonesia beyond June 2018. As a secondary purpose, the review also assesses achievement of program outcomes, implementation arrangements and management of the current AIP-EID Phase2 program, and makes recommendations on critical issues to be addressed during the final year of implementation.

Context: Australia's interests in EID

The threats posed by 'poor population health, existing and emerging diseases, drug-resistance, and weak public health preparedness and response systems' to Australia's economic, trade, and political interests' has been noted in the Department of Foreign Affairs and Trade (DFAT) Health for Development Strategy 2015-2020. Australia is currently contributing to a number of regional initiatives, including the World Bank managed regional trust fund on integrating donor health financing, and is developing the Regional Health Security Initiative, as announced in the last election.

In relation to the animal health, the Department of Agriculture and Water Resources (DAWR) has had a strong level of engagement with Indonesian counterparts as the animal health implementing partner in AIP-EID since 2010. DAWR has expressed a strong interest in maintaining a technical role in any future activities, although it does not wish to continue in its current role in managing the animal health programme.

However, the Australian Department of Health (DoH) has not been significantly engaged in the current program, although it had previously engaged with the Indonesian Ministry of Health in a number of areas. While staff of the DoH emerging infectious disease section indicated an interest in building relationships with the Indonesian MoH in particular areas of concern, the interest of higher policy makers within the DoH is not known.

Context: Indonesia and EIDs

Indonesia continues to face significant infectious disease problems. Tuberculosis (TB), dengue, and malaria are the largest contributors, but there are ongoing cases and occasional outbreaks of vaccine preventable illness (measles, diphtheria), and zoonoses such as anthrax, leptospirosis and rabies. Highly pathogenic avian influenza is endemic in poultry, with occasional cases of human transmission still reported, the last two cases in 2015 (both fatal). The interface between animal and human ecosystems remains the most likely point for emergence of new infectious diseases.

The decentralized system of government in Indonesia has placed responsibility for the management and response to animal and human infectious disease at the level of district and provincial

governments, with the central government's role limited to oversight, support and management only in the case of national level outbreaks. This creates a challenge for an integrated, coordinated and rapid response to any outbreaks or emerging infectious disease.

Responsibility for public health lies with the Ministry of Health, Directorate-General of Disease Control, and the provincial and district health offices; while responsibility for animal health lies with the Ministry of Agriculture, Directorate-General of Livestock and Animal Health Services (DGLAHS). The Coordinating Ministry for Human Development and Cultural Affairs (CMHDC) has taken over the national coordination function in relation to zoonoses, and works with both ministries.

Assessment of current program (AIPEID phase 2)

In terms of progress against outcomes, the current AIPEID program has made most progress on outcome two, strengthened animal health and human health information and surveillance systems, with significant development of EWARS (human health) and iSIKHNAS (animal health). In terms of outcome one, stronger systems for preparation and rapid response to animal health and public health emergencies, there has been partial achievement, with a public health emergency operations centre established in the Ministry of Health, and multi-sectoral pandemic contingency plans developed. While there have been some improvements in leadership and management, particularly in the human health sector, the contribution of the training inputs provided by AIPEID is likely to be seen only in the long term. The human health component also has an objective to improve funding for surveillance and EID control, but little has been achieved in this complex policy area.

Strengthened collaboration between MoH and MoA is also listed as an expected outcome, in line with the One Health approach. This is assessed as partial achievement. The two Ministries have cooperated in a number of activities, some of which have been facilitated or supported by AIPEID. However, much of the collaboration is informal or the result of others playing a coordinating role, and there does not appear to be a formalized institutional commitment from either ministry to collaborate.

At the level of relevance and effectiveness, strengthening of emergency preparedness and response and the information and surveillance systems, remain very relevant to MoA and MoH priorities, and has attracted considerable commitment and ownership. The human health Field Epidemiology Training Program (FETP) is now well established and institutionalized, but the long duration (2 years) and limited employment opportunities limit its impact. The need for strengthening of veterinary leadership skills is well recognized, but the Indonesia Veterinary Leadership Program (IVL) still requires considerable effort to institutionalize and standardise, and its impact may well take some years to be seen. Given the complexities of government funding in Indonesia, and the large amount of funding from national sources, it is unlikely that advocacy to local government for increased allocation to surveillance and emergency response will be effective.

For the remaining period the review team recommends continuing focus on outcomes one (strengthening emergency response systems) and two (information systems). In regards the training programs, efforts should focus on their institutionalization, with a view to phasing out of future support. Further engagement in improving funding should focus on working with CMHDC on developing protocols to access national disaster funds for infectious disease outbreaks.

The review team also noted limited collaborative efforts between the animal health and human health teams to identify and address strategic and policy challenges. The team recommends more focus on jointly identifying policy and structural issues, and strategizing on how to address them.

Options for future Australian assistance in health security

Options for support at a strategic level: Currently the only strategic level objective is to improve coordination between MoH and MoA; but this objective could be better focused on applying a One Health perspective in practice. Australia's strategic interests could be better reflected in strategic

objectives to improve communication between Australian and Indonesian agencies, to develop stronger institutional linkages and engagement, or even formal institutional linkages.

Achievement of these objectives requires retention of both animal health and human health components, but improved coordination between the components; maintaining a focus on zoonoses and EID, but retaining flexibility to address emerging areas of infectious disease risk; and a mechanism that facilitates that coordination as well as linkages between Australian and Indonesian agencies.

Potential implementing modalities include: DFAT Indonesia health post coordinating with DoH and DAWR; expanding the role of the WHO implementing team; contracting an implementing agent with Indonesian and Australian linkages to coordinate and facilitate; and convening a joint high level technical advisory panel to engage in analysis and discussion of key strategic and policy issues.

Options for support at a technical level. Options include (a) Maintaining the current technical scope; focusing on information systems and their use; focusing on emergency response systems; reducing investment in specific training (FETP and IVL); and reducing the investment in strategies to increase funding focused on the human health service, and (b) Expanding the technical scope to include support for development of collaborative research proposals (to then leverage funding from other regional and national sources); building laboratory capacity; and addressing other health security issues such as AMR and MDRTB.

Modalities to implement the technical objectives include: continuing support to WHO to implement the human health activities and FAO for the animal health activities; contract an implementing agent to cover both human and animal health; or use the coordination and facilitation agent proposed for the strategic level objectives. Consideration of modalities should include the option to link with the potential Disaster Risk Management (DRM) program to maximize value for money and synergies, where they exist.

Summary of recommendations of review team

(i) Strategic and technical approach

(a) Continue with further assistance to the Government of Indonesia in the area of detection and response to infectious disease risks, maintaining the current focus on EIDs and zoonoses but retaining flexibility to respond to infectious disease risks as they emerge, and with more focus on engagement at a strategic level.
(b) The new program to have an explicit focus on the application of a One Health approach, and on building communication and strategic engagement of Australian agencies.
(c) The new program to support the further development and future sustainability of early detection and response information systems (EWARS and iSIKHNAS); strengthening mechanisms and procedures for coordinated response to infectious disease events; and identification of research opportunities and developing research proposals.
(d) If funds are available, consider the potential to expand the technical scope to address AMR and strengthening of laboratory and diagnostic system capacity.

(ii) Implementing modality:

(a) Contracting of an independent agent to manage coordination, communication, and facilitation of engagement by Australian and other international experts in both human health and animal health areas, and encourage a One Health approach.
(b) Convening of a technical advisory panel to support strategic approaches and the work of the coordination and facilitation agent.
(c) Continue to contract WHO to manage the technical inputs into human health / MoH.

(d) Explore the potential to channel funds / contract FAO to provide coordination and technical support for DAWR inputs into MoA; otherwise use the independent agent contracted under (a) above.

Abbreviations / Indonesian terms

AAHL	Australian Animal Health Laboratory
ACIAR	Australian Centre for International Agricultural Research
AI	Avian Influenza
AMR	Anti-microbial resistance
APSED	Asia Pacific Strategy for Emerging Diseases
AusAID	Australian Agency for International Development
Bappenas	Badan Perencanaan Pembangunan Nasional / National development planning agency
BBalitVet	Balai Penelitian Veteriner / Veterinary Research Centre
BBVet	Balai Besar Veteriner/ Animal health laboratory
BNPB	Badan nasional penanggulangan bencana / National disaster management agency
BOK	Bantuan Operasional Kesehatan / Health operations support funds
BTKL	Balai teknis kesehatan lingkungan / Environmental health laboratory
CDC	Centres for Disease Control, US Government
CMHDC / KemenkoPMK	Coordinating Ministry for Human Development And Culture/ Kementerian koordinasi pembangunan manusia dan kebudayaan
DAWR	Department of Agriculture & Water Resources (Australia)
DGLAHS	Directorate-General Livestock and Animal Health Services (MoA)
DIC / UPT-DIC	Disease Investigation Centre (Animal health) / Unit pelayanan teknis-DIC
Dinas	Provincial or District government agency
DoH	Department of Health (Australia)
EID	Emerging Infectious Diseases
EMS	Emergency Management System
EMWG	Emergency Management Working Group (MoA)
EWARS	Early Warning and Alert Response System / Sistem kewaspadaan dini dan respons (SKDR)
EPR	Emergency Preparedness and Response
EPT	Emerging Pandemic Threats (USAID program)
FAO	Food and Agriculture Organisation of the United Nations
FETP	Field Epidemiology Training Program
FMD	Foot and mouth disease
GHSA	Global Health Security Agenda
GoI	Government of Indonesia
HPAI	Highly Pathogenic Avian Influenza
ICS	Incident Command System (MoA)
IHR	International Health Regulations (2005)
INDOHUN	Indonesian One Health University Network
iSIKHNAS	Sistem informasi kesehatan hewan nasional / Integrated national animal health information system
IVL	Indonesia Veterinary Leadership
JEE	Joint External Evaluation (of IHR and GHSA capacity)
JKN	Jaminan Kesehatan Nasional / National health insurance program
KLB	Kejadian luar biasa / Outbreak of disease

Komnas Zoonosis	National Commission for Zoonoses (Indonesia)
MDTF	Multi donor trust fund for (for integrating donor health funding)
MDRTB	Multi drug resistant tuberculosis
MERS	Middle East Respiratory Syndrome
MenPAN	Menteri Pendayagunaan Aparatur Negera / Ministry of Administrative and Bureaucratic Reform
MoA	Ministry of Agriculture (Indonesia)
MoH	Ministry of Health (Indonesia)
NIHRD	National Institute for Health Research Development (MoH)
ODE	Office of Development Effectiveness (DFAT)
OIE	World Organisation for Animal Health
PAEI	Perhimpunan Ahli Epidemiologi Indonesia / Indonesia Epidemiologists Association
PDR	Prevent, Detect, Respond (elements of GHSA and EPT)
Permenkes	Peraturan menteri kesehatan / Ministry of Health Regulation
PHEOC	Public health emergency operations centre
Posko	Pos koordinasi / Coordination post
PP	Peraturan pemerintah / central government regulation
Pusdatin	Pusat Data dan Informasi / Data and information centre
Puskesmas	Pusat kesehatan masyarakat / community health centre (human health)
Puskeswan	Pusat kesehatan hewan / animal health centre
RPJMN	National Medium Term Strategic Plan
SARS	Severe Acute Respiratory Syndrome
SIWAB	Sapi induk wajib bunting / breeding program for beef cattle
SOP	Standard operating procedure
UNICEF	United Nations Childrens Fund
WHO	World Health Organisation of the United Nations

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Introduction:

Background:

Since the outbreak of Severe Acute Respiratory syndrome (SARS) in 2002-03 there has been heightened global awareness of the potential for new emerging infectious diseases (EIDs) to cause substantial social and economic disruption, as well as result in significant mortalities. Indonesia is considered to be a relatively high risk country for EIDs as shown by the significant outbreaks of highly pathogenic avian influenza (HPAI) in poultry from late 2003 with subsequent spill-over to humans and the high case-fatality rate that followed. More recently the introduction and ensuing widespread epidemic of dog rabies in Bali is an example of a serious zoonosis emerging in a disease free population.

Australia has invested significantly in supporting the Government of Indonesia (GoI) in the area of emerging infectious diseases (EIDs) starting from the recognition of highly pathogenic avian influenza (HPAI) in 2003. The initial support provided was mostly channelled through the United Nations agencies UNICEF, FAO and WHO and then a significant proportion of the activity was guided by the AusAID Pandemics and Emerging Infectious Diseases Strategy (PEID Strategy) 2006-2010. The investments shifted from the earlier crisis driven, short term responses to more sustainable systems strengthening and capacity building.

The Australia Indonesia Partnership for Emerging Infectious Diseases (AIP-EID) Phase 1 was implemented between 2010 and 2015. AIP-EID Phase 1 had two arms that were implemented separately: one targeting human health and implemented by the World Health Organisation (WHO) Country Office for Indonesia in partnership with the Ministry of Health (MoH); and the other one targeting animal health and implemented by the Australian Department of Agriculture (DAWR) in partnership with the Ministry of Agriculture (MoA).

The second phase of the AIP-EID program, commencing in 2015, adopted the One Health approach and aimed to work synergistically in both the animal health and human health sectors. The program built on the Phase 1 collaborations between DAWR, the WHO and their Indonesian counterpart agencies. This program is due for completion in June 2018.

Overall, since 2004, Australia has invested over $40 million in supporting Indonesia to combat the threat of EIDs and it is timely to consider whether and in what form further investment might be warranted. This is in a context where the threat of current and emerging infectious diseases remains high in the Asia Pacific region, and where the high levels of international travel and trade mean that diseases emerging in Indonesia pose a threat to other countries in the region, including Australia.

This threat has been recognized in DFAT's Health for Development Strategy 2015-2020, where building regional preparedness and capacity to respond to emerging health threats is one of two strategic priorities, along with building country level health systems and services that a responsive to people's needs. The Office of Development Effectiveness (ODE) recently completed an independent evaluation of Australia's past support for combating pandemics and emerging infectious diseases at a regional level in Asia and the Pacific. This evaluation included an examination of the AIPEID Phase 1 program.

Review purpose and methodology

The primary purpose of this review is to make recommendations on options for Australia's future bilateral programmatic support in the area of health security in Indonesia beyond the end of the current AIP-EID program in June 2018. As a secondary purpose, the review also assesses the achievement of program outcomes, implementation arrangements and management of the current AIP-EID Phase2 program, and makes recommendations on critical issues to be addressed during the final year of implementation.

The review was undertaken by a team consisting of two persons: a human health expert (who also acted as team leader), and an animal health expert. The human health expert had considerable experience with health programs in the Indonesian context, while the animal health expert had also been involved in the ODE regional level evaluation. Staff of the DFAT Indonesia health team joined the review team in all meetings and consultations.

The review started in early April with programme document examination, followed by a 10 day in-country mission in mid-April and then completion of assessment and options during late April and early May 2017.

Documentation examined included: the AIP-EID phase 2 program design, six monthly reports up to July-December 2016 prepared by the human health and animal health program teams, the independent progress review of AIP-EID Phase 1 (conducted in 2013), and the draft ODE regional PEID evaluation. In addition the review team obtained and examined key policy and strategy documents from the Government of Indonesia, including the current national and ministerial medium term development plans, relevant laws and regulations from the human health and animal health sector, and current epidemiological reports on human and animal health.

During the 10 day in country mission, the review team met with the WHO and DAWR AIP-EID implementing teams; national level officials from the relevant departments of the Ministry of Health (MoH) , Ministry of Agriculture (MoA), and Coordinating Ministry of Human Development and Culture (CMHDC); staff of other development partners including FAO, USAID, and CDC; and conducted a field visit to human health and animal health offices and laboratories in the district of Boyolali and Region of Yogyakarta, in central Java. A full list of persons interviewed is included in Annex 1.

In addressing the review terms of reference, the review team acknowledges two key limitations:

(a) the review team was unable to meet with senior program managers or policy makers responsible for the infectious disease programs in either the human health or animal health sectors. This is partly a reflection of the limited time availability of the review team in country, but also reflects the current priorities of the relevant ministries, and the level of engagement of the current AIP-EID implementing teams.

(b) the opportunity for verification at field level on policy implementation was limited to a one-day visit to a fairly well resourced area in central Java, and to brief consultations with government agency staff. This did not include the private sector, or the commercial livestock sector. Given the wide variation in capacities and context across the Indonesian archipelago, the field visit cannot be considered representative of the national situation.

2. Context of EID in Indonesia and regionally

2.1 Epidemiology: human and animal infectious diseases

Indonesia has a number of features that are considered risk factors for new zoonotic diseases, or for spread from elsewhere. The religious and cultural links to the Middle East increase the potential for an outbreak of Middle East Respiratory Syndrome (MERS), and trade in and consumption of wildlife also adds to the risk profile for EIDs, along with a very dense human population and relatively weak disease surveillance systems. It is important to note that about 70% of new diseases arising in humans over the last 3 decades are zoonotic – that is they have an origin in animals, and in many cases wildlife. So it is necessary to pay attention to the capacity of animal health systems to detect and contain new diseases if they are not to become endemic and threaten to spill over into humans.

Human health

Despite increasing proportion of illness and death arising from non-communicable diseases, communicable / infectious diseases remain an important cause of morbidity and premature mortality, creating a 'double burden' for Indonesia's human health system.

The most recent national profile (2015 data) quantifies the burden of infectious disease, which is mainly due to Tuberculosis, Malaria and other mosquito borne infections.

Tuberculosis remains a major problem with Indonesia contributing the third largest number of new cases per year globally, and is among the top 10 countries for multi drug resistant TB. In 2015, 330,000 new cases were reported, with little change in rates of new cases over the last 7 years.

There are an estimated 22,000 cases of multi drug resistant TB, of which only about 10% (2,000) have been detected, and 1,500 are receiving treatment.

Mosquito borne infections are also a major problem, with an increase in reported cases of dengue (to 130,000 in 2015). Nearly 90% of cities / municipalities are now affected by dengue. On the other hand there has been considerable reduction in malaria, with the number of malaria free cities/ municipalities increasing to 45%, and only 9% rated as highly endemic.

Despite good levels of immunisation coverage, vaccine preventable infections continue to be reported, with 53 cases of neonatal tetanus in 2015, 8,185 cases of measles, and 252 cases of diphtheria. Outbreaks of measles continue to occur, and there was an outbreak of diphtheria in 2015.

