

INVESTMENT CONCEPT

A: Investment Concept Title: ASEAN-Pacific Infectious Disease Detection and Response (APIDDaR) Program	
Proposed start date: July 2019 End Date: June 2022	
Proposed DFAT funding allocation: \$28 million	Total funding from all donors: \$ N/A
Current program fund annual allocation: TBC	
Risk and Value Profile: Low Risk / Low Value	
Consultation: Stakeholder workshops and regional scoping missions in 2018; Principal Sector Specialist (Health); external appraisers with expertise in public health, animal health and program design.	
Proposed Design Pathway: Partner-led with FAS/AS/HOM Review	
Draft AidWorks Investment number: INN144	
Delegate approving concept at post: N/A	
Delegate approving concept at desk/in Canberra: Dr Cate Rogers, A/g FAS, Development Policy Division	

B: Problem/Issue definition and rationale for investment (Why)

The Indo-Pacific is a hotspot for emerging infectious diseases. Many countries have weak disease surveillance and containment systems and are therefore vulnerable to emerging and resurgent infectious diseases, including those caused by zoonotic and drug-resistant pathogens. A major disease outbreak could have severe health and economic implications with loss of life and disruption to regional trade, tourism and development. Countries are already dealing with the growth of antimicrobial resistance (AMR), which threatens to undo decades of medical advancement in the fight against high-burden bacterial and parasitic diseases. Other exacerbating challenges include climate and land-use change, rapid population growth and urbanisation. Health systems need not only to deliver better services but also to provide resilience to the emergence of epidemic-prone and drug-resistant diseases.

A stable and economically productive region is in Australia's national interest. Preventing and reducing the occurrence of major disease outbreaks benefits both human and animal health, protects the environment, and helps to prevent serious negative impacts on national and regional economies. Australia has a demonstrated capacity to prevent, detect and rapidly respond to public health threats. With significant expertise in key areas including public health workforce development, surveillance and laboratories, health emergency response, infection prevention and control, vector control, and research

and development for global health, Australia is well placed to support other countries in the Indo-Pacific region to build and exercise their core capacities under the International Health Regulations (2005).

The Health Security Initiative for the Indo-Pacific Region, launched in October 2017, aims to contribute to the avoidance and containment of infectious disease threats in the Indo-Pacific with the potential to cause social and economic harms on a national, regional or global scale. This Investment Concept describes a substantial component of the wider Health Security Initiative for the Indo-Pacific region, funded at \$300 million over five years.¹

GOAL	To contribute to the avoidance and containment of infectious disease threats in the Indo-Pacific with the potential to cause social and economic harms on a national, regional or global scale		
OBJECTIVES	ANTICIPATE	AVERT	ARREST
	To help countries assess their infectious disease threats and capacity deficits, and equip themselves with appropriate policy and regulatory arrangements, particularly with respect to access to medicines and vector control technologies	To mitigate infectious disease threats through support for improved infection prevention and control; vector control; and surveillance of infectious diseases, immunisation coverage and treatment-resistance in pathogens and vectors	To build capacity to detect and respond to infectious disease outbreaks through laboratory strengthening; targeted public health workforce development; and support for improved outbreak detection and management systems.
	ENABLE: To provide expertise, financing and support to key multilateral, regional and whole-of-Australian-government partner organisations in support of the above objectives		

Following the launch of the Initiative in October 2017, investment priorities were progressively established during 2018 with reference to the central international normative frameworks for assessing public health capacity, and on the basis of consultations with partner governments, regional, international and non-governmental development organisations engaged in the provision of health security assistance, and key Australian research and operational agencies active in the field of infectious disease prevention, detection and response.² Lessons were also drawn from reviews of evidence and practice from Australia's long history of support for infectious disease management.

¹ For additional information on the Health Security Initiative for the Indo-Pacific region, including foundation and subsequent investments, see the [Provisional Strategic Framework](https://indopacifichealthsecurity.govcms.gov.au/sites/default/files/Health%20Security%20Initiative%20Provisional%20Strategic%20Framework.pdf?v=1554340970) for the Initiative (<https://indopacifichealthsecurity.govcms.gov.au/sites/default/files/Health%20Security%20Initiative%20Provisional%20Strategic%20Framework.pdf?v=1554340970>).

² In early-mid 2018, a team of experts visited Solomon Islands, Fiji, Papua New Guinea and Samoa, and also met heads of health agencies from other Pacific island countries in the margins of a regional meeting. Another team visited Indonesia, Myanmar, Laos, Cambodia and Vietnam, and also consulted with regional and international organisations in Thailand and the Philippines. Scoping reports were prepared for the two regions, together with country-specific reports for the countries visited. These reports provide an assessment of the health security context, informed where relevant by the findings of WHO-led Joint External Evaluation processes, and make broad recommendations for action. As public health workforce development was identified as a particularly high priority in all discussions with partner governments and organisations in the region, CHS further commissioned experts in that field to develop an overarching investment design for Australian assistance in workforce development. For scoping reports, see the [Indo-Pacific Centre for Health Security publications page](https://indopacifichealthsecurity.dfat.gov.au/publications/) (<https://indopacifichealthsecurity.dfat.gov.au/publications/>). The [workforce design](https://indopacifichealthsecurity.govcms.gov.au/sites/default/files/Health%20Security%20Workforce%20Design.pdf?v=1554338559) can be found at <https://indopacifichealthsecurity.govcms.gov.au/sites/default/files/Health%20Security%20Workforce%20Design.pdf?v=1554338559>.

Country and multi-country investments under the Initiative are concentrated in Southeast Asia, Papua New Guinea (PNG) and the Pacific island countries, and fall under one or more of three overarching objectives as shown below.