There continues to be a burden of neglected tropical diseases, with 17,000 new cases of leprosy in 2015, and 13,000 cases of filariasis.

The main zoonoses continuing to occur in Indonesia are rabies, leptospirosis, anthrax and avian influenza.

Twentyfive of Indonesia's 34 provinces report transmission of Rabies, while nine provinces have been declared free of Rabies. In 2015, 115 cases of death due to Rabies were reported, while some 80,000 bites from rabid animals were reported.

Cases of leptospirosis were reported from 6 provinces, all on the island of Java, with a total of 336 cases reported in 2015. Sporadic cases of anthrax continue to be reported with 3 cases in 2015, and 48 cases in 2014.

Following its initial detection in 2003 sporadic infections with H5N1 avian influenza (AI) in humans were reported from 15 provinces, with the highest number of cases reported from DKI Jakarta, West Java and Banten. In 2014 and 2015 only two cases were reported, but both were fatal. However close contact between humans and poultry continues in most small scale domestic poultry farming, with frequent suspected human cases linked to outbreaks in poultry, suggesting ongoing risk of transfer to humans should strains capable of human to human transmission arise.

There are occasional infections with anthrax in humans mainly due to the practice of salvaging meat from freshly dead livestock, but anthrax is not likely to cause large outbreaks in humans as it does not propagate. Occurrence of anthrax in humans is a good proxy for the effectiveness of veterinary public health activities and cross-sectoral coordination of outbreak response measures. Anthrax is a zoonosis that occurs sporadically in cattle in endemic zones across the country and routine preventive vaccination is used in these areas

Animal health

Of the zoonoses that have an impact on humans in Indonesia, only highly pathogenic avian influenza (HPAI) has a major impact on animal health. For other zoonoses the driver for control is primarily public health. Rabies, for example, while important in humans, is not an important disease of livestock, although rabid dogs can infect livestock that invariably die. Leptospirosis is not recognised as important to the livestock sector in Indonesia, but certain strains can cause abortions in cattle.

The situation with HPAI in poultry is unclear. By and large the commercial poultry sector vaccinates to suppress the disease and government veterinary services are not heavily involved in control efforts. It is evident from live bird market surveillance supported by USAID through FAO, there are very heavy HPAI virus loads in poultry passing through markets, but at the same time there is little reporting of cases in poultry. One factor that may be influencing the number of cases in humans is that since a new strain of HPAI was introduced into Indonesia in late 2012 it has become the predominant strain found in poultry surveillance, and it may be less pathogenic for humans. However this large virus load still in close association with humans is a concern as the potential still exists for a variant to arise capable of human-to-human transmission. Also co-circulation of other avian or human influenza viruses offers the potential for a recombination event to occur.

It is likely that both past HPAI virus introductions to Indonesia involved some human activity and so with new viruses evolving on mainland East Asia, that conduit of introduction must always be considered. Traded wildlife species are also a potential source for viruses to emerge and there is evidence for example of Nipah virus infections in fruit bat species in Indonesia.

Among other zoonoses, anthrax continues to occur sporadically in cattle in endemic zones across the country, and routine preventive vaccination is used in these areas. The continuing occurrence of occasional cases of anthrax in humans is a good indicator of weaknesses in veterinary public health activities.

The following Table provides an estimate of the priority among infectious diseases of humans in terms of the potential for a threat extending beyond Indonesia to the region.

Table 1 : Infectious diseases and potential threat regionally.

Disease	Current Burden	Likelihood of creating threat	Consequences of threat	Priority
Multi drug resistant Tuberculosis	moderate	moderate	high	2
Malaria	moderate	moderate	high	2
Mosquito borne viruses (dengue)	high	moderate	high	1
Neglected tropical diseases	low	low	low	4
Vaccine preventable diseases	low	low	low	4
Anti-microbial resistance	low	moderate	high	2
Avian influenza /EID	low	high	high	1
Rabies	low	moderate	moderate	3
Leptospirosis / anthrax	low	low	moderate	3

Threat considered as increase in numbers or spread

2.2 Global / regional policy and strategies

At a global level, the One Health concept emerged in 2005 – 2006 from the SARS outbreak and the Global Response to Avian Influenza. The One Health concept has been further expanded beyond the management of outbreak situations to the consolidated management of existing endemic diseases, and emerging and novel zoonoses. The One Health Global Network bringing together WHO, FAO, OIE and other international partners was established in 2011.

In regard to animal diseases, FAO and OIE have an agreement called the Global Framework for the progressive control of Transboundary Animal Diseases (GF-TADS) that operates through committees at regional level, and WHO can also participate in GF-TADs meetings. There is a Sub-regional GF-TADs committee for ASEAN+3 countries.

More recently, in 2014, the Global Health Security Agenda (GHSA) was launched. The GHSA is a partnership of over 50 nations, international organisations and non-government stakeholders which aims to use a multilateral and multi-sectoral approach to strengthen global and national capacity to prevent, detect and respond to human and animal infectious disease threats. Indonesia is a member of the steering group, and chaired the partnership during 2016. The GHSA incorporates the WHO International Health Regulations (IHR), and the OIE Performance of Veterinary Services (PVS) Pathway, and uses the WHO Joint External Evaluation (JEE) process as a method for assessment and monitoring of progress. (https://www.ghsagenda.org/packages)

The work of the GHSA is planned around 11 Action Packages, which address the key issues in each component of Prevent, Detect and Respond. Indonesia is leading on Action Package 2, Zoonotic Disease. Indonesia is actively involved in the GHSA process, and has established working groups to

address each action package within the GoI. The GoI has also proposed to undertake the JEE in November 2017, which will provide a review of IHR capacities and progress on GHSA action packages. (https://ghsaindonesia.files.wordpress.com/2016/02/ghsa-action-packages.pdf)

At a regional level, the countries of the SEARO and WPRO regions of the Asia Pacific developed the Asia Pacific Strategy for Emerging Diseases (APSED) in 2005. The strategy addresses eight focus areas: surveillance, risk assessment and response; laboratories; zoonoses; infection prevention and control; risk communication; public health emergency preparedness; regional preparedness; and monitoring and evaluation.

ASEAN also has agreed to the establishment of an ASEAN Coordinating Centre for Animal Health and Zoonoses (ACCAHZ), and an animal health trust fund has been set up to organise financial support for this centre. A virtual centre was established at the regional FAO office in Bangkok in the period 2010-2014 with support from the European Union, and a number of regional networks were established (e.g. veterinary epidemiology network, veterinary laboratory network).

2.3 Indonesian human and animal health system and institutional arrangements

Following decentralization in 1999, authority and responsibility for provision of human and animal health services was devolved to provincial and district levels of government, while the national level retained the role of setting the standards and overall strategic direction for services.

Under law 23/2014 the functions of government are divided into (a) absolute government affairs, under control of central government (b) concurrent affairs with joint responsibility of central and local governments and (c) general government affairs under the authority of the president. Human and animal health are classified as concurrent affairs, with human health classified as mandatory, and animal health as an optional responsibility of local governments.

Law 23/2014 provides greater clarification of the responsibilities of levels of government for concurrent affairs. In the case of human health, central government has responsibility for surveillance of outbreaks of national scale; management of control and response to infectious disease that have epidemic potential, or relate to international or global commitments, and management of national quarantine; while provincial government has the responsibility for surveillance and management of outbreaks of provincial scale; and districts / municipalities have the same responsibilities for outbreaks of district / city scale. (This division uses the description in PP38/2007 but is consistent with the classification of Law 23/2014).

For animal health, Law 23/2014 defines government responsibilities as follows: central government has responsibility to set the technical requirements for animal health, veterinary medical services, laboratory services, animal welfare, and disease free zones, as well as national level animal health responses including establishing outbreak areas; provincial government is responsible for management of outbreaks and communicable animal disease in the provincial area, including determining epidemic status and control of animal movement at provincial level; while district / municipal governments have the same responsibilities for animal health and control of animal disease in the district / city area.

Coordination and strategic direction at national level is addressed through the national medium term strategic plan (RPJMN), which provides the framework and sets national priorities and targets

for all ministries and levels of government. The current RPJMN (2015-2019) identifies improving the availability and coverage of basic services for poor communities as the priority. In the health sector, priority continues to be given to maternal, neonatal and child health, and nutrition, as well as to the implementation and expansion of the national health insurance program (JKN). In the livestock / animal health sector, priority is given to food security, increasing production and protecting the livelihoods of farmers.

While economic growth is driving a transition from low income to middle income status, Indonesia continues to face a number of competing priorities. President Joko Widodo has emphasised the importance of national sovereignty and security, and has focused his domestic agenda on addressing disparities in economic growth and levels of poverty across the archipelago. However the experience of the avian influenza outbreak from 2003, together with periodic infectious disease alerts, most recently around Zika, has ensured that the issue of detection and response to communicable disease remains high on the political agenda. Indonesia has also demonstrated that it is sensitive to, and prepared to take an active role in, global and regional institutions and related policy development.

Summary Assessment

A brief review of the burden of infectious disease and potential regional threat identifies that avian influenza and EIDs, as well as mosquito borne virus diseases (such as dengue) as highest priority. Three key factors contribute to the ongoing relatively high potential for development of novel infections and for regional spread through movement of humans and/or animals: (a) ongoing presence of zoonoses in various domestic species and potential entry of new infectious agents circulating in the region ; (b) close contact between humans and animals through poultry and livestock management practices, as well as some encroachment on wildlife habitats; (c) weaknesses in human and animal health systems that have limited programs to prevent and control infectious disease.

There are a number of regional and global initiatives and programs which aim to strengthen regional and national capacity to better prevent, detect and respond to current and emerging infectious diseases, and with which Indonesia is engaged, particularly the GHSA. Indonesia has also developed the basic legal and policy framework which provides the basis for effective programs, but the division of responsibilities and roles between central and local levels, and the number of institutions involved, creates both challenges and opportunities.

3. Australia's interest / engagement

DFAT engagement / interest

The DFAT Health for Development Strategy 2015-2020 notes that 'poor population health, existing and emerging diseases, drug-resistance, and weak public health preparedness and response systems also pose threats to Australia's economic, trade, and political interests.' The strategy identifies as a focus 'Bilateral and regional health investment in Southeast Asia and the Pacific that strengthen health systems and capacities for improved regional health security (e.g. surveillance, laboratory and drug-quality systems, networks, and cross-border and regional cooperation).'

The recent ODE evaluation of Australia's efforts to combat pandemics and EID in Asia and the Pacific noted improvements in human health EID surveillance, field epidemiology skills, leadership and governance and laboratories; and in animal health leadership, governance and surveillance, but

mixed results from laboratory and quarantine investments. A key factor identified in addition to technical inputs was the legitimacy achieved by linking with the WHO APSED strategy.

The report identified the need to address systemic constraints in areas of financing, policy and planning, the lack of attention to underlying policy and institutional constraints, and the lack of explicit strategies to strengthen broader systems.

The DFAT Indonesia branch identified an interest in the transparency and openness of Indonesian reporting on EID, and governance and policy constraints on capacity to implement responses. They noted that engagement with the Government of Indonesia was shifting to focus more on the evidence base for policy making, provision of specific technical expertise, and supporting piloting of potential interventions that could then be scaled up.

The DFAT Health section noted that the current investment had been effective at a technical level, but failed to gain access at senior levels, and to address political and strategic issues. DFAT is currently providing support at a regional level to the World Bank managed multi donor trust fund (MDTF), and Indonesia is one of the priority countries for trust fund support. DFAT is also developing a new regional health security initiative, which will likely focus on the evidence base and on building linkages between Australian and regional institutions.

Animal health relationships – DAWR and Australian based institutions

DAWR has engaged significantly in building capacity in the animal health sector in Indonesia. While funding for this engagement has primarily derived from DFAT, DAWR has delivered oversight and management of animal health component of the AIP-EID and has located staff in Indonesia to provide technical support to the program. However, in discussion with key DAWR staff in Canberra it was indicated that while DAWR was prepared to continue to provide periodic technical inputs into any future animal health support program, they did not have the capacity to continue to manage the animal health component. DAWR particularly stressed the importance of ensuring the ongoing and sustainable operation of the iSIKHNAS surveillance system. The value of ongoing relationships with Indonesia to assist bilateral transparency in animal health biosecurity matters was also highlighted.

Other Australian animal health institutions continue to engage with and provide support to Indonesian institutions in the animal health sector outside the development assistance framework. The CSIRO Australian Animal Health Laboratory (AAHL) has been significantly engaged in Indonesia in providing technical inputs to strengthening the veterinary laboratory system, assisted by both Australian and other donor support. The scientific linkages arising are of strategic importance to Australia as they provide direct insights into laboratory capacity and the disease situation in Indonesia. It is also considered that working within the Indonesian laboratory system provides valuable experience for the CSIRO scientists. There is strong interest on the Indonesian side to develop a laboratory twinning arrangement with CSIRO AAHL under the OIE reference laboratory system, so as to assist one Disease Investigation Centre (DIC) to achieve reference laboratory status for AI.

The Australian Centre for International Agricultural Research (ACIAR) historically has supported collaborative research in animal health between Indonesian and Australian research institutions, including work on rabies and HPAI. It is noteworthy that ACIAR has been employing Mobile

Acquisition of Data (MAD) approaches to some of its recent field research, including exploring linking research outputs to the iSIKHNAS platform.

These relationships and interests support the view that continued Australian engagement with the animal health sector in Indonesia is of strategic benefit to both countries.

Human Health relationships – DoH and Australian based institutions

In regard to the Australian Department of Health (DoH), engagement with and support for the Indonesian MoH is much less than that of DAWR in the animal health sector. In the past DoH had negotiated a MoU with the Indonesian MoH, and was much more heavily engaged; but this relationship has lapsed over the last few years.

The review team was able to meet with staff of the DoH emerging infectious disease section who indicated an interest in building relationships with the Indonesian MoH, particularly around information sharing, and potentially sharing of virus samples. Antimicrobial resistance(AMR) is a particular area of interest, as is rabies and dengue in Bali, in terms of its impact on Australian tourists returning home. However, the interest of higher policy makers within the DoH is not known.

Australian institutions have a long history of collaborating with and supporting Indonesian health institutions. A notable example is the capacity building from Research Institutes in Melbourne for the Eijkman Institute for Molecular Biology in Jakarta, which enabled the Institute to undertake genomic analysis of malarial parasites. The Victorian Infectious Disease Research Laboratory (VIDRL) as the WHO regional influenza reference laboratory continues this tradition through collaboration with the MoH National Institute for Health Research Development (NIHRD) to build laboratory biosafety standards and capacity for influenza virus analysis.

More recently, scientists from the Monash University have been collaborating with colleagues at Universitas Gadjah Mada (UGM) on a trial of the capacity of Wolbachia infected mosquitoes to reduce dengue infections in the area of Yogyakarta. However, the difficulties the research team has faced in negotiating the Indonesian administrative bureaucracy to obtain the necessary permissions and approvals illustrate the challenges for individual institutional collaborations without an overarching and supportive higher level engagement framework.

Summary Assessment

There are a range of expressed and potential strategic interests for Australian government agencies and Australian institutions in regard to engagement with Indonesian government agencies and institutions in the area of infectious disease prevention, detection and control. DFAT indicated interest in being able to access high levels within Indonesian government agencies, particularly in the event of an emerging infectious disease threat; while DAWR has interests in protecting Australian livestock from infectious diseases that might enter Australia through Indonesia, as well as keeping communication channels open for trade dialogue. The review team was not able to meet with policy managers within the Australian DoH, although DoH program staff expressed interest in communicating with Indonesian counterparts in regard to infectious disease control, particularly in regard to potential threats to Australian human health. Many research and academic institutions

also have links with Indonesian counterparts, and may request guidance or support in complying with Indonesian government requirements.

4. Review of the current AIPEID program against outcomes and recommendations for priorities during remaining period.

4.1 Program level achievement against outcomes (see matrix in Annex 3)

Outcome 1: Stronger systems for preparation and rapid response to animal health and public health emergencies. Assessed as on track, but difficult to assess as the extent of strengthening to be achieved by the program is not specified in the design document, and there are a number of concurrent policy initiatives by the Government of Indonesia that have also contributed to strengthened systems, such as the establishment of the MoH public health emergency operations centre (PHEOC), and the incorporation of the Komnas Zoonosis into the CMHDC.

Outcome 2: Strengthened animal health and human health information and surveillance systems. Assessed as largely achieved, with information systems in both sectors functioning effectively and being utilised by both agencies.

Outcome 3: Improved performance in leadership, management and evidence based decision-making. Assessed as not on track. , While there have been some significant policy decisions demonstrating leadership, such as the MoH's lead role in the GHSA, the establishment of a new EID sub-directorate within the MoH , and the transfer of zoonosis coordination to CMHDC, the review team was unable to identify a cohesive strategic vision, or find much evidence of strategic thinking or consideration of evidence in decision making. The decisions appeared to be more politically driven. For example the implications of using iSIKHNAS for livestock production data collection and management do not seem to have been strategically considered. AIPEID inputs in this area are mainly in terms of leadership training (at the MoA) and epidemiology training (human health). These may result in more capable leaders and managers in the longer term, but the culture of frequent changes in positions, and the lack of opportunities for strategic thinking, tends to lead to short term, operational decision making rather than strategic and evidence based decision making.

Strengthened collaboration between MoH and MoA is also listed as an expected outcome. This is assessed as on track, although again, no specific target level of achievement is stated in the design. The two Ministries have cooperated in a number of activities, some of which have been facilitated or supported by AIPEID, for example the pandemic contingency plan simulation, and the proposed exercise in 2017; the One Health training; and the development of the integrated One Health workplan. However, much of the engagement is informal or the result of others playing a coordinating role, such as the role of CMHDC in regard to zoonoses. There does not appear to be an institutional commitment from either ministry to take initiatives to collaborate. This also suggests that the One Health approach is yet to be fully adopted and applied in the institution's policies and programs on detection and response to emerging infectious diseases.

4.2 Component level achievement against outcomes: Human Health

Component outcomes: Human health (see matrix in Annex 3)

HH1: Improved public health emergency preparedness and risk management. On track. Guidelines and SOP for pandemic preparedness and strengthened multi stakeholder engagement have been largely achieved through the national pandemic contingency plan.

HH2: Enhanced surveillance for detection of potential outbreaks has been achieved, and is on track; links with laboratories for verification and integration of human and animal surveillance remain weak.

HH3: Increased performance of public health workforce in epidemiology. Assessed as not on track. While there has been progress in expanding the FETP network, and improving collaboration with universities, but it was not possible to assess the quality of the teaching and supervision, or the application of epidemiology in decision making during the brief period of the review. There are issues with the appointment and placement of epidemiology trained staff that may compromise the performance of the public health workforce in epidemiology.

HH4: Improved government funding for the surveillance and control of EID. Not on track. While advocacy materials were developed and some advocacy activities undertaken in 8 provinces, it is difficult to determine if this has resulted in improvements in local government budget allocation. There does not appear to be a strategic plan and tools to map funding gaps, and progress on policies and systems for sustainable funding appears to be mainly occurring through the efforts of the CMHDC.

Assessment against criteria of relevance, effectiveness, level of engagement and partnership, effectiveness of use of time and resources (efficiency), and level of coordination between animal and human health components.

(i) Relevance and effectiveness

Outputs HH1 (emergency preparedness and response) and HH2 (surveillance) remain very relevant to GoI and MoH priorities, as can be seen in the establishment of the PHEOC and the investment in and utilisation of EWARS (Early Warning and Reporting System). AIPEID technical support for EWARS and in developing the pandemic contingency plan appears to be an effective contribution.

Output HH3 has focused on the FETP element. In interviews with the Director of Surveillance, the need for improved epidemiological capacity was recognised, but the current policy priority is for shorter on-line courses to build the basic understanding of key staff of epidemiological concepts. The two year intensive FETP course faces constraints in terms of its high cost and duration, and the lack of a career path following graduation. Effectiveness and relevance of the focus on FETP, particularly given support from CDC, could be questioned.

Output HH4 has focused on advocacy to local government for budget allocation. It is doubtful that local governments have fiscal space or interest in increasing the allocation to the health sector, given the large amounts of funding provided by national government through the national programs such as the national health insurance program (JKN) and the operational funding support for health promotion and prevention (BoK). There does not appear to be much of a strategic approach to this

issue. It is more likely that the work of the CMHDC in developing guidelines for access to disaster funding will improve access to funding. The effectiveness and relevance of the advocacy focus could be questioned.

(ii) Level of engagement and partnership, use of time and resources, and level of coordination with animal health component.

AIPEID support is largely being provided through technical support from the WHO in-country team of technical consultants. The reviewers noted close collaboration between the WHO technical consultants and technical counterparts within the MoH. However, while the review team did not have an opportunity to meet the DG Disease Prevention, in a meeting with DFAT health staff, the DG stated that he was not aware of the specific activities and extent of support being provided by WHO and DFAT. The review team formed the opinion that the WHO technical consultants have focused on a technical level of engagement and partnership, rather than a strategic or policy level engagement. This has resulted in good progress on some of the technical issues, but less progress on the strategic or policy issues of workforce and funding.

The use of the WHO country team does provide an opportunity to improve the efficiency in use of resources by enabling leverage of resources provided by other partners, and effective 'pooling' of resources by the WHO country office. For example, AIPEID resources contributed to the One Health pilot training, although the costs of the training itself were born by other development partners. However, the failure to engage with some of the underlying policy and strategic issues has resulted in resources being used in some activities of doubtful strategic relevance or effectiveness.

The review team was unable to identify planned or strategic level coordination between the animal health and human health component teams. The teams do meet and communicate, particularly in DFAT convened meetings, and through one health activities – for example, planning the pandemic simulation exercise, or the upcoming workshop to compare surveillance systems and examine strengths and weaknesses. But the review team was not informed of regular meetings or strategic discussions planned and convened by the component teams themselves.

Recommendations re critical issues to be addressed in the final year of program implementation

(1) Given the changing policy context for the program, with the establishment of an EID sub-directorate, the establishment of a PHEOC, the changes to needs in relation to epidemiological training, the new role of the CMHDC, the GHSA action packages, and the proposed JEE in November, there is a need to strategically review engagement and roles, particularly in relation to outputs HH3 and HH4. We recommend using the remaining time to phase out support for the FETP (HH3), and to phase out support for further advocacy to local government for funding (HH4). However it would be strategic for AIPED to remain engaged with CMHDC on discussions with the National Agency for Disaster Management (BNPB) on accessing the various disaster related funds for non-natural disasters.

(2) There is a need for the human health (WHO) and the animal health (DAWR) AIPEID teams to meet more regularly to discuss at a strategic and policy level their engagement with their respective ministries, and the evolving policy landscape. These discussions could consider how to leverage the

role of CMHDC and the 'zoonotic disease' agenda; progress on the GHSA and how to leverage the different action packages; the results of the JEE in November 2017, and the response of the GoI to the results. DFAT health should also participate in these discussions, and it may be appropriate for DFAT to convene them.

(3) In terms of the current outputs, the focus of effort in the remaining time should be on outputs HH1 and HH2: supporting the operations of the PHEOC, further development of the pandemic contingency plan through simulation exercises involving subnational level staff and shifting towards an 'all hazards approach', and addressing some of the gaps in the current EWARS, such as linkage with laboratory results and with facility (hospital) based syndromic surveillance. In regards to outputs HH3 and HH4, activities should be limited to ensuring the sustainability of current inputs, and the transition to the phasing out of further support following the end of the program.

4.3 Component level achievement against outcomes: Animal Health

Component outcomes: Animal Health (see matrix in Annex 3)

AH1: Strengthened emergency management – there are three component outcomes which are in progress but behind expectations and in part unlikely to be complete before the end of the project

AH1.1: Emergency preparedness enhanced with improved policies, procedures and capabilities. On track but progress behind expectations - Significant progress has been made toward the establishment of an Emergency Management Working Group (EMWG). Formal role of EMWG has to be ratified and improved emergency preparedness policies and capabilities are yet to be achieved.

AH1.2: A robust and coherent mechanism for the management of animal disease emergencies is defined and established. In progress and on track: The Emergency Management Manual has been approved and published, some distribution has occurred but socialisation at sub-national level remains to be conducted.

AH1.3: Enhanced operational capacity to implement an emergency response. In progress but outcome likely to be partially achieved. - The Incident Command System (ICS) has been introduced and training conducted, including with MoH. Planning is underway to test the ICS in a One Health pandemic influenza simulation exercise in 2017. SOPs are being reviewed, as are the regulations on outbreak response. A substantial review undertaken of emergency funding mechanisms through BNPB identified gaps and constraints beyond the scope of the project.

AH2: Enhanced national animal health information system (iSIKHNAS) and the effective use of information to support surveillance, veterinary service delivery, policy development & advocacy. There are two component outcomes, one on track and one not.

AH 2.1: The iSIKHNAS data management system continues to perform well as coverage by the system becomes wider nationally. On track and largely achieved. Accelerated roll out by GoI has resulted in some gaps in performance and expansion of iSIKHNAS to support the national cattle breeding program (SIWAB) has overwhelmed MoA support resources.

AH2.2: Information made available through iSIKHNAS is used effectively to support surveillance, disease control, policy development and advocacy. Not on track and little progress evident.

While results are available, information is not routinely analysed as staff resources limited or diverted to other priorities.

AH3: Strengthened leadership and management within Indonesia's Veterinary Service. There were two component outcomes with good progress made but outcome AH3.2 was not realistic at institutional level:

AH3.1 Institutional and individual capacity exists within the Ministry of Agriculture to ensure strong leadership of the veterinary services. On track but outcome likely to be partially achieved because of institutional constraints. There are good results at the personal and team level but probably too early to have indication of institutional change. As trainees progress through the organisational structure this outcome might be realised.

AH3.2 Enhanced core capabilities in the areas of strategic planning, program design, management, monitoring & evaluation. In progress but unlikely to be fully achieved – most information indicated trainees had enhanced confidence to lead and better teamwork influencing management, but not strong indicators on other aspects of core capabilities.

Assessment against criteria of relevance, effectiveness, level of engagement and partnership, effectiveness of use of time and resources (efficiency), and level of coordination between animal and human health components.

(i) Relevance and effectiveness

All three components are still considered highly relevant to GoI needs. The disease information component (AH2) of the current AIP EID programme has strong ownership from the GoI partners, the leadership component (AH3) has moderate ownership and the emergency preparedness component the weakest ownership it would seem. The design of the project has contributed to this ownership and relevance, in particular by concentrating on 3 key areas of need identified by the GoI in the wake of the OIE Performance of Veterinary Services Evaluation. This direct ownership and government to government modality have also enabled some adaptive management to occur - DAWR management's understanding of the needs of the GoI has been instrumental in building for success and programme effectiveness. AH2 has been a particularly effective approach in meeting the objective, but constraints at DAH level made it less effective in enhancing capacity to utilise the outputs from the system. The approach to AH3 is well regarded by the GoI and it has utilised an effective modality that has been very productive in generating change at the individual level. It is also noted that AH3 has brought benefits to the project as it has enhanced linkages between the functional units and the project activities. The GoI institutional environment related to the objective of strengthening the emergency management system is very complex and so progress has been at best steady, but at the same time what has been achieved has been effective in meeting the objective. The review also notes that the AIPEID team has approached the constraints carefully and are working with the DAH to develop solutions to constraints. The continual presence of the AIPEID consultants working on these matters is proving a productive approach.

(ii) Level of engagement and partnership, use of time and resources, and level of coordination with human health component.

There is also a level of mutual respect that has been enhanced by the programme, in particular fostering GoI interest to understand the DAWR approach to key animal health management issues. This is also exemplified by DAWR desire to maintain technical assistance in areas where there is good capacity to add value to any ongoing activities. So AIPEID has been effective in meeting DAWR interests in the programme as well.

The implementation modality appeared to be efficient, and while the AIPEID team is small, there does seem to be a level of "multi-skilling" involved in project delivery. The use of the Australian Government DAWR to deliver the project seemed appropriate and effective. However in broad terms it appears that in 2016 there was some loss of efficiency . The shift of project management back to Canberra, reducing the level of local autonomy and decision making, could have contributed to this. There was also protracted legal wrangling in Australia over the intellectual property rights related to AH3 that had not occurred with phase 1 of AIPEID and this delayed phase 2 implementation of the IVL program. Over the same period there has been a MoA staff rotation and so working relationships and in some cases training investments were lost. As well changes in Director-General and Director positions caused delays in implementation of all international activities. A further significant issue has been the very big emphasis MoA has put on the SIWAB initiative – one interviewee described it as "sucking up" all the resources and attention of DGLAHS over the last 6 months. These latter matters are out of the hands of the programme.

To complement information above, while cross-sectoral collaboration is not strong, where it takes place it has been productive. AIPEID is to conduct a pandemic influenza simulation in September 2017 and there has been significant cooperation with WHO and MoH in the planning although AIPEID animal health reported that DGLAHS engagement in the process has not been strong. Again this reflects the focus of the GoI counterparts at present. As noted in the human health summary, the small AIPEID team is too stretched in dealing with the day to day constraints to find the mental and temporal space for higher level strategy development.

Recommendations re critical issues to be addressed in the final year of program implementation

This section reinforces the view from above that there needs to be a more strategic alliance between the human health and animal health components, as there are some areas where closer alignment of approach and interests would be fruitful, especially in the development of the relationship with CMHDC. The project also needs to be developing an exit strategy, particularly as DAWR has expressed an interest to remain engaged at a technical level with DGLAHS/MoA. Some thought needs to be given to what modality might be established that might be sustained even in the absence of direct support from DFAT.

AH1: Strengthening emergency response

Many of the constraints faced concerning emergency preparedness and response are not within the ambit of the programme to resolve, as they related to policy and legal issues intrinsic to the environment. However the objective to establish the EMWG to deal with constraints is well underway and having it formally endorsed and operating is a priority milestone to reach. The EMS manual must be socialised as far as feasible, but certainly provincial and DIC management must be familiar with its contents and rationale. Any SOPs agreed to be in need of revision must be updated

and endorsed by project end. The role of document management and "version control" of manuals, guidelines and instructions has been identified as a constraint for consistency in technical approach and a system to manage such documents should be established by the end of the project if feasible, as there appears to be a critical gap in this area. Whether such documents can be archived with version control in iSIKHNAS would be worth exploring. It will be very important for AIPEID and DAH partners to do a full assessment of the Sept 2017 simulation exercise, and in particular to examine the role of and the interaction with BNPB in the execution of the response. It appears that there is acceptance of the ICS within DGLAHS, but more clarity is required to understand how the governance, technical and management aspects will intersect in the Indonesian context. The review was noted that AIPEID AH1 has been facilitating interaction with CMHDC and regards this as strategic and important to continue.

AH2: Animal health surveillance and information management

There seems to be two points of view in relation to the performance of iSIKHNAS at present. The central management view is that the SIWAB focus is not affecting performance, but at field level there are significant concerns about performance for a number of reasons. AIPEID and the component consultant have undertaken an evaluation and there is a strategy to address the constraints that have arisen. DAH is of the view that to finish the task with iSIKHNAS, DAWR must now complete the system programming knowledge transfer to the MoA. While the local Champions are able to perform the task of adding additional functions to iSIKHNAS, it appears that they are not able to streamline the system logic and avoid inefficiencies in data processing. The iSIKHNAS program developer proposes that capacity be built in the private sector to provide programming support to MoA under contract; while the DAH has indicated a preference for capacity to be build 'in house', and has suggested the Ministry Information and Data Centre (Pusdatin). While in house capacity would be preferable, it is not known whether Pusdatin have staff with the necessary basic expertise, and whether these staff would remain available to provide the necessary support. Further exploration of the feasibility and effectiveness of these two options is needed before a decision can be made, but it would seem important for the partnership to resolve this matter as quickly as possible.

It is important that animal health functions of iSIKHNAS are working effectively and efficiently at field level by project end, and additional revision training required for coordinators is implemented. There is also a need to strengthen DGLAHS capacity to utilise data from iSIKHNAS so that the animal health benefits are maximised and promoted to ensure sustainability of this aspect of the system. However there seem to be institutional constraints to achieving this goal. A further point raised with the review related to the link of the laboratory information system to iSIKHNAS. DAWR and DFAT might consider a variation in the work plan to ensure that efforts being made at DIC level to integrate laboratory results do not result in a set of different solutions being developed across a number of laboratories.

Component 3 – Indonesian Veterinary Leadership

There are not any outstanding issues that must be addressed other than to find an "institutional home" for the programme. Options continue to be explored and there is optimism that it will be situated within one of the MoA training institutions. This will be important for sustainability of the programme. It was noted that there is a lot of demand from different quarters for training to be

provided but in some cases for a modified course, and AIPEID expressed concern about the trainers agreeing to these requests. If the course is recognised as a quality "brand", then it seems important that the "brand' is in some way protected. This is a matter for the institutional home to manage, but also for DAH to take more ownership of. The review also puts two suggestions on the table for consideration. This appears to be an opportunity to introduce gender concepts to the leadership programme, and this should be explored. The second is to have some role play related to the ICS system and emergency management, or even to devote a segment to leadership in emergencies and working with other sectors. Both of these ideas can lead to greater socialisation of the concepts in the Indonesian context.

Summary Assessment

Overall, the review team assessed that the first key objective of strengthened systems for response to human and animal infectious disease emergencies is progressing and is largely on track; the second objective of strengthened surveillance systems that are used effectively is largely achieved; while the third objective of improved leadership, management and evidence based decision making has made progress at an individual level, but is not on track at the institutional level. The additional outcome of improved collaboration is largely on track, although not to the extent of developing institutional coordination. In terms of priorities for the remaining period of the program, the review team recommends a focus on progressing objective one, through development of manuals, protocols and training exercises; and objective two, through further development of elements of the surveillance information systems (notably linkages with laboratories), and resolving some structural issues related to the expanded use of iSIKHNAS. In regards to the objectives in relation to training in leadership and epidemiology, the focus of effort in the remaining time should be on establishing the structures and arrangements for the sustained delivery of the courses, and phasing out future support; while the efforts on advocacy for funding for surveillance are considered unlikely to be effective, and any further effort in regard to funding should be through engaging with the steps being undertaken by CMHDC.

5. Review/assessment of GOI preparedness/response capacity to EID

Annex four provides the review team's description and analysis of current Government of Indonesia policies and systems in regard to detection and response to outbreaks of human and animal infectious disease. In summary, the assessment of the review team is as follows:

Summary Assessment:

(a) Current priorities for the MoH and the MoA are not in the area of infectious disease detection and control, or in emerging infectious diseases. The priority is probably greater in the MoH, with recent policy decisions to create an EID Sub-Directorate and to upgrade the Posko KLB to a PHEOC indicating some vision and commitment. In the MoA, livestock is only one area of its remit, and the priority there is on increasing cattle breeding, rather than animal health. However, new laws and regulations creating the establishment of veterinary authorities could lead to an increase in the technical capacity and quality of responses to animal disease outbreaks.

(b) Given the challenge of coordinating across a decentralized government system, both MoH and MoA have valued, and are committed to, the information systems which enable central level to be

rapidly informed about developments and to monitor potential outbreaks at local level. Information has emerged as a key to managing systems in this environment.

(c) There does not appear to be a strong commitment to coordination at a central level in either of the ministries, and much of the initiative is coming from the CMHDC, which has taken over the role and authority of the National Zoonosis Commission. In this role, it is continuing the development of a program (termed SIZE) linking to the two information systems (iSIKHNAS and EWARS) that was initiated by the previous Komnas Zoonosis, as well as the development of joint protocols with the BNPB on management of non-natural disasters. USAID is providing support to develop guidelines for a One Health Framework to facilitate the coordination process.

(d) Other elements of the systems that support detection and response to EIDs are impacted by broader policy developments both within and outside the human and animal health sectors. In human health, the introduction of capitation payments to primary care through the national health insurance scheme (JKN) has reduced the attractiveness and resources available to public health programs such as surveillance and response. The MoH is working with the Ministry of Administrative and Bureaucratic Reform (MenPAN) to develop new functional job descriptions for epidemiologists to make this role more attractive. Animal health faces challenges in competing for funding for surveillance and response within the MoA, but by providing support to the current priority cattle breeding program, has maintained resourcing for iSIKHNAS.

(e) Laboratory analytic capacity is a constraint in both human and animal health sectors. The MoH relies on regional laboratories only recently converted from an environmental health role, together with research laboratories under NIHRD; while MoA has eight Disease Investigation Centres with quite good laboratory and investigative capacity. While laboratories in both sectors are currently being assessed through the USAID EPT-2 program, this program provides only limited resources; both sectors' laboratories indicated interest in partnering with Australian laboratories.