Threat mitigation activities under the “Avert” objective are supported in PNG, Timor-Leste and the Pacific island countries; detection and response activities under the “Arrest” heading are supported across Southeast Asia and the Pacific. The totality of activities under each objective is intended to recognise the importance of adopting a One Health approach to capacity-building in health security—that is, an approach that reflects the zoonotic origins of most emerging infectious disease threats and works at the interface between human and animal health.

In addition, investments in enabling partnerships are providing expertise, financing and support to key multilateral, regional and whole-of-Australian-government partner organisations to further the above objectives and ensure Australia’s full engagement in global health security processes, including the Global Health Security Agenda and the World Health Organisation’s Asia-Pacific Strategy for Emerging Diseases and Public Health Emergencies.

Countries across Southeast Asia and the Pacific are vulnerable to the internal and cross-border spread of infectious diseases. Analysis of the findings of WHO-led Joint External Evaluations (JEEs) and other assessments points to relatively stronger prevention capacity in many Southeast Asian countries as compared to Papua New Guinea, Timor-Leste and Pacific island countries. Countries in Southeast Asia face relatively greater deficits in areas relating to detection and response, including the aggregation of syndromic and event-based surveillance data, reliable laboratory diagnosis, the depth of the field epidemiology workforce, risk communication and the coordination of outbreak response.

This program will be implemented in developing Southeast Asia (any of Vietnam, Cambodia, Laos, Myanmar, the Philippines, Indonesia or Timor-Leste), PNG and priority Pacific island countries (any of Solomon Islands, Vanuatu, Fiji, Tuvalu, Kiribati, Nauru, Samoa, Tonga, Cook Islands and Niue).

Separate to this investment, a program of prevention activities for the Pacific region is also planned and outlined in an additional Investment Concept. This investment will be known as the Pacific Infectious Disease Prevention Program.

Many Australian institutions are already involved in capacity-building activities in and for Southeast Asia and the Pacific in connection with public health and veterinary diagnostic laboratories, outbreak detection and management, and public health workforce development. This partnership grants program provides an opportunity for such organisations, as well as other regional and international actors with strong track records, to extend, intensify and better connect their efforts in these three areas under a single funding umbrella and performance framework.

Program performance assessment arrangements for this partnerships grants program, as for the Health Security Initiative as a whole, will seek to measure Australia’s contribution to the achievement of partner country progress towards sustainable infectious disease detection and response capacity relative to the core capacities described in the International Health Regulations and related capability assessment frameworks including the World Organisation for Animal Health’s (OIE) Performance of Veterinary Services (PVS) framework.

C: Proposed outcomes and investment options (What)

The objective of the program, in line with the ARREST objective articulated above, is to build capacity in Southeast Asia and the Pacific to detect and respond to infectious disease outbreaks through laboratory strengthening; targeted public health workforce development; and support for improved outbreak detection and management systems.

The program's component areas, accordingly, are as follows:

- a) capacity building in public health and veterinary diagnostic laboratories;
- b) public health workforce development with particular attention to building field epidemiology and public health leadership capacity; and
- c) strengthening outbreak detection and management systems and processes.

The desired end-of-program and intermediate outcomes, and activity areas, are specified in the provisional program logic for this investment at Annex 2. The final program logic will be determined following partner selection and the collaborative development of detailed work plans.

Proposals will be sought for activities addressing one or more of the program components and judged likely to contribute materially to the end-of-program outcomes. Proponents will be asked to identify the primary beneficiaries of the proposed activities, and will be required to provide specific information on how women and girls will participate and benefit.

Activity proposals to the value of \$2 million or more will be preferred but high-quality smaller projects may be considered. Exact allocations to the three program components will be determined following partner selection but the following is provided as a rough guide: \$8-10 million for laboratory strengthening; \$10-12 million for workforce development; and \$8-10 million for outbreak detection and management systems and processes.

A partnership grants program modality is the preferred option for delivery of this investment. Competitive resource allocation will promote innovation, economy and the formation of alliances among proponents working in related fields and locations. The partnership grants modality, involving collaborative design processes that simultaneously engage all selected proponents and other existing delivery partners, will ensure that all activities support the program's overall objectives in the most coherent, flexible and efficient way. A DFAT-led design process was judged to be less appropriate owing to the depth of expertise that resides in the many stakeholder organisations in the field of health security, and the limited availability of evidence on pathways to impact for development assistance interventions in public health.³ The partnerships supported through this investment will sit alongside a range of multilateral and other institutional partnerships already supported by the Health Security Initiative.

D: Implementation/delivery approach (How and with whom?)

³ As indicated above, a DFAT-led design process was undertaken in 2018 in connection with public health workforce development, a less technical area of assistance than the other two specified in this Investment Concept, in order to inform decisions on a number of early investments and requests for assistance. The relevant design document will be a resource for proponents, who may choose to address some of the investment options outlined within it, but does not constrain the range of workforce development proposals that will be considered for support through this partnership grants program. Refer to the [Indo-Pacific Health Security Workforce Design](https://indopacifichealthsecurity.govcms.gov.au/sites/default/files/Health%20Security%20Workforce%20Design.pdf?v=1554338559).
<https://indopacifichealthsecurity.govcms.gov.au/sites/default/files/Health%20Security%20Workforce%20Design.pdf?v=1554338559>

This investment will be delivered through a partnership grants program following an open call for proposals. Grants will support activities implemented over a three-year period, from July 2019 to June 2022. It is anticipated that DFAT will enter into Grant Agreements with an estimated 3-6 partner organisations or consortia under this program.