(f) Despite the institutional barriers to coordination and application of a One Health approach at central level, the field visit identified good communication between animal health and human health agencies in investigating potential zoonoses, and the formation of joint rapid response teams. While the field visit site is likely to be in a better position than many other locations (due to training and reasonably high levels of local resourcing), it does demonstrate the practical application of a One Health approach is feasible. The review team also noted the relatively high proportion of women among the staff of human health (? and animal health) service facilities and laboratories in the infectious disease program, which indicates reasonable gender equity in this area of the workforce.

6. Assistance needs and opportunities

Current assistance programs

The review team met with the following development partners currently engaged in activities related to health security: WHO, FAO, CDC, USAID, and World Bank.

(a) WHO Indonesia country program: The WHO country program is based on supporting the MoH in achieving the IHR requirements and uses the APSED framework. The current biannual work plan, 2016-17 is financed from a combination of regular budget, plus USAID, CDC and DFAT contributions. DFAT funding is about 50% of the total.

The WHO country team identified the following priorities for further assistance: laboratory capacity building, developing the PHEOC, introducing an "all hazards" approach, and expanding One Health to include wildlife and environment (USAID EPT-2 is engaged with wildlife and the environment).

(b) FAO: The FAO program is mainly the provision of technical support for the Emerging Pandemic Threat -2 (EPT2) program funded by USAID.

(c) USAID: Emerging Pandemic Threats Phase 2 (EPT-2) Jan 2016 – April 2019

This program focuses on zoonoses and EIDs, is implemented through a number of collaborating partners and takes a global – regional perspective. It is closely linked to the GHSA and is administered globally through Washington.

There are six outputs in Indonesia: surveillance system for zoonoses and EIDS, incorporating laboratory diagnosis; One Health focussed effective and sustainable prevention and control of targeted zoonoses and EIDs (includes a national web based platform for sharing information named 'IVM on line' for influenza virus genome monitoring); increased knowledge base and information sharing on poultry productivity; identification diseases risks along the poultry market chain to support policy making; collaboration between government and educational institutions on one health capacity building (INDOHUN); and improved preparedness and response system for zoonotic diseases and EIDs.

The program includes strengthening veterinary laboratory diagnostic capacity, and linking laboratory diagnostics to surveillance; and the development of an on-line data sharing platform (Influenza Virus Monitoring - IVM) to share genetic analysis of AI samples. The laboratory support is primarily through a self-assessment tool (FAO Lab Mapping Tool) designed to assist laboratories to determine their needs and request budget from government.

(d) US Centres for Disease Control

CDC support is primarily around the GHSA framework with a focus on workforce. It includes support to enable the FETP to transition to a 2-year degree program; and collaboration with the Indonesian Association of Epidemiologists (PAEI) to develop a career pathway. CDC is also providing support to the PHEOC at the MoH, through technical advice, training workshops, and hosting one MOH staff for a 4-month fellowship with CDC Atlanta. There is also some activity being undertaken to establish a form of FETP for veterinarians (FETPV) in Indonesia, with FAO as a partner.

(e) World Bank: Regional MDTF on Integrating Donor Financed health programs (2016-2018).

This program aims to assist countries in the Asia Pacific to transition from donor financing of essential health programs as countries lose eligibility for multilateral financing (eg from the Global Fund and The Vaccine Alliance). The program has 4 pillars, and three windows with DFAT funding.

> Pillar One: Comprehensive health financing and institutional assessments. In Indonesia, a health finance assessment (macro level, system approach) has been completed, while reports (by Survey Meter) on service availability and readiness are in preparation.

Pillar Two: Technical assistance and capacity building: TA is being provided on public finance management, with a focus on the poor performance of public expenditure at a subnational level; and on exploring the potential for public-private linkages.
Pillar Three: Knowledge generation and exchange. Activities are under development
Pillar Four: Resources to support recipient country executed interventions.

DFAT is providing funding for three windows. Window 3 focuses on health security, with an emphasis on Indonesia and countries of the Mekong basin. In Indonesia it is proposed that activities will be developed based on the results of the JEE and the health security finance assessment tool, which is currently under development

Donor/international agency coordination currently occurs through donor coordination forum meeting monthly under auspices of USAID/EPT-2, which includes Preparedness and Response (P&R), Predict, FAO, and WHO. The CMHDC also holds a national donor coordination meeting annually.

Requests for assistance and priorities

MoA: The MoA expressed their desire to ensure the sustainability of iSIKHNAS, and to build the capacity within the MoA (in the Pusdatin unit) to manage and maintain the software. They were open to engaging external providers for hardware maintenance. Additional matters canvassed were upgrading the laboratory information system with linkage to iSIKHNAS, avian influenza reference laboratory twinning and epidemiological analysis capacity building.

MoH: The MoH identified capacity building of public health laboratories as their priority for further support. The ten regional laboratories (BTKL – Balai teknis kes lingkungan) managed by the DG Disease Prevention originated from environmental health labs, but need expansion in capacity to undertake human health investigation.

The MoH also requested technical support to develop on-line short training courses in epidemiology for current MoH and provincial/district level staff to increase the awareness and understanding of basic epidemiology among health staff, and to support an application MenPAN to develop a functional job description for epidemiologists.

In terms of priority diseases, both the NIHRD and the MoH Zoonosis Sub-Directorate identified neglected tropical diseases (schistosomiasis, filariasis), TB, malaria and leprosy as priorities rather than EID.

The MoH Zoonosis Sub-Directorate also emphasised the importance of external technical support for training and capacity building, which otherwise receives little funding from the government budget. They mentioned support from AIP-EID through WHO for One Health pilot training; world rabies day; leptospirosis surveillance with CDC; and the expert meeting on zoonosis.

Opportunities:

The AIP-EID program has effectively leveraged technical support and the credibility and convening power of WHO in providing technical support in the human health sector. There is an opportunity to continue to build on this as well as to consider approaching FAO in a similar way. USAID indicated an interest in collaborating around strategic thinking and policy analysis in addressing EID and One Health.

In terms of other DFAT programs, there are likely to be opportunities to leverage funding from the MDTF on donor health financing, and from the DFAT regional health security initiative, provided there was capacity to prepare strong and well supported proposals with Indonesian partners.

The review team also noted potential linkages with other Indonesian DFAT programs, particularly the Knowledge Sector Initiative (KSI). The KSI program focuses on the use of information and evidence in policy decisions; while the AIPEID focus is on the use of information to inform program and implementation decisions. However many of the issues in regard to the management and use of information are similar, and there could be opportunities for the strategic sharing of experience between the two programs.

The review team identified a number of current and developing partnerships between Australian and Indonesian institutions and authorities, and noted that a key strength of the current program is the engagement between DAWR and MoA. While there is some uncertainty about the interest of the Australian DoH, there appears to be considerable interest among Australian health researchers and Indonesian researchers to collaborate. However the experience of the Wolbachia study indicates the importance of understanding the Indonesian context and policy framework, and suggests a potential role for an intermediary or facilitatory function.

The review team also examined the potential to link with the DFAT humanitarian/disaster preparedness program in Indonesia. The focus of this program is currently on: risk based decision making in BNPB, with data provision and linkage; community preparedness (NGO contracts); and internal embassy preparedness. There are potential commonalities in the engagement with BNPB and work on information systems and linkages, but meaningful engagement with MoH and MoA will require significant technical expertise, which is well outside the technical scope of the disaster program. In regards to potential management or administrative linkages, this is addressed in the following section on options.

Summary Assessment

While there are a number of development partners engaged in the area of prevention and control of infectious diseases, in terms of funding allocation, DFAT and USAID are the main partners. DFAT has been funding a significant portion (around 50%) of the WHO programs; while USAID is the principal funder of FAO and US CDC engagement. The Global Health Security Agenda is an important initiative, particularly given Indonesia's strong engagement, and provides a new structure and framework for development partner engagement. There is also potential funding from the WB managed multi-donor trust fund on integrated donor financing, and the potential new regional health security initiative from DFAT. DFAT support to Indonesia in this space has played a critical role in complementing USAID and FAO focus on animal husbandry, and in supporting Indonesia's engagement at a regional and global level. While the Indonesian government continues to develop its policy framework, both MoH and MoA expressed desires for continued Australian support in specific technical areas, particularly building on Australian institutional expertise.

Section 7. Options for Australian assistance in health security in Indonesia.

Options for further Australian assistance in health security are considered at two levels: strategic and technical. It should be noted that the two levels are inter-dependent: strategic level objectives will require a technical level engagement; and technical level engagement requires strategic level engagement to be most effective.

Options at a Strategic Level.

Rationale: A key criticism of the current program is its focus on addressing specific technical areas, and lack of engagement at a higher or strategic level, as detailed in Section 4. This is particularly concerning because of the identified weakness in the Indonesian system in strategic thinking and decision making; and the need for further strategic analysis and direction in terms of understanding and applying a 'One Health' approach, and in negotiating the complex institutional and regulatory environment in which the program operates. As noted in section 6, USAID has also indicated an interest in collaborating on more strategic thinking and policy analysis.

Given the strategic interests of both Australia and Indonesia identified, the review team recommends that the strategic objectives of a further program be explicitly stated and that the resources and capacity required to achieve the strategic objectives be considered in the selection of modality.

Options for Strategic level objectives (A)

(A1) While the current AIPEID program has not explicitly stated a 'strategic objective', the implicit objective can be seen as improving coordination between MoA and MoH in adopting and using a One Health approach.

The strategic objective of improving coordination between MoA and MoH has proven to be challenging to achieve. This is partly because external agencies have limited capacity to influence the institutional and administrative arrangements of the Government of Indonesia, and also possibly because such coordination may not be well aligned with the interests or priorities of the two ministries.

However the review team considers that the application of a One Health approach to the detection and response to current and emerging infectious disease is essential, and views a One Health approach as encompassing a way of thinking and operating that extends beyond, although includes, coordination. The review provides a more in depth discussion of the One Health concept and its application in Annex 2. Based on the reasoning presented in Annex 2, the review team supports a strategic objective that relates to the application of the One Health approach, and requires engagement with the two components of animal health and human health, and related institutions (CMHDC, BNPB). In defining the scope of the program, one option is to maintain the current focus on zoonoses and emerging infectious disease. However, given the fluid nature of the context, another option is to base the scope on infectious disease risk, with the flexibility to address risks in current infectious diseases arising from changes in environment or practices, such as AMR and MDRTB. Table 1 on page 13 provides an initial assessment of potential priorities.

Based on these considerations, one option is a strategic objective that explicitly endorses a One health approach: such as 'Supporting and building the capacities of the MoH and MoA to introduce and work together with other relevant institutions to apply a One Health approach to the prevention, detection of, and response to current and emerging infectious disease risks'.

(A2) This strategic objective could be further expanded to respond to the identified strategic interests of Australian and Indonesian government agencies to improve communication and engagement in the field of infectious diseases. This reflects the assessment of Section 3.

The objective could be framed at the level of communication, such as:

(A2.1) Develop and maintain communication channels between Australia and Indonesia in the area of infectious disease detection and response at both government and professional levels, including with high levels of the GoI agencies involved (at least Director General level).

The scope of the communication could extend from high level exchange between respective government departments at national and /or state –subnational levels, to professional organisations (communicable disease control networks, public health laboratory networks), and to research and academic institutions. Such communication could also benefit academic and research collaborations, where, as the Wolbachia experience indicates (Section 6), greater understanding of Government of Indonesia systems could facilitate research implementation.

Or the objective could be further strengthened to a greater level of engagement and collaboration, which could be expressed as:

(A2.2) Develop and maintain an ongoing institutional relationship between Australian and Indonesian human and animal health system agencies and / or institutions, as a basis for facilitating and supporting strategic communication and discussion and collective engagement with regional and multilateral structures and partners.

While engagement at the level of objective A2.2 would require a significantly greater investment of effort and resources, it would enable much more effective communication. This is because knowledge and understanding of the respective systems and institutional arrangements will assist communication, and also inform more strategic investment of resources in technical support than has been possible in AIPEID. The review team recommends that this objective as most likely to achieve the strategic interests of the respective governments.

(A3) A third strategic option is to maintain engagement around specific technical issues only, and not to explicitly endorse a One Health approach. This has been the strategy adopted in the current AIP-EID program, and was explicitly stated by DAWR managers as 'selecting winners'.

However, the lack of engagement at a strategic level has hampered development of contacts and communication with higher level Indonesian agency managers, and does not support or address the strategic interests of Australian agencies and institutions in engaging with Indonesian counterparts. There is also the issue that without strategic level thinking and engagement, the technical inputs and products may not be used to the greatest effect, or may not be appropriately institutionalized or sustained – problems that have been noted in the current AIP-EID program.

Options at a Technical level

The review team has noted the evolving and fluid nature of the policy and institutional environment in which the program operates, as well as the evolving and unpredictable nature of the technical needs. This assessment is based on the current context and situation, but, as has occurred over the life of the AIPEID, the needs evolve and develop. For this reason it is important that adequate strategic oversight and discussion complement and inform decisions on technical priorities, as proposed in the strategic objectives level.

Options for Technical level objectives (B)

(B1) Continue support for animal and human health surveillance information systems
Support the further development, ongoing adaptation and use of information systems that enable the early detection and support / monitor the rapid response to potential incidents of EID / zoonoses / changes to infectious diseases with the potential to spread (including AMR, MDRTB). In particular, examine the potential to develop laboratory information systems and enable linkage to the existing EWARS and iSIKHNAS, and support the linkage between the human health and animal health systems (the SIZE system proposed by CMHDC); build the capacity within the MoA / MoH (if appropriate, within Pusdatin) to maintain, operate and further develop the systems; and build the capacity and develop the opportunities to analyse, interpret and use data provided by the information systems in decision making, planning and monitoring of responses. The information system data could also be reviewed to check for gender bias in reporting of potential cases or incidents and / or to ensure that gender information is included.

Rationale: Investment in information systems maintains and builds on previous successful investments from AIP-EID as detailed in Section 4; information systems are the key to early detection and coordination of responses; there is a need to provide further support to the information systems to improve their use in detection and response, and to maintain a focus on health outcomes. The scope of information collected should be based on infectious disease risks, and not be restricted to zoonoses and emerging infectious diseases only. The objective should be to build capacity within MoA and MoH for ongoing maintenance and periodic upgrading of the systems, and the resources and regulatory authority for their sustainability. The MoH has issued a regulation regarding EWARS (Permenkes 45/2014) that provides the regulatory authority. We understand that the MoA has drafted a regulation for iSIKHNAS but has not yet issued it, which should be followed up during the remaining phase 2 activities of AIPEID.

(B2) Continue support for development of systems and procedures for response to infectious diseases risk events.

Facilitate collaboration between Australian and Indonesian agencies on the operation of outbreak response coordination and control systems through joint exercises, exchange of experience, and procedures.

Rationale: External agents have only limited ability to contribute to the development of response systems and procedures which need to be aligned with Indonesian institutional, financial and regulatory policy. Encouraging exchange between Australian and Indonesian agencies facilitates communication and understanding of each other's systems; while specific technical inputs can

strengthen key aspects of the systems. As above, the scope of response should be based on infectious disease risks, and not be limited to EID.

(B3) Continue support for epidemiology (human health) and leadership training (animal health)

Completion of the institutionalization of the current investments in workforce training should be a focus of the remaining phase 2 period. In regards to FETP, the expansion of the training sites to other regional universities should improve availability, and the MoH is developing position descriptions for functional roles for epidemiologists. There is potential for further support needs in developing on line short courses, which could be addressed through other DFAT training programs. In regards the IVL, it should be clear whether there is a likelihood of an institutional basis for the IVL by the end of the current AIPEID phase 2. There is the potential that further inputs may be needed in developing the institutional capacity to deliver IVL, and the option of continuing some short term additional technical support could be considered A further option would be to consider the potential to support development of a FETP for veterinarians (FETPV). However at this stage it is unclear whether there is demand or a feasible institutional partner for the FETPV course, or career positions for graduates in the present structure.

(B4) Continue support for strategies to influence GOI policy and decisions on funding infectious disease surveillance and response .

The policy and institutional context for the funding of animal / human health and outbreak response is complex and evolving, with many stakeholders. It is unlikely that an external agent can play a significant role unless technical advice is requested for a specific issue. An example would be a request to undertake research and analysis that assists GoI agencies to quantify funding needs and make better use of current funding sources, and there may be opportunities to leverage the WB managed MDTF on integration of donor health financing to support developing this evidence base.

(B5) Expand to cover areas not currently covered in current program

Expansion of technical scope is largely dependent on the resources and funding available. Any technical expansion should also be viewed in terms of the strategic objectives. Within the current resource envelope, additional resources could be obtained by reducing / ceasing some of current activities as proposed in the next section (5).

(B5.1) Support collaborative research and studies into interventions to reduce the risk of occurrence, spread or harm from EIDs / zoonoses / infectious diseases with potential to spread; including laboratory research into diagnostics or treatment options.

Rationale: As discussed in Annex 2, application of a One Health approach involves greater use of a broader range of research and evidence, while there are still significant research gaps in terms of the potential outcomes and added value from the One Health approach.

GoI has also expressed interest in research collaboration; and has identified the need for additional research particularly operational research on interventions for prevention and control of EID. This option would also support opportunities to access regional and other funding streams that support research (eg Regional health security initiative). Another opportunity for collaboration could be with

USAID which is supporting applied research in regard to the animal/ human interface. Further research could also explore the role of gender in EID risk and prevention.

The scope of potential research topics could include infectious disease risks broadly, with a focus on implementation research, for example:

- Strategies and interventions to operationalize a One Health approach, and measurement of the outcomes and value add from such an approach
- Strategies and interventions to modify behaviour and practices around the human-animal interface, with particular attention to gender differences in roles and risk
- Methods and technologies for data analysis and interpretation, such as modelling or diagnostic technologies, that enable better detection and response to potential infectious disease outbreaks

Given the potential for research funding from other sources as mentioned above, it is recommended that this option focus on support for the development of proposals and submissions, particularly involving collaboration between Australian and Indonesian researchers, with the aim of securing funding from other sources, rather than the direct funding of research.