The request for proposals will indicate that proposals from organisations or consortia will be assessed on the basis of demonstrated capability and broad concepts, with detailed activity designs, including monitoring, evaluation and learning frameworks, to be developed in collaboration with CHS following partner selection. Specialised program design assistance will be made available to partners where necessary.

Following completion of detailed activity designs, DFAT will prepare an overarching Investment Design Summary, as is required for partner-led designs, and submit it together with the activity designs for independent appraisal. The Summary will incorporate a revised program logic and a performance assessment framework for the program, drawing upon and integrating the monitoring, evaluation and learning frameworks developed for individual activities under the program. Program implementation will commence once quality assurance processes are complete.

E: Risk assessment approach (What might go wrong?)

Key risks for this investment are:

- insufficient alignment with partner governments' health security priorities and/or other health-sector programs supported by DFAT or other agencies;
- insufficient partner technical and administrative capacity to design and/or implement and/or monitor and evaluate activities efficiently and effectively; and
- inadequate treatment of risks associated with the long-term sustainability of impacts achieved through activities at the end of the three-year investment period.

These risks will be managed by:

- selecting and managing activities in close coordination with partner governments, DFAT's country program personnel at posts and on desks, and other relevant funding sources;
- ensuring delivery partners have sufficiently strong technical and project administration capacity or, where there is a good case for doing so, supplementing this capacity; and
- requiring and supporting partners to develop strategies for sustaining impacts beyond the program timeframe, including by building support for domestic implementation in partner countries and establishing twinning/mentoring relationships that will persist beyond the program timeframe.

Broad activity concepts will be required to include information on proposed approaches to risk management. Risk management plans will be incorporated into detailed activity designs. Information in relation to risks and safeguards will be required in six-monthly reports, with emerging or unanticipated risks highlighted to DFAT as they occur. A risk register for the entire investment will be managed and updated by the CHS Program Manager. Processes for managing risk and alerting DFAT of problems will be outlined in the program's inception workshop.

This investment has been assessed as carrying no risks in relation to displacement/resettlement or environmental sustainability. Activity proposals will be required to outline the extent of contact with

children and, where relevant, how risks will be assessed and managed through recruitment, deployment and monitoring processes in line with DFAT's Child Protection Policy requirements. For successful partner organisations, evidence must be provided of the organisation's (and relevant consortium partners') DFAT-compliant child protection policy. During implementation, checks of compliance and the presence of appropriate safeguards will be carried out by DFAT as part of routine monitoring.

F: Proposed design and quality assurance process (What are the next steps?)

An open call for proposals will be issued in March 2019. Proponents will be allowed eight weeks to prepare capability statements and broad concepts that address outcomes described in Section C. It is envisaged that the selection of partners will be completed, and Grant Agreements signed, in June 2019, with the collaborative design of activities to be undertaken in July-August 2019. The call for proposals will be open to all organisations.

The selection criteria for proposals will assign specified weights to three areas: national and regional health security significance of the development needs to be addressed by proposed activities; quality of the broad activity concept; and organisational capability and track record.

To assure quality, proposals will be shortlisted, ranked and assessed by a panel of individuals who bring expertise and knowledge in the several component areas of the program, as well as capacity building and program design and management.

DFAT will establish a Grant Review Panel (GRP), comprising technical experts, to assess and rank conforming applications against set Selection Criteria. The panel will include members with appropriate expertise to:

- a) review applications against the assessment criteria
- b) review budgets to ensure value for money
- c) score applications to produce a ranked list of applications with recommendations for funding to provide to DFAT.

The panel will be conducted on a confidential basis and panel members are required not to discuss matters relating to the assessment of any proposal with any external party. Applicants must not seek contact with any members of the panel, and any such contact will be considered a breach of confidentiality and may result in DFAT rejecting the proposal of the applicant concerned. DFAT will undertake an internal review of the GRP's ranked list of applications and recommendations. DFAT may seek additional advice on any Activity Proposal if required. Note that issues not relevant to the Selection Criteria and budget will not be considered. DFAT reserves the right to make final grant funding decisions. Proposal and high level activity plans for selected proposals will be used to develop a consolidated investment design, program logic and framework for performance assessment. This design will be developed, appraised and approved in line with requirements outlined in DFAT's Aid Programming Guide. Designs will be externally appraised.