(B5.2) Build capacity of current laboratory and diagnostic systems, and collaboration between animal health and human health laboratories

Rationale: As detailed in section 4, laboratory confirmation is the next key step in developing the early detection process; the review has identified significant issues with laboratory capacity, particularly in the public health laboratories. USAID has introduced a laboratory mapping tool to identify capacity building needs in these laboratories. There is also interest to develop reference laboratory capacity in the animal health laboratory system.

(B5.3) Expand scope of technical program to address other human health security risk areas, including MDR TB, antimicrobial resistance, and vector borne diseases (malaria, dengue); or animal health security areas (FMD) as assessed in Table 1

Rationale: As summarised in Section 2, there are a number of risks among current infectious diseases, notably the spread of AMR and MDR TB; and the expansion southward of areas at risk of dengue / malaria vectors as a result of global warming. Introduction of FMD would be a key risk for Australian livestock. GoI has commenced programs to address AMR and MDR TB with WHO assistance, but still confronts large challenges.

As noted in Annex 2, AMR in particular provides an opportunity for further development of the One Health approach and its strategic application, as it requires policy that balances the strategic interests of animal production, livestock producers and industry, with animal welfare and human and animal health implications.

(B5.4) Strengthen the application of a One Health approach by engaging with and strengthening the capacity of the Directorate of Veterinary Public Health (Kesehatan masyarakat veteriner) in terms of their role in bridging between animal and human health. The Directorate is currently poorly resourced, but has some staff with experience and commitment, and could provide an opportunity to address some of the prevention aspects of EID.

(B6) Option of not providing further support in this area.

Potential consequences of not providing further support include:
(a) Failure to ensure the sustainability and continuing effective operation of key investments from the AIPEID program that are regarded as effective and useful in reducing the risk of infectious disease by both Australian government partners and Indonesian government partners, and that have been delivered at very moderate cost -in particular the information systems (iSIKHNAS and EWARS).

(b) Failure to build and maintain engagement and relationships between Australian government partners (DAWR, DoH) and Indonesian government partners.

(c) As a consequence, increased risk to Australia from the emergence of new, or the increasing spread of current, infectious disease in Indonesia; and increased delays and costs to Indonesia and Australia in responding to such emergence, noting that the risk of the emergence of new infectious diseases or increasing spread of current infectious diseases is high.

Recommendation: This option is not supported by the review team.

Options for implementing modality:

Consideration of the implementing modality requires consideration of the modality that enables or supports engagement at a strategic level, and engagement at a technical level.

Implementation at the Strategic level (C)

Requirements for the implementing modality to engage at a strategic level include: ability to engage with and facilitate interaction between high level policy makers in GoA and GoI government agencies; ability to provide management and administrative support for activities such as exchange visits, meetings, seminars, policy analysis that might support strategic level discussions; ability to access high level GoI policy makers; ability to facilitate and develop strategic collaboration between the human health and animal health technical support components of the program.

Options include

(C1) DFAT supports DAWR / DoH to engage directly with relevant GoI agencies.

Assessment: DAWR already indicated they are not willing to manage an ongoing program, but only provide periodic inputs; DoH has not indicated their interest at this stage. DFAT health unit could undertake some of these functions in terms of GoI engagement and strategic discussions, and potentially facilitate objective A2.1. However this modality would not enable the more in depth and higher level of strategic engagement required for objective A 2.2 . DFAT Health has noted the difficulty of accessing higher levels of GoI agencies without investing in building links and technical credibility; and the challenge for DFAT to facilitate coordination between the human and animal health sectors

(C2) WHO take on more of a coordination / facilitation / strategic engagement role.

WHO provides credibility and ongoing presence; has demonstrated the ability to engage and build communication with technical staff of MoH and to some extent MoA and CMHDC. This option enables and supports engagement with WHO at a regional level. However WHO tends to focus at a

technical level, and does not bring recognition / presence of Australia's interests, or capacity to facilitate specifically Australian collaboration; and does not have the links or technical expertise (or likely interest) to engage in Animal health. The WHO team operates in a different way and with a different relationship with the MoH than DAWR with the MoA, and this has limited the capacity of both technical partners to engage jointly in a strategic way around One Health. For example, DAWR is seen by the MoA as representing the Australian government and the bilateral agency relationship is valued by MoA in addition to its technical expertise.

(C3) Contract an implementing agent (organisation or team) to establish a 'coordination and facilitation' unit / structure to support engagement from DAWR/DoH.

Such an agent should have the technical and management capacities noted in the requirements above: familiarity and experience operating in the GoI system; credibility and links with key GoI agencies through reputable senior Indonesian experts; and capacity to provide administrative and communications support for visiting Australian experts or research teams. The agent could be a partnership – for example, an international or Australian human or animal health technical specialist organisation in partnership with an Indonesian academic health group. It would not necessarily provide technical support to the GoI in the EID area – current arrangements with WHO could continue. It would however take a leading role in coordinating between the human health and animal health components and in facilitating a more strategic and coordinated approach to building the application of One Health across the components.

(C4) Convene a 'technical advisory panel' with Australian and Indonesian senior experts to meet periodically and provide strategic oversight and review of the program, and support to the selected implementation coordination agent selected from the above. Previous experience with this mechanism, for example in the AIPHSS program, has found that this level of strategic discussion is welcomed and valued by Indonesian government officials. This modality would need to be complemented with one of the modalities above. The panel could meet once or twice per year with GoI ministry counterparts for discussion on key strategic issues, and could also involve experts from WHO, FAO, USAID and from other relevant DFAT Indonesian programs (eg Knowledge Sector Initiative). USAID has indicated their interest in more strategic level discussion with DFAT. Meeting and discussion with such a panel may encourage senior level MoH and MoA engagement, and enable more in-depth exploration of the challenges of a One Health approach.

Implementing at a technical level (D)

(D1) For human health: continue support through WHO or replace WHO with a contracted technical agent.

The current arrangements with WHO provide an efficient technical support modality with the advantages of: ongoing and good relationships with MoH technical areas; efficient pooling of funds and ability to leverage other WHO activities and programs; and leverages the credibility and international position of WHO. The disadvantages are that access / engagement with higher level policy makers has been weaker (although this also reflects the current relatively low priority of EID, engagement at high level has occurred during the GHSA meetings); and that WHO is not representing Australia's interest –and not managing the program as an Australian government program.

An alternative option would be contracting another international or national group with the technical expertise and capacity to represent Australia. There may be Australian institutions who could take up this role. However this is likely to be more expensive, and could adversely impact on relationships with WHO.

(D2) For animal health: DAWR has indicated that they are prepared to provide technical inputs, but not to manage the program.

The review team note that engaging the MoA, even at the level of the DGLAHS, on issues of animal health and the One Health agenda is challenging, as the priority for the MoA is clearly livestock production, food security, and producer livelihoods. There is also some tension or potential tension between Indonesia's national interests in respect to animal health, and regional / global security agendas. DAWR has done well to accommodate the MoA's priority agenda, but the withdrawal of DAWR from an active management role will need to be carefully managed.

Options include (a) using the 'coordination-facilitation' agent mentioned under the strategic objectives; (b) contract FAO; (c) contracting a separate international / Indonesian based organisation /unit.

Rationale / assessment; Option (a) could result in distracting the focus of the contracted agent to undertake the coordination / facilitation of engagement; but could also support engagement with the MoA. Option (b) needs further exploration particularly in terms the workload of current FAO animal health staff, and the ability to act as a support to ongoing DAWR inputs. USAID appears to get good value in terms of their agenda from FAO, but FAO may face challenges in accommodating the MoA's other agenda in view of their (FAO's) commitment to the regional / global agenda. Option (c) depends on the availability and capacity of a suitable Indonesian / international implementing partner.

Summary of recommendations:

Strategic and technical approaches:

(1) Continue with further assistance to the Government of Indonesia in the area of detection and response to infectious disease risks, maintaining the current focus on EIDs and zoonoses but retaining flexibility to respond to risks as they emerge, and including an animal and human health component, but with more focus on engagement at a strategic level.

(2) The new program to have an explicit focus on the application of a One Health approach, and on building communication and strategic engagement of Australian agencies, especially DAWR and (if interested) DoH.

(3) The new phase to focus on the further development and future sustainability of early detection and response information systems (EWARS and iSIKHNAS), and linkage with laboratory information systems; identification of research opportunities and developing research proposals; review options to support IVL or FETPV depending on the status/ situation by mid-2018; and examine the potential to support exchanges between Australian emergency operations systems and the MoH PHEOC.
Building similar capacity in MoA would be a parallel objective.

(4) If funds are available, consider the potential to expand the technical scope to address the objectives of B4.

Implementing modality:

(a) Contracting of an independent agent to manage coordination, communication, and facilitation of engagement by Australian and other international experts in both human health and animal health areas, and encourage a One Health approach;

(b) Convening of a technical advisory panel to support strategic approaches and the work of the coordination and facilitation agent.

(c) Continue to contract WHO to manage the technical inputs into human health / MoH, but with greater attention opportunities for Australian institutional engagement, and links with the Australian DoH

(d) Explore the potential to channel funds / contract FAO to provide coordination and technical support for DAWR inputs into MoA; otherwise use the independent agent contracted under (a) above.

Summary Table of options

Level	Option	Review team assessment
OBJECTIVES		
Strategic	A1 Build capacity of MoH and MoA to introduce and apply the One Health approach to prevent, detect and respond to infectious disease risks	High priority
	A2.1 Maintain and develop communication channels between Australian and Indonesian agencies	High priority
	A2.2 Develop and maintain ongoing institutional relationships between Australian and Indonesian agencies	Requires institutional commitment – moderate priority
	A3 Maintain technical engagement without specific strategic objective	Not recommended
Technical	B1 Information systems in human and animal health	High priority
	B2 Organisational capacity and procedures for detection and response to ID events	High priority
	B3 FETP and IVL training programs	Low priority: cease funding once institutionalized
	B4 Strategies to influence GoI policy and decisions on funding for infectious disease control	Low effectiveness: cease funding
	B5.1 Expand to support research proposal development and submissions	First priority if more funding
	B5.2 Expand to build capacity of laboratory and diagnostic systems	Third priority if more funding
	B5.3 Expand to other infectious disease risks: AMR, MDRTB, mosquito borne infections	Second priority if more funding - AMR particularly
	B5.4 Expand to build capacity of veterinary public health	Fourth priority if more funding
	B 6. Cease providing technical assistance to GoI	Not recommended

	programs of infectious disease control	
IMPLEMENTING MECHANISM		
Strategic	C1. DFAT Indonesia health unit to facilitate strategic engagement by DAWR / DoH	Second preference
	C2. WHO to take on more facilitation, coordination and strategic engagement role	Third preference
	C3.Contract coordination and facilitation agent to manage strategic engagement	Preferred option
	C4. Convene a technical advisory panel to support strategic engagement	Preferred option (in conjunction with C3)
Technical	C5.1 Continue engaging WHO to provide human health technical inputs	Preferred option
	C5.2 Contract implementing agent to provide human health technical inputs	Second preference
	C6.1 Contract FAO to provide animal health technical inputs	Preferred but needs exploration
	C6.2 Contract implementing agent to provide animal health technical inputs	Second preference

INDONESIA EID PROGRAM

Strategic Review and Options Development

Report Annexes

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Prepared for

The Department of Foreign Affairs and Trade

Australia

Contents

Annex 1: List of persons consulted

Sector	Name	Position
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DFAT Office of Development Effectiveness	Irene Wettenhall	Assistant Director, Performance & Quality Analysis Section
DFAT Indonesia Program Delivery and Timor-Leste Branch	Elly Lawson Anna McNicol Kate Smith	Assistant Secretary Director, Human Development Section Executive Officer, Human Development Section
DAWR	Tim Chapman Kiran Johar	First Assistant Secretary, Biosecurity Animal Division Director, Pre-border Programs
DoH	Margaret Arven Katrina Knope	Emerging Infectious Diseases branch
Indonesia		
DFAT Indonesia Post	Fleur Davis Neryl Lewis Nikolasia Budiman Nacita Sunoto	Minister Counsellor, Governance and Human Development Counsellor Human Development Senior Program Manager, Health Unit Program Officer, Health Unit
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Ministry of Agriculture, Indonesia		
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Directorate of Veterinary Public Health	drh. Agung Suganda, M.Si. drh Apriani Lestariningsih drh Herwinarni drh Agus Jaelani, M.Si. drh Puguh Wahyudi, M.Si.	Head, Sub-Directorate of Sanitary and Standardisation Head, Sub-Directorate of Zoonosis Head, Diseases Spread Prevention Section Head, Business Units Inspection Section Staff, Sub-Directorate of Animal Welfare

Centre for Animal Quarantine and Biosafety	drh Mulyanto, MM. drh Muhammad Jumadh drh Sri Endah Ekandari, M.Si. drh Bambang Haryanto, MM Dr. drh. Risma Juniati, M.Si. drh Tatit Diah NR drh Voni Mega Fitria drh Kemas Usman drh Destira M. drh Esrimelda Eka Fitri, M.Si.	Head, Centre for Animal Quarantine and Biosafety Head, Live Animal Quarantine Division Head, Sub-Division of Imported Biosafety Head, Biosafety Division Head, Sub-Division of Imported Animal Head, Sub-Directorate of Quarantine Compliance, Cooperation and Information Staff, Sub-Directorate of Quarantine Compliance, Cooperation and Information Sub-Directorate of Quarantine Compliance, Cooperation and Information Sub-Directorate of Quarantine Compliance, Cooperation and Information Head, Sub-Division of Exported and Inter-Area Animal Products
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Dinas Boyolali	Ir. Juwaris drh Afiany Rifdania drh. Ria Dwi Hapsari	Head of Boyolali District Livestock and Fisheries Office Section Head of Animal Health iSIKHNAS Coordinator, Boyolali District
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MoH D/G Disease control	dr. Elizabeth Jane Soepardi, MPH, Dsc	Director, Directorate of Surveillance and Health Quarantine, DG Disease Control
	dr. Wiendra Waworuntu, M.Kes	Director, Directorate of Infectious Diseases, DG Disease Control
	dr Nancy Anggraeni	Head, Sub-Directorate Surveillance
	dr. Edi Purwanto	Staff, Sub-Directorate of Surveillance (EWARS Officer)
	dr Ratna B. Hapsari, M.Kes	Head, Sub-Directorate of EID
	drh Endang Burni Prasetyowati, M.Kes.	Head, Sub-Directorate of Zoonosis
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	Dra. Pretty Multihartina, Ph.D Dra. Rr. Rachmalina Prasodjo, MSc.PH Eka S. P. Indraningsih, S.H.	Director, Centre for Research and Development of Biomedical and Basic Health Technology Senior Researcher, Centre for Health Services Staff, Sub-Division of Legal
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Annex 2: One Health: what does it mean and what is a One Health approach?

Introduction

This annex provides a brief review of the literature on the concept of One Health, and how it can be applied to addressing current and emerging infectious disease. It also seeks to document the rationale for the review recommendation to continue with a One Health approach, and what such an approach might achieve in a new phase of the program in Indonesia.

What is meant by One Health?

One Health has several meanings. A useful way to consider One Health is the explanation from the One Health Global Network: One Health began as 'a concept that became an approach and then a movement' (quoted on p 260, Chapter 22, Zinsstag et al, 2015).

Concept of One health

'One Health as a concept refers to the recognition that human, animal and environmental health are interdependent, that animal species provide a shared reservoir for pathogen exchange and spread, and that many EIDs are driven by varied and dynamic human-animal interactions'. (Degeling et al, 2015)

One Health approach

The One Health approach refers to operationalizing this concept. This requires that programs are developed and function with 'an appreciation of the links between human and animal health, ecosystems and the environment in general, as well as between livelihoods and policy processes.' (Vandermissen and Welburn, 2014, p 423)

Implementing a One Health approach is a key aspect of One Health and this is incorporated into the definition of One Health proposed by Zinsstag et al, 2015 (p 18):

'*One Health can thus be defined as any added value in terms of health of humans and animals, financial savings or environmental services achievable by the cooperation of human and veterinary medicine when compared to the two medicines working separately'.*

One Health movement

The One Health movement conveys the sense of the evolution and dynamism of this concept, from a focus on human and animal health towards a broader understanding of the interaction between health and the environment.

This is reflected in the concept of 'ecohealth', as defined by Zinsstag et al, 2015.:

'A much broader concept is an 'ecosystem approach to health' or 'ecohealth'. Ecohealth considers inextricable linkages between ecosystems, society and health. It seeks in-depth understanding of ecological processes and their relation to human and animal health. (Zinsstag et al, 2015, p 21)

Rationale for recommending a continuation of the One Health approach

The key underlying rationale is that EID prevention and control requires a One Health approach.

As explained by Degeling et al (2015): 'The threats posed by EIDs are comprised of complex and contingent sets of relations that involve socioeconomic and socio-political drivers and consequences, with the latter extending beyond the impact of the disease'.(Degeling et al, 2015, p3)

'A One Health approach is increasingly considered to be the most effective way of managing EID threats because it represents an acknowledgement of certain facts about the nature of disease, which are then deployed to structure the response'. (Degeling et al, 2015, p 2)

This is echoed by Vandersmissen and Welburn (2014): 'Emerging, re-emerging and endemic zoonotic diseases exhibit complex links with ecosystems, the environment and livelihoods, and pose substantial risks for smallholder farmers, communities, livestock and wildlife. A One Health approach is the most appropriate for the sustainable management of disease risk'. (Vandersmissen and Welburn 2014, p 422)

Operationalizing / applying a One Health approach

Operationalizing a One Health approach is challenging.

'Implementing One Health requires an appreciation of the links between human and animal health, ecosystems and the environment in general, as well as between livelihoods and policy processes. Gaining the full value of the One Health approach demands the support of and consultation with all sectors and industries that have a stake in health governance' (Vandersmissen and Welburn, 2014, p 423).

Such an approach faces a range of challenges: 'to be successfully implemented, the One Health approach must address a range of socio-political, ethical and legal challenges that arise as a consequence of the spread of infection within and between species'. (Degeling et al 2015, p 4)

In addition to these challenges, there are the barriers in institutional collaboration. These include 'budgetary constraints, unequal institutional capabilities and differing cultures, limited communication of information, the absence of a shared vision, and disincentives to working horizontally' (World Bank, 2010, p 14)

One way to analyse operationalizing a One Health approach is to consider the approach at three levels or aspects: (1) Information sharing and collaboration (2) Addressing complex decision making (3) Addressing underlying structural and policy drivers.

(1) Information sharing and collaboration

The World Bank 'People, Pathogens, and our Planet' (2010) Volume 1 page 25 provides the following list of the key elements of this level of One Health implementation:

- Shared surveillance to improve capability to detect emergence of disease event
- Joint strategies for prevention and control, clearly defining roles, responsibilities and accountabilities
- Communicating consistent messages
- Joint preparation and testing of emergency preparedness plans and joint formulation of internal and external reporting and communication plans
- Sharing facilities and exchange of staff in surveillance and control operations to foster capacity
- New modalities for mobilizing financial resources

These have largely been the focus of the AIP-EID program during its first phases. Experience described in the literature indicates the challenges of even this level of coordination, many of which have been encountered by AIP-EID. The World Bank publication also suggests the following as instruments to support information sharing and coordination: appropriate institutional framework: cross sectoral coordination mechanism; coordinating authority at the executive level of government; joint One Health teams; and an independent agency for public health.

However, as Degeling et al comment 'establishment and implementation of mechanisms that enhance information-sharing, collaboration and inter-sectoral co-operation, such as working groups and interdepartmental committees, have rarely delivered the outcomes promised in the past '. (Degeling et al, 2015 p8)

They conclude that 'This suggests that the One Health approach needs more than inter-sectoral collaboration and robust health legislation, as the unique nature of EIDs critically limits the effectiveness of scientific, top-down and technocratic approaches to governance' (Degeling et al, 2015, p 4)

In two instances where a One Health Framework has been designed (Bangladesh and Cambodia), a key issue and constraint is to develop an effective and equitable governance structure. This requires very high level political commitment, and cross-sectoral agreements can be difficult to forge if the (political) benefits are not clearly evident. In this respect Indonesia might have a comparative advantage because of the accepted role of the Coordinating Ministries.

An additional aspect of One Health that needs to be appreciated is the dominant "one-way" flow of outcomes. To date there are not readily articulated examples of where One Health offers a benefit by reducing a human (health) impact on livestock health. Potentially the biggest issue with a clear two-way benefit relates to AMR, where resistance developed in humans becomes a threat to livestock (and vice versa). Environmental contamination with antibiotic residues has implications for humans, livestock and increasingly wildlife, as well as the impact on the environmental microbiome. There is no good understanding of potential environmental impact of human or animal generated AMR on fauna, flora or crops.

(2) Addressing the complexities of decision making

While sharing information and coordinating activities is a necessary starting point, operationalizing a One Health approach requires incorporating the principles and concepts of One Health into decision making on risk assessment, priorities and strategies to address infectious diseases.

Degeling et al describe the complexities that incorporating a One Health approach into decision making raises:

'To be effective, a One Health approach – like any EID policy – must deal with scientific uncertainty, whilst addressing the socio-political, ethical and legal dimensions of effective health communication and intervention strategies'. (Degeling et al 2015 p8)

They go on to suggest the following elements in order to support incorporating a One Health approach to decision making:

(a) Social science and economic research to help catalogue and describe the drivers, mechanisms and social and political configuration through which EIDs become threats to human, animal and ecological health

(b) The development of a One Health Analytic Framework that integrates information about social, cultural and economic impacts, control measures and uncertainty.

(c) Statement of principles and values that provides consensus guidance on the key ethical issues that arise in responding to infectious disease outbreaks.

They conclude: 'The dynamic, unpredictable effects and risks to peoples' lives of EIDs necessitate a public health and biosecurity infrastructure equipped to address the ethical problems that arise. EID management must therefore be based on normative principles as well as local knowledge, operational experience and disease-specific scientific and economic evidence.' (Degeling et al 2015 p7)

(3) Addressing the underlying policy and structural drivers

A further step in operationalizing a One Health approach is to address the underlying policy and structural drivers that contribute to the human and animal health risks arising from the interaction of industry, agriculture, urban development and environmental change.

However, 'the policy focus for EID prevention and control tends to remain on individual behaviours rather than the structural drivers'. (Degeling et al 2015, p 4)

Addressing the underlying policy and structural drivers requires a much broader multi-sectoral approach.

'Implementing One Health requires an appreciation of the links between human and animal health, ecosystems and the environment in general, as well as between livelihoods and policy processes. Gaining the full value of the One Health approach demands the support of and consultation with all sectors and industries that have a stake in health governance' (Vandersmissen and Welburn, 2014, p 423)

For example, New Zealand has addressed this challenge by establishing key multi-sectoral and multi-disciplinary advisory groups – the TAG (Technical Advisory Group) and SAG (Stakeholder Advisory Group). The TAG comprises technical experts, who review the scientific context and assess the associated risks and recommend appropriate technical response management option(s) to the response manager. The SAG normally reviews TAG-proposed response management option(s) in light of primary production/commerce, environment, social (including human health) and cultural values. It is comprised of individuals with skills and experience in these matters, including policy advisers from the Ministry of Health, the Department of Conservation and industry advisers. (Cork, Geale and Hall, in Zinsstag et al, 2015, p 309)

It also seems clear that in most resource poor economies the focus of animal health services is on production issues. It is evident from institutional arrangements that Ministries of Agriculture do not give enough policy support to veterinary public health as a core function and responsibility of animal health services, and this affects the interface with human health in the One Health context. When veterinary services are seen to play a key role in ensuring the safety of food and upstream the health and welfare of livestock then they are in a better position to contribute to the One Health Movement.

What are the potential benefits/value add from a One Health approach?

The World Bank 'People, Pathogens and our Planet, ' (2012) Volume two provides an analysis of the potential savings from a One Health approach.

This work identified potential savings from the following activities: joint transport and communication systems; shared front line staff; shared border control and abattoir and market inspection; joint facilities and equipment; shared support staff; shared quarantine of infected areas; and shared staff in hygiene and awareness programs. In a low prevalence scenario, it was estimated that a One Health approach could provide savings of ~ 10% of the total cost; and in a high prevalence scenario, savings of ~ 15% of total cost. (World Bank, 2012, Chapter 7)

Zinsstag, et al provide the following diagram of potential outcomes and causal pathways from the application of a One Health Approach, indicating three key outcomes: reduced burden and saved lives; financial savings; and environmental gains (p 55)

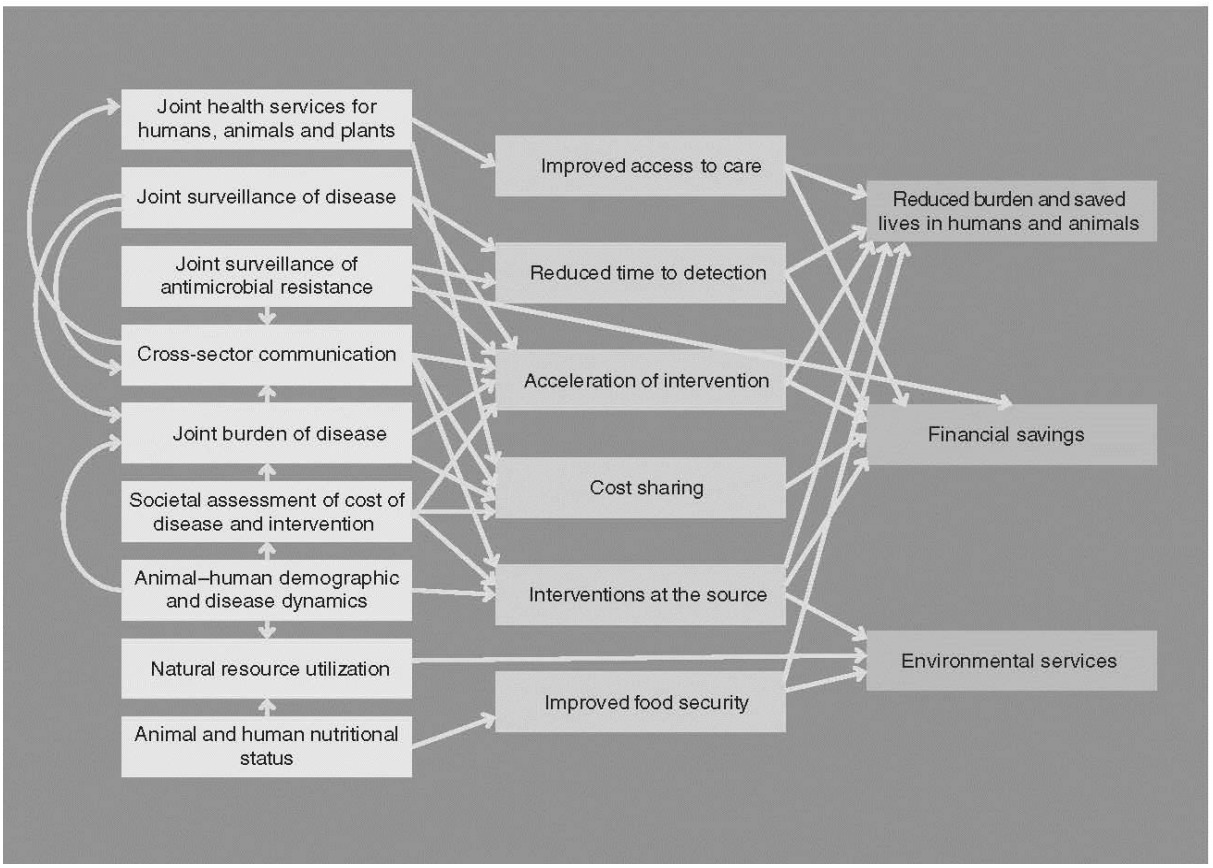

Fig. 5.2. Web of causation of distal and proximal added value of One Health.

Implications for One Health in Indonesia

The concept of One Health has been introduced and is now widely accepted in principle. With AIP-EID support, there has been considerable progress in establishing the base of information sharing and cooperation between human and animal health agencies. A minimum level of application of the One Health approach would encompass achievement of the six outputs listed on page 2-3 of this annex.

However, there is a risk that a focus only on these institutional and regulatory levers only will not lead to the application of a One Health approach in decision making, or in addressing underlying structural drivers.

Addressing more complex issues such as AMR requires consideration of the political, economic, social and ethical dimensions raised by Degeling et al. This will require an expansion of engagement from government

departments to professions, industry and civil society. There is potential in Indonesia for this expansion, but it will require development of appropriate mechanisms, such as advisory groups and opportunities to consider a range of views and evidence. This is an area where the Knowledge Sector Initiative (KSI) has been engaged, and KSI experience in establishing 'knowledge communities' and networks may be of assistance.

However, this would also require further resources. If such resources were to become available, then there would be an opportunity for Australian assistance to support the wider application of One Health approach to address problems such as AMR and the underlying structural drivers of risks of emerging or re-emerging infectious disease.

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Annex 3: AIP-EID Results Framework

Outcome level	Outcomes in design	Reported	Assessment by consultants
Program level	1. The Indonesian government has stronger systems for preparation and rapid response to animal health and public health emergencies.	2/2016 MoH has established PHEOC and proposes JEE evaluation of IHR for quarter 4/2017- which will accelerate development of response protocols. ICR training and manuals have MoA better prepared.	On track: Systems for preparation and response have improved, more on the human health than animal health sides; CMHD has taken on coordinating role; and new law establishing Veterinary authorities will strengthen animal health response.
	2: The Indonesian government animal health information system and public health surveillance systems are strengthened and used effectively.	2/2016 EWARS/SKDR covers 34 provinces; 48% 24-hour response rate. Extended use of iSIKHNAS by MoA.	Achieved: EWARS/SKDR in MoH, and iSIKHNAS in MoA are functional and much utilised by GoI. CMHD proposes to link systems to improve use.
.	3: Institutions and key individuals improve their performance in leadership, management and evidence-based decision-making	2/2016 MoH response to Zika virus demonstrates prevention, control, risk management strategies. Changes and delays in appointment of replacements (DG, Dirkeswan, and component coordinators) and a focus on meat production have hampered leadership in animal health at MoA.	Not on track: Project inputs are mainly in leadership training (MoA) and epidemiology training (MoH). Frequent changes in leadership positions within both organisations undermine continuity in direction; while a lack of strategic thinking and evidence review has contributed to short term rather than long term decision making. Some individual graduates from the IVL show potential for leadership .
	Strengthened collaboration between MoH and MoA	2/2016 National workshop in Bogor with MoH and MoA – joint activity plan for 2017	On track: Communication between technical officers of both ministries is strong, mainly using informal communication; some improved communication at institutional level through joint meetings, and joint one health training; coordination seems better at operational level in districts

Outcome level	Outcomes in design	Reported	Assessment by consultants
Human Health			
HH1: Improved public health emergency preparedness and risk management	HH1.1 All levels adopt guidelines for pandemic preparedness and risk management.	2/2016 National pandemic contingency plan tested at national and subnational levels (Sept 2016) Involving civilian and military. Six provinces developed & tested provincial plans	On track : Shift towards all hazards approach as recommended by WHO still to occur.
	MoH develops guideline and SOP for EID pandemic preparedness and risk management.	2/2016 PHEOC established and SoPs developed; pandemic risk guidelines developed 2/2016EID guidelines, training module curriculum and risk communication materials developed	Achieved
	HH1.2 Strengthened multi-stakeholder coordination at national and sub-national levels for EID pandemic preparedness and risk management.	2/2016 National workshop in Bogor with MoH and MoA – joint activity plan for 2017. Agreement on 4 way data linking framework. 2/2016 CMHD proposes SIZE to link EWARS and iSIKHNAS	On track : Good progress at national level despite disbanding of Komnas Zoonosis and devolution of tasks to CMHD.
	Multi-sectoral stakeholders at national and sub-national levels competently conduct pandemic preparedness and risk management simulation exercises	1/2016 Training materials developed 2/2016 One health pilot training in 3 districts – MoH, FAO and MoAg	Achieved: national pandemic contingency plan tested, simulation planned for September 2017
	Provincial zoonosis committees become more functional and lead the coordination efforts for EID prevention and control.	2/2016 National Zoonosis committee disbanded and staged transfer of function to CMHD.	Unable to assess: likely that some provinces have established committees (eg DI Yogyakarta), but disbanding of National committee reduces relevance.

Outcome level	Outcomes in design	Reported	Assessment by consultants
HH2: Enhanced surveillance for detection, verification, assessing, reporting and response to outbreak prone diseases	HH2.1 Improved human resource capacity for outbreak prone diseases.	2/2016 Establishment of EID subdirectorate in MoH, development of guidelines, training materials, risk communication materials.	On track: MoH have capacity to manage, analyse and report on EID using. Capacity to use at local levels varies depending on locality.
	HH2.2 Improved policy and systems for integrated human-animal health surveillance for outbreak prone diseases.	2/2016 One health pilot training conducted for Rapid Response Teams in 3 districts with MoA, MoH and Wildlife sector. (Other donors)	On track : CMHD propose to progress proposal developed by Komnas Zoonosis to link EWARS and iSIKHNAS – but only at proposal stage.
	Sub-national and national levels are able to detect potential outbreaks sufficiently early and conduct prompt response through EWARS (Early Warning Alert and Response System).	2/2016 EWARS established on line in all 34 provinces, 2/2016 link to laboratory confirmation to be strengthened	Achieved: EWARS /SKRD consistently use to report on potential EID outbreaks at subnational and national level. Local level responses undertaken.
	Sub-national levels commence community based EWARS, produce and send weekly EWARS report consistently.	2/2016 2016 reporting completeness 78% timeliness 66% - issues of high turnover of staff at sub national level	On track. For 2016, high levels of completeness and timeliness result of monitoring and follow up by Prov / DHO. Areas with poor sms access main problem.
	Command Post at [national and] sub-national level is established and implements event-based surveillance.	2/2016 PoskoKLB converted to PHEOC ; reviews and responds to incident reports. Managed appropriate response to potential cases of Zika.	Partly achieved. On track at national level; not known if on track at subnational level. National level command post (PHEOC) established; training and guidelines under
	MoH implements national Command Post sustainability plan in stepwise manner.	2/2016 PHEOC greater sustainability	Achievement not known. No information on sustainability plan identified.
	Sub-national governance authority establishes / revitalizes integrated human-animal rapid response team.	2/2016 MoH reviewed RRT guideline and integrates one health; training materials	Partly achieved. Not known if on track. RRTs established through local SK and used in response in some areas (eg Jogya) but extent of achievement overall is

Outcome level	Outcomes in design	Reported	Assessment by consultants
HH3: Increased performance of public health workforce in epidemiology	HH3.1 Improved quality of Field Epidemiology Training programme (FETP).	2/2016 Six cohorts since revitalisation in 2008 – 350 graduates 2/2016 CQI assessment to identify and improve quality	Unable to assess, but some achievement is likely. Indonesian FETP is a member of international TEPHINET and plans to seek accreditation of the Indonesian program.
	FETP improves its curricula, academic program & field placement arrangement.	2/2016 Development of FETP work plan, review of curricula,	Unable to assess, but some improvement is likely. FETP curriculum and program has been standardised and now delivered by universities.
	Field Supervisors are competent to conduct FETP students' supervision.	2/2016 Training provided to field supervisors	Unable to assess. Field supervisors established but competency not recorded.
	FETP expands its national and international network in epidemiology.	2/2016 Link to Telphinet and ASEAN + 3	Achieved. FETP expands to further 3 universities in 2017, and continues to build links with TEPHINET regionally.
	FETP is able to enroll more qualified students.	2/2016 MoH and PAEI developing career pathway for FETP graduates	Not yet achieved but in progress. Expansion to additional universities will enable increased in enrolment, but limited places and demand
	HH3.2 Improved capacity of Surveillance Officers and Health Managers to apply epidemiology approach for evidence-based decision making for outbreak early detection and rapid response.	2/2016 Framework and SoP for mobilisation of epidemiologist in outbreak response with PAEI	Partly achieved. Increased availability of FETP graduates with epidemiology qualifications, but limited functional positions for epidemiologists. MoH proposes to request creation of Epi positions through MenPAN.
	Surveillance Officers and health managers understand the epidemiology approach for evidence-based decision making for outbreak early detection and rapid response.		Unable to assess. MoH recognizes need for improved health manager understanding of epi and proposes to develop shorter on line course for managers - through BPPSDMK

Outcome level	Outcomes in design	Reported	Assessment by consultants
	HH3.3 Improved collaboration between MoH and universities to provide appropriate training on epidemiology.	2/2016 Established at UI and UGM & involving PAEI	Achieved. Courses continue at UI and UGM with academic recognition for placement component; and new courses in 3 additional universities. FETP secretariat continues to liaise with Universities.
	Selected universities establish epidemiology short course program.	2/2016 Proposal to expand to regional universities but questioned by AIPEID	Not achieved. MoH proposes on line short course to be delivered by BPPSDMK rather than by universities
HH4: Improved government funding management for surveillance and control of EID	HH4.1 Improved strategic planning to determine sustainable funding levels required for surveillance and control of EIDs.	2/2016 National strategic plan for EID preparedness developed	Partly achieved – in progress. Surveillance unit is developing strategic plan for EID preparedness.
	MoH endorses Strategic plans and tools to map funding gaps and identify opportunities to embed funding for surveillance and control of EID into national/ local budgets.	2/2016 MoH allocates funding for migration of EWARS to on line platform, and to establish PHEOC.	Not achieved. Strategic plan still in development. Funding for surveillance / public health response mainly dependent on BoK (national level operational support funds)
	HH4.2 Improved advocacy and communication skills for national and provincial advocacy teams.	1/2016 Advocacy materials developed	Partly achieved. One round of advocacy undertaken. Results unknown.
	MoH assemble advocacy team comprises multi-sectoral stakeholders to conduct advocacy road show to sub-national levels.	2/2016 Advocacy materials and activities in 8 provinces April 2016	See above
	Advocacy team are competently able to conduct advocacy to national and sub-national governance authorities on sustainable funding for surveillance and control of EIDs.		Unable to assess; but question effectiveness of advocacy in current context.