Annex 1: Risk and safeguards assessment tool

Table 1: Safeguard Screening Checklist

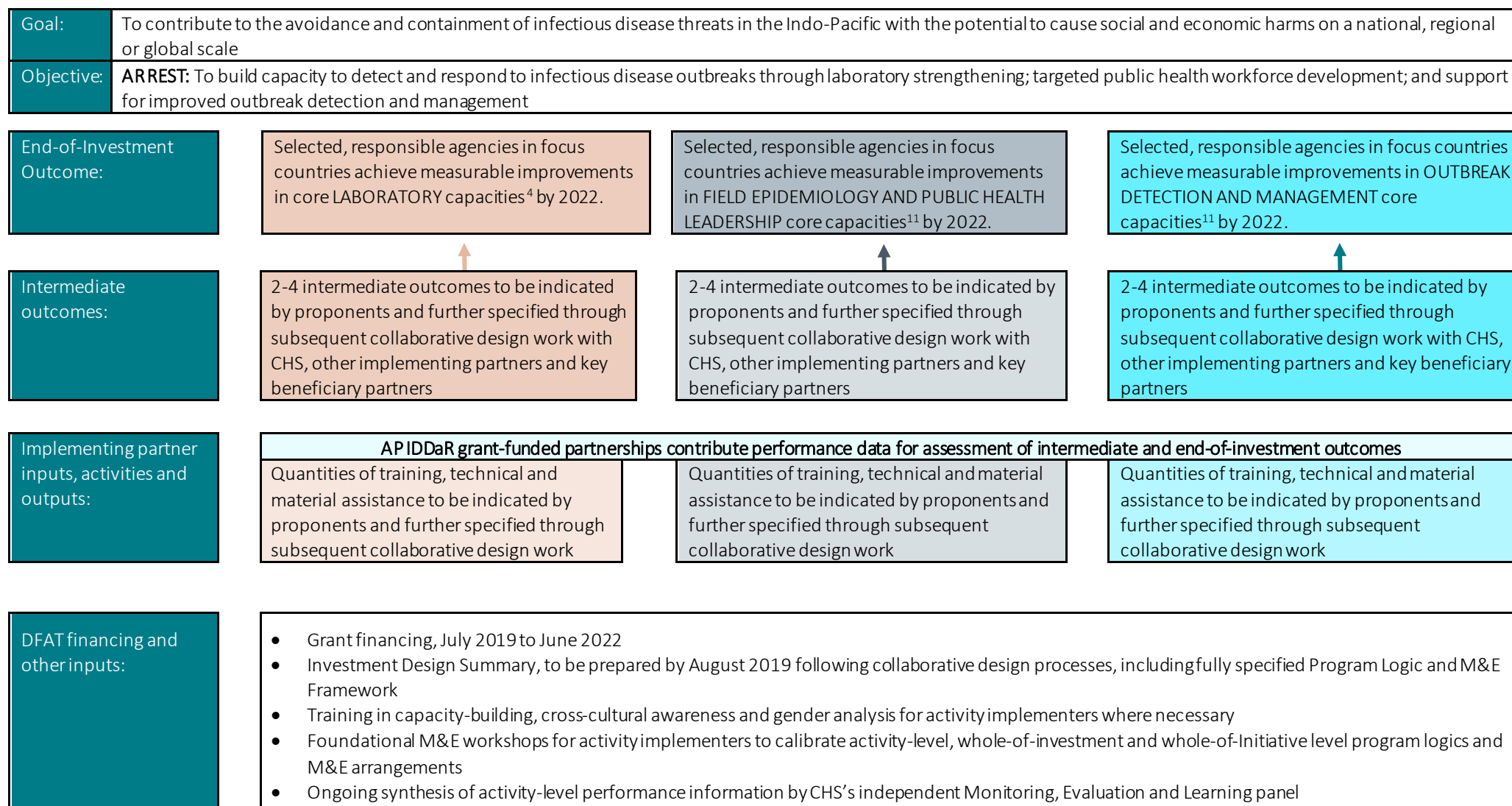
Environmental and Social Safeguards	No, Yes Unsure	If Yes or Unsure		Risk rating before controls
		Likelihood	Consequence	
Environmental protection				
1.1 Could the investment have an adverse impact on the environment? For example, by supporting or providing advice on any of the following: <ul style="list-style-type: none">infrastructure development, such as roads, bridges, airports, railways, ports, dams, water, sanitation and hygiene (WASH), waste management, telecommunications, energy production and distribution facilities, urban development.construction/renovation/refurbishment/demolition of buildings such as schools, hospitals, health facilities or any of the infrastructure abovediversion of water, including for water supply, irrigation, flood-mitigation, or aquaculturerural development, agriculture, food production, or forestry activitiesactivities in the extractives (oil, gas, mining), manufacturing, transportation and tourism sectors.	No	Choose an item.	Choose an item.	Low
Guidance: Environmental Protection safeguard webpage or contact aidsafeguards@dfat.gov.au for more information.				
1.2 Could the investment increase environmental, climatic and/or social vulnerability, including by (but not limited to): <ul style="list-style-type: none">increasing emissions of greenhouse gases (e.g. energy intensive process will lead to an increase in Green House Gas production)reducing incentives to adapt (e.g. change in social norm away from responsible water conservation to increased consumption)increasing the vulnerability of people (particularly the most vulnerable) or the environment to climate change (e.g. pesticides, used to eradicate mosquitoes that carry dengue fever, damage native insect populations which reduces agricultural productivity, leading to food insecurity)increasing the impact of disasters, e.g. will infrastructure building codes and specifications be adequate for the intensity of disasters/hazards experienced in the investment area (e.g. floods, earthquakes, cyclones), will the investment impact the food security of a vulnerable populationsetting paths that limit future choices (e.g. large capital and institutional commitment reduces portfolio of future adaptation options).	No	Choose an item.	Choose an item.	Low
Guidance: Climate action and disaster resilience webpage ; Humanitarian and disaster risk reduction webpage or contact resilience@dfat.gov.au for further information.				
Children, vulnerable and disadvantaged groups				
2.1. Could the investment have an adverse impact on vulnerable and/or disadvantaged groups including children, women, people with disabilities, minority groups, or the elderly?	No	Choose an item.	Choose an item.	Low
2.2. Could the investment involve contact with children or working with children?	Yes	Possible		Low
Guidance: Children, vulnerable and disadvantaged groups safeguard webpage ; Child protection webpage or contact childprotection@dfat.gov.au ; Gender equality and empowerment of women and girls webpage or contact gender.equality@dfat.gov.au ; Disability-inclusive development webpage or contact disability.inclusive.development@dfat.gov.au for further information.				

Environmental and Social Safeguards	No, Yes Unsure	If Yes or Unsure		Risk rating before controls
		Likelihood	Consequence	
Displacement and resettlement				
3.1 Could the investment involve activities or provide advice about an activity that will: <ul style="list-style-type: none">displace people, either physically or economicallyexclude or reduce people’s access to land they live on or used to generate livelihoodsexclude or reduce people’s access to land that is of cultural or traditional importance to them?	No	Choose an item.	Choose an item.	Choose an item.
Guidance: Displacement and resettlement safeguard webpage or contact resettlement@dfat.gov.au for further information.				
Indigenous peoples				
4.1. Could the investment involve activities that adversely impact the: <ul style="list-style-type: none">dignity, human rights, livelihood systems or culture of indigenous peoplesland or natural and cultural resources that indigenous peoples own, use, occupy or claim?	No	Choose an item.	Choose an item.	Choose an item.
Guidance: Indigenous peoples safeguard webpage or contact humanrights@dfat.gov.au for further information.				
Health and safety				
5.1. Could the investment involve activities that adversely impact the health and safety of workers and/or communities?	No	Choose an item.	Choose an item.	Choose an item.
5.2. Could the investment involve DFAT workers?	No	N/A		
5.3. Could the investment involve risk of exposing workers and/or communities to asbestos?	No	N/A		
Guidance: Health and safety safeguard webpage or contact whs@dfat.gov.au or aidsafeguards@dfat.gov.au for further information.				

Table 2: Investment Risk Summary

		Highest individual risk rating in each category (before controls)
1.	Operating environment: What factors in the operational or physical environment (political instability, security, poor governance, lack of essential infrastructure, gender inequality etc.) might impact directly on achieving the objectives?	Low
2.	Disaster risk: Is the investment or intended outcomes exposed to disasters that typically occur in the investment area and/or country? Disaster impacts could include the risk of damage to infrastructure, loss of life, and other economic and social impacts.	Low
3.	Development Results: How realistic are the objectives and can they be achieved within the timeframe? Are the objectives/results sustainable? Would the failure to achieve the results in the proposed timeframe, or at all, affect the targeted beneficiaries directly? What factors may prevent the objectives being met?	Medium
4.	Partner capacity and relations: Could a relationship breakdown occur with key partners or stakeholders and would this prevent the objectives/results from being achieved? Does the intended partner (if known) have the capacity to manage the risks involved with this investment? Could differing risk appetites affect the relationship? Do all partners have the capacity and capability to manage their role/work involved in this investment?	Medium
5.	Fiduciary and fraud: Are there any significant weaknesses which mean funds may not be used for intended purposes, not properly accounted for or do not achieve value for money? (Fraud Control and Anti-Corruption Strategies and Assessments of National Systems will assist in identifying significant risks.)	Medium
6.	Compliance: Is there a risk that poor program management may lead to a breach of investment accountability, legislative/ contractual or security obligations? Is there a risk that DFAT aid program funding could be diverted for use by terrorists? (Refer DFAT's <i>Approach to Managing Terrorism Financing Risk</i> policy)	Low
7.	Reputation: Could any of the risks, if they eventuated, cause damage to DFAT's reputation? Could any aspect of implementation damage bilateral relations?	Medium
8.	Environment and Social Safeguards: Do any of the activities involved in this investment have the potential to cause harm to the environment and people - (environmental protection; children, vulnerable and disadvantaged groups; displacement and resettlement, indigenous peoples; health and safety)?	Low
9.	Other: Are there any other factors specific to this investment that would present a risk (e.g. this is a new area of activity or it is an innovative approach; are DFAT resources (budget, people, or timeframes) critically constrained)?	Low
10.	Overall Risk Rating (see step 3 for how this is calculated):	Low – risk

Annex 2: Provisional APIDDaR Program Logic



Annex 3: Example APIDDaR Monitoring and Evaluation Framework at design stage (Outcome One - laboratory strengthening - Only)

⁴ Related capability frameworks include WHO frameworks and assessment tools relating to laboratory, public health workforce and outbreak monitoring and management capacity, and the World Organisation for Animal Health's (OIE) Performance of Veterinary Services (PVS) assessment framework.

Key Evaluation Questions:

- To what extent has the APIDDaR contribution resulted in improved capacity in targeted agencies?
- To what extent does the APIDDaR approach – grant based design/delivery activities – represent Value for Money?
- What activity strategies and approaches are working best in delivering results to contribute to APIDDaR outcomes? Why?
- To what extent are APIDDaR funded activities operationalising Australia's policies on gender equality and women's empowerment?

	Indicator	Data collection method & frequency	Risks	Who will collect and analyse the data	Baseline	Target	Use
Broader goal: HSI Goal	To contribute to the avoidance and containment of infectious disease threats in the Indo-Pacific with the potential to cause social and economic harms on a national, regional or global scale						
Relevant Strategic Objective: ARREST	To build capacity to detect and respond to infectious disease outbreaks through laboratory strengthening; targeted public health workforce development; and support for improved outbreak detection and management						
End-of-investment outcome one: Selected, responsible agencies in focus countries achieve targeted improvements in core LABORATORY capacities by 2022.	Changes in, for example: <ul style="list-style-type: none"> • Laboratory testing for detection of priority diseases • Specimen transport and referral system • Effective national diagnostic network • Laboratory quality system 	<ul style="list-style-type: none"> • State part self-assessments (annually) • Joint External Evaluations • Activity implementer surveys of knowledge attitude and practices (six-monthly) • Quality assurance of unit reports (on-going) • Community surveys/focus group discussions (annually) • Cost / benefit analysis (annually) 	<ul style="list-style-type: none"> • Inadequate resourcing by partner government • Low capacity base in targeted Units. • Lack of engagement by PG and/or targeted Units • Inadequate capacity building capacity amongst technical advisers. 	<ul style="list-style-type: none"> • Designated personnel in targeted Units • Activity implementer M&E personnel • Activity implementer technical advisers • APIDDaR sub-contracted local consultant • APIDDaR sub-contracted economist 	<ul style="list-style-type: none"> • States Parties assessment of status of IHR implementation. • Use WHO JEE/SPAR core capacity as a baseline, or establish a relevant baseline. 	<p>Capability level of targeted agencies and staff moves from a defined baseline to defined target level Outputs and Outcomes by 2022.</p> <p><i>(This target would be broken down into annual targets and appropriately monitored in activity implementer M&E frameworks)</i></p>	<p><u>Partner government</u> uses results to report annually to WHO on progress in developing core capacities.</p> <p><u>WHO</u> uses information to prepare its global reports and to identify specific areas where further WHO and partner support is required.</p> <p><u>APIDDaR funded activity implementers</u> uses the data for management, continuous improvement and accountability/ reporting.</p> <p><u>DFAT</u> uses reports from project implementers to assess 'whole-of-investment' performance and to manage individual activities for improved performance.</p>