Outcome level	Outcomes in design	Reported	Assessment by consultants
	HH4.3 Policies, system, management capacities for sustainable funding for essential surveillance and control of EIDs in place. [no intermediate results identified]	2/2016 Dialogue with CMHD and BNPB (National Disaster Management Board) re access to funding during public health emergencies	Partly achieved - in progress, not clear if on track. Engagement with CMHD on access to disaster funds from BNPB which may assist in early response. National level funding available through BoK.
	National and sub national governance authorities understand and are better able to formulate policy on sustainable funding for surveillance and control for EID	2/2016 CMHD develops guidelines for coordination zoonosis control and access LG funding for response	Unable to assess - not on track. CMDH refers to development of minimum service standards (SPM) on responding to disease outbreaks which will be obligatory for local government.

Animal Health	Outcomes in design	Reported	Assessment by consultants
AH1: Strengthened emergency management	AH1.1 Emergency preparedness is enhanced with improved policies, procedures and capabilities.	A higher level of commitment demonstrated by Directors and Heads of Sub-directorates evidenced by an increased focus on developing integrated systems within MoA and the intention to develop new MoUs with key Government agencies (particularly BNPB and MoH).	On track but progress behind expectations: Difficult to get a clear GoI view of progress as review has limited access to key high level officials. In limited time not possible to assess reports from training or exercises conducted. Seems DAH not engaged at high level in planning for 2017 pandemic simulation exercise. Has been hard for AIPEID to get traction with senior policy makers in last year – problem for all projects working with DAH/DGLAHS. Engagement at project level with Kemenko PMK is helping to facilitate DGLAHS engagement with this high level coordinating body. Complex environment and AIPEID trying multiple channels to move forward.
	AH1.2 A robust and coherent mechanism for the management of animal disease emergencies is defined and established.	Publication of the Emergency Management Manual in September 2016 and its distribution to central and sub-national staff	Achieved: Significant milestone that took 12 months to get approval. Now 'socialisation' process must proceed. AIPEID acknowledges many unknowns in the emergency management system still.

Animal Health	Outcomes in design	Reported	Assessment by consultants
	Agencies and individuals understand their roles & responsibilities, lines of communication and reporting in emergency response.	EM Manual has resulted in a greater understanding by DAH staff of the complex tasks that must be undertaken in an emergency response – issues that are now being openly discussed at national meetings. Simulation exercises conducted to test roles and responsibility.	On track, but progress behind expectations: Progress was described as slow and SOPs still being reviewed, so partially achieved to date. Hard to get inputs from counterparts who are busy with other DGLAHS priorities. It has to be said that DAH does not drive this process. A gap analysis of response capacity was conducted but no significant follow up by DAH. No Emergency Operations Centre plan in DGLAHS. Debrief on recent simulation not rigorous enough to drive changes.
	Consistent and cohesive emergency management system (EMS) for animal disease emergencies is defined and supported by legislation covering national and sub-national agencies.	2/2016 Establishment of Emergency Management Working Group (EMWG); first meeting held but EMWG still needs to be ratified by DGLAHS	On track but outcome only likely to be partially achieved: This EMWG is an important milestone achievement. Seems that Quarantine is not member of EMWG, although have attended meetings. Not clear how the new animal health law is going to facilitate the EMS at sub-national levels. How EMS will interact with the complex governance in the devolved administration is unknown at present. Much work required by GoI to drive this outcome but it seems to have been low priority.
	AH1.3 Enhanced operational capacity to implement an emergency response.	Consultant has undertaken extensive review of emergency funding mechanisms	On track but outcome only likely to be partially achieved: There are no clear procedures in place to quickly release funds for an emergency response. Many obstacles are beyond the resources of AIPEID to resolve, but issues highlighted for the Government.

Animal Health	Outcomes in design	Reported	Assessment by consultants
	An Incident Command System (ICS) approach is adopted and operational positions defined under the ICS.	ICS training materials developed, review of SOPs underway	On track but outcome only likely to be partially achieved: ICS training undertaken involving key stakeholders. Engagement of BNPB is a positive development although now not clear what role technical people will have in the local response. Training manual not examined by review.
	Agencies and individuals demonstrate greater operational capacity to implement an emergency response following EMS & ICS principles.	This is not specifically reported.	Not possible to assess, but sub-optimal DGLAHS engagement is a constraining factor. Probably need to await evaluation of the pandemic simulation, although much of the emphasis will be on public health issues. DGLAHS/DAH not engaging strongly with simulation planning.
AH2: Enhanced animal health information system (iSIKHNAS) and the effective use of information to support surveillance, veterinary service delivery, policy development and	AH2.1 The iSIKHNAS data management system continues to perform well as coverage by the system becomes wider nationally.	2/2016 iSIKHNAS enhanced to support new GoI priorities; reporting has increased x 2. ISIKHNAS evaluation study conducted. Program to deal with constraints set out.	Achieved: By and large the system is performing well. Some field operatives are concerned about reduction in processing speed, complexity of some of the coding, lack of uniform coverage of telecom network and personal costs involved in reporting. AIPEID has program to address issues that have arisen.
	Extension of iSIKHNAS nationally	2/2016 23,000 users covering 510 districts (nearly 100%). Significant GoI investment in expansion, and is providing running costs	Achieved: The number of registered users has increased dramatically early in 2017 since many farmers involved in SIWAB are now registered – now about 500,000 “users” and numbers expected to rise further (not clear to what extent a farmer is a “user” of iSIKHNAS). Some departure from work plan imposed in process. Medium term impact on animal health functions to be assessed.

Animal Health	Outcomes in design	Reported	Assessment by consultants
	iSIKHNAS is being used at all levels of government to inform strategic plans and policies, plan and monitor disease control programs and support advocacy for the provision of vet services.	Commitment to information sharing with MoH, WHO, FAO and Kemenko PSK. Regulation drafted to govern use, data management and resourcing	Generally not on track but difficult to assess with limited access to key officials. Strong GoI commitment to this system and widely used at field level. Information sharing process still not formalised and operating. Regulation covering iSIKHNAS drafted but not operational – so iSIKHNAS management group not operating. AIPEID did not identify a GoI strategic approach to advocacy for animal health priority issues
	GoI staff demonstrate greater skills and knowledge to design and implement system enhancements in response to user demands.	iSIKHNAS coordinator refresher training has taken place. iSIKHNAS Champion's room inDGLAHS supported	Achieved: Champions have implemented additional functions to support SIWAB. However this is coming at a cost in terms of system efficiency. The number of functional champions has been reduced by staff rotations. DGLAHS does not appear to have an operational strategy to maintain the system but is expanding its use. DGLAHS has agreed to add new champions to redress critical situation. Issue with how to maintain efficiency of the system with increased data volume and traffic. DAH and consultant see solution differently.
	AH2.2 Information made available through iSIKHNAS is used effectively to support surveillance, disease control, policy development and advocacy.	Routine disease and vaccination reports have also been produced monthly for use by DGLAHS	Not on track: Routine reporting generated, but higher level outcome not achieved beyond the pilot areas, where on ODE review it was clear local vet services were making good use of the system for a number of purposes. GoI has little capacity directed toward analysis of information from iSIKHNAS. Advocacy for iSIKHNAS is being driven by priority for animal breeding data, not by animal health benefits, and so significant bias developing regarding utility.

Animal Health	Outcomes in design	Reported	Assessment by consultants
	Epidemiology leaders and iSIKHNAS coordinators actively engage in the analysis of iSIKHNAS data and the provision of quality advice to decision makers.	Routine disease and vaccination reports have also been produced monthly for use by DGLAHS Epidemiological Leaders Group not yet functional, although agreed	Not on track: DGLAHS has not established an epidemiology unit or similar with responsibility to analyse data from iSIKHNAS. Animal health information generally under-utilised.
AH3: Strengthened leadership and management within Indonesia's Veterinary Service	AH3.1 Institutional and individual capacity exists within the Ministry of Agriculture to ensure strong leadership of the veterinary services.	Evaluation indicates strengthening of individual capacity Reported issues arising from DGLAHS management changes and reduction in resources to some areas of activity.	On track but outcome unlikely at institutional level: The IVL programme has seen some surprising results, and staff seem very receptive to ideas. Changes to institutional capacity realistic but some time away. General optimism that positive changes will endure over time.
	GoI staff demonstrate greater capacity in leadership, strategic planning, communication and program management	Graduates of IVL become trainers and promotions among alumni recognises leadership potential	On track: General impression is that the programme has a significant impact on individuals – team work and communication very positive and so drives better leadership. There was not much detail available about demonstrated capacity in strategic planning and program management. Much management direction for disease control comes from above and not possible yet to determine the extent to which "managing upwards" has occurred.

Animal Health	Outcomes in design	Reported	Assessment by consultants
	GoI staff demonstrate improved skills in program design, management, monitoring & evaluation to deliver effective disease control program.	IVL evaluation demonstrates positive impact at individual level on team management, work practices and perceived efficiency	Difficult to assess but is in part on track: Much of the information is soft, but the consistent message related to improved teamwork and enhanced supervisory capacity. AIPEID looking to get better M&E of IVL outcomes. No examples about M&E implementation or project design from graduates. Alumni very positive about results from personal workplace perspective and articulate the organisational benefit.
	AH3.2 Enhanced core capabilities in the areas of strategic planning, program design, management, monitoring & evaluation.	See above	Difficult to assess as little access to senior officials. But assessment is that it will take time for these core capacities to be functionally realised. Noted that AIPEID is getting some benefit from working with MoA staff who have been through the IVL.programme.
	The Indonesia Veterinary Leadership course is expanded to establish a larger group of trainers and increased training coverage.	2/2016: Cohort 4 training delivered. Plan to expand size of course. More trainers recruited from graduate ranks Pursuing options for embedding in MoA training system	Achieved: some concern expressed by AIPEID that some trainers are modifying course to fit demands of clients and so fidelity to the quality of the programme is not assured. Making acceptable progress with finding institutional home for IVL.

Animal Health	Outcomes in design	Reported	Assessment by consultants
	Improved coordination and integration of veterinary service delivery in Indonesia	Nothing specifically reported on veterinary services coordination. 2/2016 Joint meetings MoA-MoH; joint simulation exercises; proposal to develop MoUs; joint training in field management of emergencies (ICS)	Difficult to assess as no specific criteria in program design. Long term outcome as more graduates come on line. Good esprit among alumni so this can assist integration and coordination in the future. Needs many graduates in influential field positions such as provincial offices, and high livestock districts. No suggestion to bring private sector veterinarians in but it would also create stronger linkage and better understanding across animal health sector.

Annex 4: Review/assessment of GOI preparedness/response capacity to EID

4.1 Overall institutional and policy framework

The main institutions involved in detecting and responding to EID are the Ministry of Health (MoH), the Directorate-General of Livestock and Animal Health Services (DGLAHS) of the Ministry of Agriculture (MoA), and the Coordinating Ministry for Human Development and Culture (CMHDC). The national and district levels of the National Agency for Disaster Management (BNPB) are also involved in responding to an outbreak / epidemic if declared a disaster (infectious diseases outbreaks are termed ‘‘non-natural’ disasters).

(a) Strategic direction

Human Health.

In regard to human health, the MoH has developed a medium term strategic plan (Renstra 2015-19) to guide the development of the health service, based on the National Medium Term Strategic Plan (RPJMN) priorities. Priorities for communicable disease control include innovative local strategies to respond to infectious disease based on local risk factors, community based surveillance, increased health workforce competency in epidemiology, sanitation and laboratory services, provision of medicines, vaccines and rapid diagnostic tests, and strengthening the role of local government in implementing the International Health Regulations (IHR).

Animal health / livestock

The medium terms strategic plan (2015-19) of the DGLAHS notes a shift in function for the MoA towards production and development of livestock. In regard to animal health, the plan notes the need to maintain control of brucellosis, particularly in the islands of eastern Indonesia and Kalimantan; rabies in Java, NTB and Papua, and hog cholera in Sumatera Barat. The vision for the DG is to achieve self-sufficiency in food and improve the livelihood of farmers. Key objectives are to increase production of key livestock commodities, by increase the numbers, production and productivity of livestock, and to increase the quality and potential for export of livestock commodities. In relation to animal health the objective is to free Indonesia from infectious animal diseases with a focus on diseases with outbreak potential. The Ministry introduced a strategy to increase numbers of livestock through increased reproduction (Sapi Induk Wajib Bunting or SIWAB) and has focused allocation of resources across the Ministry on this strategy.

At the level of the MoA the strategy for 2015-2019 also emphasises food sovereignty and farmer welfare amongst other things and the need to increase production of meat. However it is noteworthy that while the policy approach mentions improving the quality of agricultural quarantine and biosecurity supervision along with strengthening import and export regulation, animal disease is not mentioned, and particularly strategies to deal with incursions of high impact livestock diseases or zoonosis. This gap then is reflected in policy and strategic emphasis at the DGLAHS level.

(b) Institutions and regulations

(1) Human health. At a national level, the MoH has a Directorate-General of Disease Control and Prevention, which includes five directorates: Directorate of Surveillance and Health Quarantine, Directorate of Prevention and Control of directly transmitted communicable disease, Directorate of Prevention and Control of diseases transmitted by vectors and zoonosis, Directorate of Prevention and Control of non-communicable disease, and Directorate of Prevention and Control of mental health and addiction. The Directorate of Surveillance and Health Quarantine includes a Sub-Directorate of Surveillance and (from 2015) a new Sub-Directorate of Emerging Infectious Disease.

At the provincial and district/city level, the health agency of local government (dinas) has one unit (sub-dinas) for disease control, which includes a section for communicable disease control, and manages surveillance and response at province and district level. At the subdistrict level, the Puskesmas (community health centre) will usually include a surveillance officer.

Surveillance is regulated by Ministerial regulation (Permenkes) 45/2014 which defines the aims of surveillance, identifies indicator based and incident/event based surveillance, and requires that the MoH and provincial and district/municipal health offices provide surveillance. The regulation states that surveillance staff require epidemiological competency.

Response to outbreaks of communicable disease is regulated by Permenkes 82/2014 which states that central and local governments and the community are responsible for provision of responses to communicable disease. Activities include health promotion, surveillance, risk factor control, case finding, case management, immunisation, mass treatment and other activities. This regulation requires anyone who is aware of someone suffering from a communicable disease to report this to a health worker; and any health worker must report this to the local Puskesmas. It also provides the response team to an outbreak with the right to obtain data from health facilities and the community in responding to an outbreak.

(2) Animal health

There are two key directorates under the DGLAHS that deal with animal health: the Directorate of Animal Health (DAH) and the Directorate of Veterinary Public Health (DVPH). The DAH deals with the monitoring of animal health, prevention and control of animal diseases, protection of animals and regulation of veterinary medicines. While the DVPH deals with the hygiene, sanitation and safety of animal products, and the processes of slaughtering and preparation of animal products. Priority diseases for DGLAHS are anthrax, brucellosis, rabies, avian influenza and hog cholera.

At provincial and district level, animal health offices (dinas) may function as livestock offices or be combined with agriculture. There are animal health centres or Puskeswan at subdistrict level, but generally not in every subdistrict, unlike Puskesmas. They are staffed by livestock officers and in some cases by veterinarians, but the number veterinarians is much less than that of human health doctors.

Eight regional animal health laboratories or disease investigation centres (DIC) that report to DGLAHS have been established across Indonesia. These laboratories participate in the investigation of animal

disease outbreaks, collect samples and conduct laboratory analysis, and DIC reports of confirmed outbreaks are the basis for animal health policy and strategy development.

The regulatory context for animal health is in a process of change following law 41/2014 and government regulation PP 47/2014 which establishes Veterinary Authorities at national, provincial and district level.

Regulation PP 47/2014 states that 'Veterinary authorities are government institutions established by the government to take the highest level of technical decisions in regard to animal health, with the involvement of the veterinary (dokter hewan) profession, and to mobilize all levels of professional capacity beginning with the identification of problems, deciding on policy, coordinating policy implementation, through to operational technical control in the field [Pasal 1.15]. Each authority will be led by an existing structural staff member in the ministry or dinas, who satisfies the defined competencies as a veterinary doctor. This means that these authorities will not result in additional new structural positions.

As explained by Dr Fadjar, Director of DAH, the veterinary authorities will ensure independent competent technical advice to local and central government on the technical responses required for any particular animal health event. Implementation of the response will continue to be undertaken by the dinas offices of animal health / agriculture and local governments at each level.

(3) Coordination between animal and human health - the One Health approach: The role of the Coordinating Ministry of Human Development and Culture (CMHDC).