Annex 4

Outcomes of scoping activities and references

1. Southeast Asia, PNG and the Pacific island countries – challenges

The health security threats and capacity deficits of Papua New Guinea (PNG), Timor-Leste and the Pacific island countries differ substantially from those of most Southeast Asian countries.

PNG, Timor-Leste and the Pacific island countries are generally characterised by small, scattered, low-density populations and smaller, often household-scale, poultry and livestock industries. This grouping of countries faces significant threats to health security from existing, emerging and re-emerging infectious diseases including malaria, tuberculosis (TB), dengue fever, childhood diarrhoea, acute respiratory infection, and various vaccine-preventable diseases (VPD) not already mentioned. Their ability to manage these threats is limited by the small scale and low complexity of their health systems and the geographic dispersion of their populations. The threats are aggravated by the effects of climate change and water scarcity. In addition, the evolving non-communicable disease (NCD) crisis in these countries is tied to their limited infectious disease control capacity through the emergence of AMR in bacteria occurring in diabetes-related infections, and also through the heavy reliance on international surgical services for Pacific island nationals.

Southeast Asia, by contrast, has large populations in high-density areas. Most countries have intensive livestock production industries. The combination of high population density with the large-scale movement of people and livestock increases opportunities for the rapid spread of infectious diseases, including zoonotic diseases, within countries and across borders. Both emerging and existing infectious diseases pose threats. Although malaria is declining, resistance to artemisinin-based combination therapy has been found in Cambodia, Laos, Myanmar, Thailand and Vietnam—jeopardising medical progress in treating malaria.

While there is variation in health system capacity across Southeast Asia, health programs are typically under-funded and it is particularly common for there to be insufficient financial and human capacity to fulfil core health security functions, especially at sub-national levels. Inter-sectoral collaboration and coordination is mostly weak. The weaknesses tend to be greatest with respect to IHR core capacities relating to disease detection and response.

Cambodia, Laos, Indonesia, Myanmar, Philippines, Thailand, Timor Leste and Vietnam have undertaken JEEs in the 2016-18 period to assess their core capacities with respect to the International Health Regulations. In Cambodia, Laos, Indonesia, Myanmar, Thailand and Vietnam, these evaluations particularly highlighted weaknesses in emergency preparedness and response, anti-microbial usage, risk communications, and points-of-entry procedures. Key national challenges identified in the JEEs are further summarised in the regional and national scoping mission reports informing this investment concept.

In addition to the scoping exercises and consultative workshops mentioned above, this program has been informed by relevant findings and recommendations of the Office of Development Effectiveness (ODE) *Evaluation of DFAT's Pandemics and Emerging Infectious Disease Portfolio 2006-2015*. That evaluation pointed to achievements in strengthening infectious disease surveillance, laboratories, leadership and governance for infectious diseases, attention to gender issues, and public health functions of the human and animal health workforce. However, it noted that ongoing health threats have highlighted the fragility of these gains and the slow progress in the implementation of the IHRs.

The ODE evaluation underlined a number of key lessons for health security investments, including that such investments need to be integrated into the health systems of partner countries and should take a differentiated approach accounting for differences between animal and human health systems, and between countries. Other key lessons were as follows.

- Investments should focus on sustainable capacity building and systems strengthening across a range of endemic, emerging and re-emerging infectious diseases.
- DFAT should seek to strengthen systems and approaches outside crisis or high-threat situations so that protective measures and behaviours are more likely to be in place when outbreaks occur.
- It is critical to involve communities in activities aimed at promoting prevention and preparedness for infectious disease outbreaks. Key community members can play an effective role in explaining complex health issues and policies, and in encourage community mobilization for risk reduction.

The more specific health security challenges faced by countries in Southeast Asia, PNG and the Pacific island countries, which correspond to the three objectives and program components of the investment, are discussed further below.

1.1 Laboratory strengthening

Credible and accessible laboratory services capable of producing reliable results in a timely manner are the cornerstone of investigating potential public health events of national, regional and international concern. Early detection and management of disease outbreaks can only be accomplished if responsive laboratory systems are in place.

Many of the Australian public health laboratories that form the membership of the Public Health Laboratory Network of Australia already have linkages with counterpart laboratories in the region, and a capacity and desire to strengthen these linkages. The Centre for Health Security has had multiple interactions with PHLN as a group and with individual member laboratories in order to build an understanding of their capabilities and interests. In addition, the Centre has already negotiated a multi-year funding agreement with the Australian Animal Health Laboratory (AAHL) in Geelong to extend assistance to key laboratories in Indonesia, Myanmar and elsewhere in Southeast Asia, in recognition of AAHL's unique position as a major BSL-4 facility (one of only six high-containment animal research facilities in the world) and a national strategic asset.⁵

International sources of laboratory strengthening assistance including the Asian Development Bank, the UN Food and Agriculture Organisation, the Pasteur Institute, the UK's Fleming Fund and the Merieux Foundation are active in both Southeast Asia and/or the Pacific. Assistance provided under the present investment program would seek to complement, build upon and leverage assistance from such other sources, with a view to ensuring that key public health and veterinary diagnostic laboratories in our region of focus are better able to detect outbreaks close to source or else rapidly refer unidentified pathogens to regional laboratories of higher capable under formal reference arrangements.

Broad lessons from the scoping missions and the ODE evaluation highlighted that:

- assistance provided in connection with specific disease threats can and should be used to build laboratory capacities that also deliver benefits in connection with a range of other diseases;
- given the prevalence of zoonoses among emerging infectious diseases, veterinary laboratory strengthening should be integrated within broader laboratory strengthening programs; and
- expanded support for capacity development beyond the more technical aspects of laboratory strengthening is important to address broader human resource issues, including a lack of leadership and supervisory capacity.

The Pacific region has significant gaps in connection with:

- laboratory capacity and workforce capability to provide reliable confirmation of suspected infectious diseases (especially at sub-national levels);
- standardised methodologies for routine diagnoses;
- adequately maintained equipment;
- supply chains for laboratory reagents and other essential laboratory supplies;
- effective networking of laboratories within countries and across the region (hindering reporting of diseases of international public health concern);
- clear policies on the long-term development, roles and functions of, and linkages between, laboratory services (in particular, animal health is generally not integrated into public health laboratory functions);
- the utilisation of data for decision-makers (e.g. microbiology laboratories generally do not systematically compile or analyse data on drug sensitivity and AMR); and
- laboratory quality management systems (LQMS), including External Quality Assurance.

Key challenges in Southeast Asia include:

⁵ Laboratories are classified at one of four Biosafety Levels. A BSL-4 laboratory is a very high-security facility appropriate for work with biological agents that could easily be aerosol-transmitted within the laboratory and cause severe to fatal disease in humans for which there are no available vaccines or treatments. A BSL-3 laboratory is also quite a high-security facility, used for the handling of microbes that can cause serious and potentially serious disease via inhalation.

- variations between laboratory services in the quality of infection prevention and control and the ability to diagnose infections;
- the sustainability of Biosafety Level 3 laboratories (where they exist) for the diagnosis of highly pathogenic infectious agents; and
- delayed or ineffective communications between laboratories and with personnel who need their findings for outbreak alert and response and surveillance.

1.2 Workforce development

A skilled public health workforce is critical to a country's capacity to detect and respond to disease outbreaks. Field epidemiology training programs (FETPs) have been developed in many countries over the past forty years to provide health workers at various levels with the skills they need to conduct surveillance of infectious diseases, assess risks and investigate and respond to outbreaks. Emergency management skills are also needed for staff of disease-oriented Emergency Operations Centres (EOCs). First cases will often occur in rural areas or urban peripheries, highlighting the need for skilled personnel and well-equipped facilities at the sub-national level.

Almost all countries in Southeast Asia and the Pacific face public health skills gaps in their capacity to detect, identify and respond to disease threats, and to coordinate at the animal-human interface in the case of zoonoses. There is insufficient educational and training capacity to produce the number of graduates required to meet future health security needs. There are also problems in the distribution and retention of trained field epidemiologists, as well as serious deficits in other key public health skills, including public health leadership.

The Centre for Health Security has engaged extensively with global and regional field epidemiology training programs and networks to assess opportunities for strengthening workforce development. One significant early investment has already been launched—the ASEAN-Australia Health Security Fellows program, which enables the participation of selected scholars from ASEAN countries in Australia's world-class, Masters-level applied epidemiology training program (while ensuring that the bulk of their fieldwork is undertaken in their home countries).

A second investment has also been made in upgrading PNG's FETP via the Stronger Systems for Health Security applied health systems research funding round in 2017-18. And the Centre is working closely with the US Centres for Disease Control and Prevention and WHO to further improve the quality of FETPs at the national and regional levels through a strengthened global network of FETPs and an increased consensus on standards and competencies. Opportunities are also being discussed between the Centre and US-CDC to provide joint Australian-US support to broader public health training programs in Southeast Asia.

Southeast Asia's two FETP networks, SAFETYNET and the ASEAN+3 FET Network, will be fully engaged in future Australian programs of support for FETP development, as will the regional field epidemiology training programs operated by Fiji National University in Association with the Pacific Community.

In recognition of the centrality of workforce development in improving health security across the region, and also in view of its links with our laboratory strengthening and outbreak management objectives, CHS commissioned a broad *Health Security Workforce Investment Design* in 2018.⁶ This emphasises the need for a systems approach to building workforce capacity and recommends that the focus of Australian investment at the country and multi-country level should be on developing the capacity of personnel, institutions and coordination networks. The relevant capacities are primarily in the areas of laboratory diagnostics and management, epidemiology, surveillance data collection and analysis, disease emergency response, infection prevention and control (IPC), vector control, and related management and leadership for coordinated national and regional approaches. Assistance modalities include training at several levels; the placement of long-term personnel, including Health Security Corps deployees; with international organisations, health ministries and technical agencies; and associated financial assistance. This scoping report will be available as a resource document to organisations developing proposals in response to the present call.

Broad lessons from the ODE evaluation and CHS scoping missions highlighted the need to:

⁶ (refer: <https://indopacifichealthsecurity.dfat.gov.au/publications>).