The National Commission for Control of Zoonosis (Komnas Zoonosis) had been taking a lead role in developing a 'One Health' approach to management of zoonosis. However, in 2016 the President took the decision to disband the Komnas Zoonosis, along with a number of other national commissions, in order to reduce and rationalize the national institutional bureaucracy. The functions of the Komnas Zoonosis are being progressively handed over to the Coordinating Ministry for Human Development and Culture (KemenkoPMK or CMHDC).

The CMHDC coordinates the ministries of religion, education, research and technology, health, social affairs, village development and women's empowerment. The ministry of agriculture is not included in this list, and is under the Coordinating Ministry for Economic Affairs. However CMHDC indicated that the Presidential order disbanding the Komnas Zoonosis transfers all duties and functions of that commission to the CMHDC, including coordination with the MoA in relation to zoonoses.

In regard to zoonoses, CMHDC is working in three areas: developing an information system that combines data from iSIKHNAS and EWARS (SIZE - Sistem Informasi Zoonosis and EIDs); mapping the level of risk for infectious disease outbreaks at provincial level across Indonesia using a number of indicators; and development of guidelines to assist in prevention and response to EIDs. CMHDC is involved in discussions with the BNPB on guidelines for the use of emergency funds for 'non - natural' or disease related disasters.

The CMHDC is also involved, together with the Coordinating Ministry of Politics, Law and Security, in the coordination of Indonesia's GHSA program. https://ghsaindonesia.wordpress.com/about/ The Ministry of Health as the chair of the GHSA program has issued a regulation on the formation of

working groups for each of the action packages.

CMHDC also mentioned that the Ministry of Home Affairs is developing minimum service standards (SPMs) for local government responsibilities for non-natural disasters, as currently no standards exist. Such standards will assist central government to hold local levels of government accountable for preparation and response to infectious disease disasters.

4.2 Resources / health system supports

Funding for surveillance, initial investigation and response

Human health and animal health services at local government level are funded from multiple sources. Local government budget allocations (APBD) mainly cover salaries, with relatively little available for program operations. Central government budget (APBN) provides a number of funding streams for specific purposes. Relevant to human health is funding from the MoH (but now being transferred to directly from the Ministry of Finance) termed Bantuan Operasional Kesehatan or BoK which is provided to Puskesmas for preventive/promotive program activities. Puskesmas use BoK funds for surveillance, investigations and initial response to infectious disease outbreak.

An additional funding stream for human health has become available through the National Health Insurance Program (JKN). JKN funding to Puskesmas is on a capitation basis, and can be used by the Puskesmas to fund curative services (individual health services) by providing allowances for Puskesmas staff involved in curative activities, as well as cover operational costs such as transport and supplies. The funds cannot be used for public health programs, and thus create the potential to divert Puskesmas staff attention and effort towards those activities that are rewarded/incentivised by JKN, and neglect public health and community programs. During our field trip to Boyolali, the head of the local Dinas Kesehatan indicated another impact from JKN funding. Staff now have the opportunity to earn larger salaries at Puskesmas level, rather than at the dinas office, and the head of the dinas has difficulty attracting and retaining staff at the dinas office.

(i) Workforce

Surveillance and response to outbreaks require skills in data compilation/analysis and in interpretation – epidemiological skills. These roles are generally regarded as ‘functional’ roles, rather than ‘structural’. Structural positions carry defined authorities and reporting responsibilities as part of the organisational structure. Currently, job descriptions and competency requirements for the functional positions of health data analyst and epidemiologist are being developed in the health sector by the Civil Service Administration (MenPAN). Until the functional positions are created, staff in structural positions who have epidemiological skills undertake these tasks as additions to their normal duties.

In addition to the problem of the specific position, the availability of staff with data analysis and epidemiological skills varies considerable across the regions of Indonesia, and between human and animal health sectors. The FETP program has produced some 350 graduates with epidemiological skills for the health sector, but they tend to be concentrated in districts around the current training sites, due to the high costs of transport from training sites to placement locations.

In the animal health sector, staff with epidemiological skills are available in the DICs, but not below

this level. There are also staff with epidemiological skills in the central DGLAHS structure but there is no specified epidemiological analysis unit, and the situation is similar to human health were some staff carry this additional load.

There are also efforts to incorporate epidemiological training and the one health concept into university courses for medical and veterinary students. The Indonesia One Health University Network (INDOHUN) was established in January 2012 by USAID as a platform where leading academicians, stakeholders, scientists, communities, and professionals from Indonesia could implement the One Health concept across the country with the support of multiple disciplines. Current members include: Faculty Public Health UI, Faculty Medicine, Faculty Veterinary Medicine UGM, Faculty of Veterinary Medicine, Agriculture Institute, Bogor.

(ii) Information technology

The importance of information systems that enable sharing of information across the levels of the animal and human health systems is demonstrated by the priority given to the EWARS and iSIKHNAS systems by the MoH, MoA and CMHDC.

However, there are currently additional information systems in both the human health and animal health sectors, that report weekly and monthly numbers of specified cases or events, through the regular information system, in conjunction with the event based surveillance through iSIKHNAS and EWARS. The GoI has recently taken steps to try to better coordinate and integrate information systems by giving the information unit within each ministry (usually termed Pusdatin) overall responsibility for information systems. Currently EWARS and iSIKHNAS are managed within the surveillance units of each Ministry. It seems likely that this will continue but there is the potential for Pusdatin to take on some of the responsibility for the management of the hardware and even the software of the systems which would support sustainability. The role of the MoA Pusdatin with iSIKHNAS is the subject of discussion between DAH and DAWR. The question was raised as to whether the “cloud” operation of iSIKHNAS might at some point be seen to contravene the emerging national data policy. At a higher level, the National Development Planning Agency (BAPPENAS) is developing a ‘One Data’ policy to address the multiple and often conflicting sources of data in the government.

(iii) Laboratories

Laboratory analysis is also a key element of effective surveillance and response. Analysis is needed of both human and animal health samples, as well as environmental samples.

Currently, in the animal health sector, the MoA has 8 regional DICs with capacity for animal health related laboratory analysis. In general, their capacity is quite high as support was provided during AIPEID phase 1 and they are currently receiving support through the USAID EPT-2 program. The DIC at Wates in Central Java is seeking OIE Avian Influenza Reference Laboratory status through a twinning arrangement with CSIRO Australian Animal Health Laboratory (AAHL).

The situation in human health is complex, with a variety of laboratories undertaken public health related analysis. These include: (a) the central and 4 regional laboratories under the National Institute for Health Research and Development (NIHRD); (b) 10 regional laboratories under the D-G Disease Prevention, MoH (these originally focused on environmental health, and are now being upgraded to undertake public health analysis) (c) provincial and district laboratories managed by local

governments in different provinces and districts.

The need to upgrade and further develop the public health laboratory network has been recognized by the GoI, and 23 laboratories have been targeted under one of the action packages in the GHSA. An assessment process is being introduced under the ETP-2, but further significant investment and technical support will be required to upgrade their capacities. The WHO regional reference laboratory for influenza in Melbourne (VIDRL) has been supporting the upgrading of the NIHRD central laboratory.

4.3 Operational performance

Given the diversity, extent and complexity of this system, its performance in terms of detection and response to potential outbreaks of infectious disease is difficult to judge.

However the report from AIPEID human health team on the MoH response to the potential for Zika cases in Indonesia during 2016 indicates that, with WHO technical support, the MoH command post (PoskoKLB) functioned effectively to coordinate and respond to potential cases, to undertake risk assessment, develop and disseminate communication materials, provide information to the general public, other government ministries, and to health workers, and to develop laboratory diagnostic capacity. Thirteen suspected cases were identified and investigated, but all were negative.

Following this experience, the MoH has upgraded the command post to a Public Health Emergency Operations Centre (PHEOC) using the US CDC model, and this should further strengthen coordination and control capacity.

Currently there is no such operations centre in the animal health sector, although the incident command system is being explored at this stage as an emergency response operations modality at field level. Mechanisms to enable coordination between MoA and MoH in the event of an infectious disease emergency have yet to be clarified. In discussions with MoH staff of the Zoonosis Sub-Directorate, it is clear that at an informal and technical level, there is good communication between the technical staff of MoH and MoA (using personal mobile phones for example) and frequent contact through a range of meetings. At an institutional level linkages are still being developed, but there does not appear to be a strong commitment from either the MoH or MoA to develop such linkages, and coordination is rather left to the CMHDC. This lack of commitment could then weaken or undermine the application of a One Health approach and perspective on identifying and responding to EIDs.

At the level of district / municipality or subdistrict, we have only the results of a field visit to one location (Boyolali district) on which to judge performance. This district, near Yogyakarta, was also a pilot site for the EPT-2 One Health training, and is likely not to be typical of Indonesian districts. However, at district level, and at subdistrict level there appeared to be good communication between the human health and animal health sectors, and the ability to coordinate responses through joint rapid response teams. More problems were reported in coordinating with hospitals and with the private sector by the human health team, than with the animal health sector. It was also notable how much of the communication depended on informal mechanisms, such as personal mobile phones. This suggests that at a field level, particularly in these areas, there is more of an application of the One Health approach in practice.

Annex 5: Terms of Reference for Review

Indonesia EID Program: Strategic Review and Options Development: March- May 2017

Background:	Emerging infectious diseases (EID) such as highly pathogenic avian influenza (HPAI), severe acute respiratory syndrome (SARS), Ebola Virus and Nipah Virus have heightened global attention to animal-human interfaces and the essential capabilities required of human and animal health systems to detect and respond to EIDs. Indonesia is considered one of the world's 'hot spots' for EIDs. Many of the drivers for the emergence of disease and their rapid spread are prevalent in Indonesia making it a focus of regional health security. Infectious diseases have the potential to exact a heavy economic and social toll throughout a country or even a region in a variety of ways. The massive scale of international travel and trade means that diseases emerging in Indonesia pose a real threat for other countries in the Asia-Pacific region, including Australia. Building regional preparedness and capacity to respond to emerging health threats is one of the two strategic priorities of DFAT's *Health for Development Strategy 2015-2020*, along with building country level health systems and services that are responsive to people's needs. Since the emergence of HPAI in Indonesia in 2004, Australia has supported Indonesia to combat the threat of EIDs and invested over $40 million in Indonesia through various programs. The Australia Indonesia Partnership for Emerging Infectious Diseases (AIP-EID) Phase 1 finished in December 2015. The program had two arms that were implemented separately: one targeting human health and implemented by the WHO Country Office for Indonesia in partnership with the Ministry of Health (MOH); and the other one targeting animal health and implemented by the Australian Department of Agriculture (DAWR) in partnership with the Ministry of Agriculture (MOA). Australian support has been well received by the Government of Indonesia. It has supported Indonesia to increasingly comply with its international obligations under WHO's International Health Regulations (IHR) as well as building national human and animal disease surveillance systems and emergency response mechanisms. Substantial progress has been made in building Indonesia's EID preparedness, detection and response capacities, but many challenges remain. These include limited human resources, unclear policies, weak governance, minimal infrastructure and operational resource constraints. Disease response efforts are hampered by a myriad of policies and coordinating mechanisms, and limited abilities in leadership, strategic planning and management. Moreover, since the majority of EIDs are of animal origin, an increased attention to the animal-human interface and strengthening of the cross-cutting capacities of the MOH and MOA (and potentially other agencies) to deal with zoonotic diseases is needed. This aligns with the globally-recommended "One Health" approach that encourages multi-disciplinary and multi-sectoral approaches to address emerging zoonotic diseases. The current DFAT EID program (AIPEID Phase 2, due to finish June 2018) adopts the One Health approach by working synergistically in both the animal health and human health sectors. The program builds on existing collaborations between the Australian Department of Agriculture (DAWR), the World Health Organisation (WHO) and their Indonesian counterpart agencies. The activities are conducted in collaboration and coordination with other development and technical assistance partners such as the Australian Centre for International Agricultural Research (ACIAR), USAID, US Centers for Disease Control and Prevention (US CDC), the Food and Agriculture Organization (FAO), US Department of Agriculture (USDA) and the Japanese International Cooperation Agency (JICA).
Context and issues	As a result of the reduction in the development assistance budget to Indonesia over the past eighteen months, the bilateral health portfolio has subsequently been streamlined. In the last eighteen months, three of Australia's large flagship programs in the health sector [The Australia Indonesia Partnership for Maternal and Neo-natal Health (AIPMNH), The Australia Indonesia Partnership for HIV (AIPH) and The Australia Indonesia Partnership for Health

	Systems Strengthening (AIPHSS)] have been closed. Currently, the bilateral health portfolio in Indonesia is limited to the Australia Indonesia Partnership for Emerging Infectious Diseases (AIPEID) and some smaller activities in nutrition, HIV and Global Fund support. The EID Human Health program, which is managed by WHO Indonesia, has established a strong relationship with a key stakeholder (MOH) and provides technical expertise to strengthen the capacity of the GOI to implement the IHR. The EID Animal Health program, which is managed by the Australian Department of Agriculture and Water Resources (DAWR), uses a government-to-government modality. The technical direction, oversight and management support for the program is provided by DAWR head office in Canberra. The program activities are delivered by DAWR technical experts, international consultants and local staff based in Jakarta under the leadership of a DAWR Counsellor (Program Team Leader). DAWR has indicated they are not considering implementing a third phase of the AIPEID. In June 2016, the Indonesia development program Aid Management Meeting (AMM) agreed that future bilateral support and policy engagement would focus on promoting regional health security, and that DFAT Jakarta post and Indonesia desk would support the Australian Department of Health to strengthen linkages with MOH on health security. Emerging infectious diseases, HIV/TB, and dengue/Zika were identified as priority health security issues for broader DFAT (e.g. regional/global) support. In August 2016, the Office of Development Effectiveness (ODE) conducted an independent evaluation of Australia's past support for combating pandemics and emerging infectious diseases in Asia and the Pacific. The aim was to gather the evidence base for strengthening health systems to prevent, detect and respond to emerging infectious disease threats with pandemic potential in Asia and the Pacific and inform decision making about future DFAT investments and policy engagement on regional health security. AIPEID Phase 1 was one of the programs that was evaluated, with the current AIPEID Program being looked at in the broader context of the evaluation and its relevance to the evaluation's forward looking recommendations. The full ODE evaluation with be distributed within DFAT in March 2017. Both the EID phase 2 program and the Australia Indonesia Partnership for Disaster Risk Management will come to an end in June 2018. Discussions are taking place as to whether there is room for these two programs to be integrated or managed under the one initiative, in order to achieve efficiencies in program management and improve strategic alignment of Australian support related to emergency preparedness and response. The Disaster program will be carrying out a review of their program at the beginning of 2017 and will be asking a similar question of their review team, namely, what are the potential linkages between the different programs (EID and disasters) and would it be sensible to move forward with a joint design process and an integrated/joint program. The review team will report to DFAT Jakarta. In Canberra, relevant areas of DFAT, DAWR and the Australian Department of Health (DOH) will be consulted. MOA, MOH, WHO and potentially BNPB, as well as other donors and philanthropic organisations working in the health security field will be key stakeholders in this review.
Purpose	The primary purpose of the review is to make recommendations on options for Australia's future bilateral programmatic support in the area of health security beyond June 2018. As a secondary purpose, it will also assess achievement of program outcomes, implementation arrangements and management of the current AIP-EID programs, and make recommendations on critical issues to be addressed during the final year of implementation of the current program. The mission team should use the program documentation and early meetings to build an understanding of the AIP-EID One Health operating context. The primary audience of the review is DFAT. A secondary audience includes DAWR, DOH, MOA, MOH, potentially BNPB and development partners. The working assumption for this review is that there may be around AUD3 million annually available for a new program of support in the area of health security from mid-2018.

Objectives for the Review	1. To present options for Australia's future bilateral support in health security beyond June 2018, and how this could support and complement Australia's broader engagement with Indonesia and the region on health security, taking into account: a) the epidemiological trend of emerging infectious diseases and other pandemic threats in Indonesia and the broader health security dialogue. b) Australia's contribution to the overall regional health security agenda through the current and previous AIPEID programs c) Australia's current priorities, strategies and initiatives in regional health security (including the multi-donor trust fund) d) GOI's current strategies and priorities in combating emerging infectious diseases/potential pandemics/health security; GOI's interest in / priorities for future Australian support; and opportunities to leverage Indonesian resources e) the broader work of multilaterals, other donors, philanthropic organisations and other relevant stakeholders both in Indonesia and the region, and opportunities to leverage these resources/programs through a bilateral intervention f) opportunities to link to and leverage other Australian support for health security in Indonesia and the region, including for dengue/Zika and HIV/TB g) opportunities for a future program to help build a stronger partnership between Australian and Indonesian authorities in preparing for and responding to EID/pandemic threats h) consideration of possible program modalities, including support for international/regional organisations, a DFAT program with a managing contractor, provision of technical assistance from Canberra-based mechanisms, or a combination of these i) options to link future Australian health security support to disaster management/ preparedness support, and assess the potential to realise management efficiencies and strengthen strategic coordination in crisis management in Indonesia, as well as possible risks and issues. 2. To review implementation of the current AIP EID program against the expected outcomes as stated in the EID Phase 2 Design Document, and note any critical issues in the program's implementation that could be addressed in the final year (to June 2018). In particular: a) Whether the program is effectively achieving its intended outcomes and whether the current organisational arrangements as well as the level of engagement and partnership with government counterparts are sufficient and appropriate to support the achievement of the program's intended outcomes, and promote sustainability b) whether the planned program activities are still relevant to the GoI's agenda and what changes could still be made in the final year of the program to align with GOI's agenda and priorities c) is the program making effective use of time and resources (in particular human resources) to achieve its objectives? d) assess the level of coordination between the AIP EID animal health program and EID human health program delivered by WHO (under the 'One Health' banner), and opportunities to further strengthen collaboration.

Methodology for the Review and Options Paper Development	The review team will consist of an external adviser for bilateral investments in health security (Indonesia), as Team Leader, an external Epidemiologist/Animal Health Adviser, and a DFAT representative from the health unit in Jakarta. The review and redesign methodology consists of three basic elements: a) Desk review: background research b) Consultations in Canberra with DFAT, DAWR and DOH c) In-country mission, including consultations with national and local stakeholders. Interviewees may include people from GOI, DFAT, the AIP EID program staff and counterparts and other relevant DFAT-funded programs and stakeholders as required. DFAT will put together a schedule of consultations for the design team while they are in country prior to their arrival.