- maximise workplace training relevance and impact on human and animal health systems by linking efforts to build surveillance and epidemiological capacity to active disease control programs (consistent with the “learning by doing” approach that typifies most FETPs);
- ensure that inputs to workforce development are part of a broader needs-based workforce development strategy, have partner government commitment and are sufficiently likely to result in the practical application of skills gained;
- develop and apply models to address the issue of lack of mentorship and supervisory capacity in the field of public health training, including by ensuring the availability and quality of train-the-trainer and other mentor/supervisor training programs; and
- be realistic about the scale of the challenge involved in building the animal health workforce and focus efforts on quality rather than quantity, with particular attention to priority training needs identified in PVS evaluations.

Key health security workforce challenges in the Pacific include:

- inadequate numbers of qualified personnel, especially in the animal health sector (e.g. ranging from one qualified veterinarian in Solomon Islands to three in PNG);
- a sub-optimal mix of skills among public health personnel;
- limited opportunities for in-service technical training and an absence of professional development pathways at early stages for staff in key areas such as laboratory services; and
- a lack of the skills needed to work at the human and animal health interface.

Key challenges in Southeast Asia include:

- an uneven distribution of skilled (human and animal) epidemiologists, particularly in non-urban areas;
- weak connections between field epidemiology courses and institutions within and between countries, which limits the quality of training, the capacity of supervisors and the sustainability of programs; and
- uncoordinated or sporadically coordinated approaches to infectious diseases and public health issues at the human/animal interface.

1.3 Outbreak detection and management and Health Emergency Operations

The effective management of outbreaks and other health emergencies requires strong health systems. Whole-of-government engagement and coordination is critical for strengthening public health emergency operations, including linkages between the human and animal health sectors.

For outbreak detection and management, relevant thresholds for outbreak detection from routine surveillance should be established, along with processes for assessing risks, and functional event-based surveillance systems. Processes for rapid reporting of outbreaks (particularly those constituting a potential Public Health Emergency of International Concern) are required, for escalation to an Incident Management System (IMS).

A functioning Emergency Operations Centre (EOC)—connected to trained, multi-sectoral rapid response teams and real-time bio-surveillance laboratory networks and information systems—is needed to meet the JEE target of a coordinated emergency response within 120 minutes of the identification of a public health emergency.

WHO’s 2015 *Framework for Public Health Emergency Operations Centres* (PHEOC) underlines the need to integrate traditional public health services into an emergency management model with coordinated response capacity. As well as staff and effective information and communication systems, PHEOCs require appropriate Incident Management Systems (IMS) that are regularly exercised. This is a challenge in all countries for health ministries outside emergencies, when health systems often struggle with existing burdens and managers are reluctant to divert resources for a possible non-event.

In developing countries, a promising strategy for building EOC capacity without diverting resources from existing health burdens is to support dual-function EOCs. In particular, where countries have adopted national malaria elimination objectives, as in many countries in Southeast Asia and the Pacific, an EOC can provide services to a national malaria program as its “day job” while also being strengthened to activate in response to outbreaks of other emerging or resurgent infectious diseases. An EOC that continuously operates is more likely to attract and retain capacity than one

that is activated only rarely in response to unpredicted health emergencies. And EOCs of this kind can also build on and amplify the impact of sustained investment in malaria by donors over the past decade.

This dual-function approach is now being introduced in Laos, supported by the Bill and Melinda Gates Foundation, BMGF, with CHS playing an observer role in the program design process over the past year. The same approach is under discussion between CHS and the Myanmar Ministry of Health and Sports. It involves strengthening EOC systems, staff and structures and includes: establishing an IMS and standard operating procedures (SOPs); recruiting and training maintenance and surge staff; and conducting regular simulation and review exercises. In the case of Myanmar, Public Health England, as well as BMGF, have expressed in a partnership with Australia.

In many countries, it will be more appropriate to focus on systems and processes for the coordination of outbreak response (including but not limited to the context of malaria case management) without necessarily investing in a central administrative unit. Such systems and processes might operate at the national or sub-national levels, or in a more distributed fashion. The key objective is to ensure that all arms of a country's detection and response apparatus, and in particular its public health workforce and diagnostic infrastructure, are working in as coordinated and timely a fashion as possible.

Key challenges in outbreak detection and management in the Pacific include:

- Public Health Emergency Preparedness and Response Plans (PHEPRP) are generally not in place and, where they are, are inadequate to support multi-sectoral “all-hazards” approaches and generally overlook civil society and inclusive response mechanisms;
- some countries have developed health or quarantine sector-specific EPRPs but most are out-of-date;
- national and regional inter-agency coordination is weak and agency roles are often unclear (e.g. the locus of responsibility for declaration of a health emergency varies, and there are often poor links between health ministries and National Disaster Management Offices);
- health agencies and points of entry generally do not conduct drills, simulations or after-action reviews;
- data collection systems are not adequately informing public health policies and responses, with only large outbreaks likely to be detected; and
- there is a lack of specific budgetary provision for health emergencies or natural disasters (beyond mechanisms to access funds from national government and/or international partners).

Key challenges in Southeast Asia include:

- major gaps in emergency preparedness and response capacity—including the lack of an agreed IMS, SOPs, real-time surveillance and communication and reporting channels—that could prove critical in the event of an outbreak of national, regional or global significance;
- poorly functioning, sporadically activated command and control centres with a lack of well-trained, multi-sectoral rapid response teams;
- a lack of routine and functional processes for linked surveillance or joint risk assessments of animal and human disease outbreaks;
- inadequate legislation and policy on emergency measures, including the rapid release of government funds and extraordinary workforce mobilisation; and
- a narrow concentration of funding in vertical disease control programs—e.g. for malaria, HIV/AIDS and TB—to the exclusion of an “all hazards” coordinated approach to infectious disease control.

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