

# One Health Monitoring Tool (OHMT) for the Implementation of Prevention and Control of Zoonoses and Emerging Infectious Diseases (EID) in Four Pilot Areas in Indonesia

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**Abstract**—The One Health (OH) approach is widely accepted as the preferred method to address disease threats at the human-animal-environment interface and to help address emerging and endemic zoonotic diseases. A monitoring and evaluation tool for OH implementation is required to compile and present strong evidence on the effectiveness of the OH approach for disease prevention, early warning, enhanced detection and response to public health threats. This tool would be useful for policymakers and donors to act strategically and target budget and other resources to increase the effectiveness and operational aspects of OH disease prevention and control on the ground. The monitoring and evaluation methods include focus group discussions with key stakeholders, key informant interviews with multi-sectoral field officers, questionnaires, field observation, and data collection on detected and reported disease events. The OH monitoring tool (OHMT) consists of three sets of criteria: 1) communication, coordination, collaboration; 2) multi-sectoral disease response; and 3) sustainability. These criteria are scored at five capacity levels (no capacity; limited capacity;

developed capacity; demonstrated capacity; and sustainable capacity). In January 2016, four districts in Indonesia were selected as One Health pilot areas based on their high-risk for zoonotic diseases. One Health capacity building activities were implemented in the pilot districts involving three technical sectors, namely animal health, public health, and wildlife health, to improve field officers' capacities to prevent, detect and respond to zoonotic disease events. There is limited literature on the methods and monitoring tools available to evaluate implementation of the OH approach at the field level. Therefore, in 2018, the Directorate General of Livestock and Animal Health Services (DGLAHS), Ministry of Agriculture and FAO developed the OHMT to track and evaluate the implementation of OH-focused field activities, understand the challenges experienced by field officers, and propose solutions for the prevention and control of zoonoses and EID.

**Keywords**—*One Health Monitoring Tool Indonesia; Monitoring and Evaluation (M&E)*

## I. INTRODUCTION

Since 2005, Indonesia has become one of the Asian epicentres for human and animal H5N1 avian influenza infections. The re-emergence of the Ebola virus and the Middle East Respiratory Syndrome Coronavirus as well as the detection of Nipah, West Nile and Zika viruses in Indonesia, emphasizes the importance of strengthening Indonesian capacities to prevent, detect and respond to new, emerging, or re-emerging animal health threats and spill-over events.

Given the increasing factors facilitating disease emergence and spread, a One Health approach is needed to manage threats at the human-animal-environment interface. The One Health concept has received growing attention around the world as a way to help address challenges at the human-environment interface, such as emerging and endemic zoonoses diseases (e.g. Ebola, Avian Influenza, and Rabies).

An evidence base for One Health, particularly in terms of its potential to assist public health system in shifting from resource-intensive response to disease events to prevention, early warning, and enhanced detection of public health threats, should be called by policy makers and donors to help move from broad interest to operational aspects of One Health on the ground.

The Food and Agriculture Organization (FAO) is working together with the Indonesian Ministry of Agriculture (MoA), Ministry of Environment and Forestry (MoEF) and Ministry of Health (MoH), as well as with the Coordinating Ministry of Human Development and Cultural Affairs on a pilot research and development program to identify sustainable strategies for strengthening capacities for One Health-focused, effective and sustainable prevention and control of targeted zoonoses and emerging infectious diseases (EIDs). The establishment of an agreement between the four collaborating ministries to support appropriate officers to participate in training and follow-up field activities, and the sharing of surveillance and response data between partners was a crucial foundational activity.

Serial workshops and training have been facilitated by FAO (MoA and MoEF) and WHO (MoH) in order to strengthen the capacities and competencies of field staffs (veterinary service officers, public health/surveillance officers as well as field officers for MoEF) in each sectors particularly on detection and investigation capacity on EIDs to reduce the risk of this disease spread into public with One Health approach. The program also followed by joint training of 3 sectors in order to increase the capacity on main technical skills and soft skill particularly on joint investigation, information sharing and response to prevent and control of emerging infectious diseases and the potential pandemic threats with One Health approach.

The One Health Monitoring Tool was developed to know the progress of the one health implementation in the pilot areas.

## II. MATERIALS AND METHODS

### A. Study design

The performance matrix (criteria and indicator) was designed in 2018 based on the materials that delivered to the field officers during the training and simulation. The performance matrix consists of three sets of criteria: 1) communication, coordination, collaboration; 2) multi-sectoral disease response; and 3) sustainability. These criteria are scored at five capacity levels (no capacity; limited capacity; developed capacity; demonstrated capacity; and sustainable capacity).

TABLE 1. PERFORMANCE MATRIX

Criteria	Communication, Coordination, Collaboration		Multi Sectoral Disease Response				Sustainability	
	Complete, timely and routine information sharing	Engagement with local stakeholders	Timely & Joint response (for relevant disease)	Joint risk assessment	Joint Investigation	Role of each Actor & engagement with stakeholders	Training	Field implementation
Level 1: No Capacity								
Level 2: Limited Capacity								
Level 3: Developed Capacity								
Level 4: Demonstrated Capacity								
Level 5: Sustainable Capacity								

The 1<sup>st</sup> criteria (communication, coordination, collaboration) consist of 2: complete, timely, routinesharing information and engagement with local stakeholders.

TABLE 2. CRITERIA: COMMUNICATION, COORDINATION AND COLLABORATION

Criteria	Communication, Coordination, Collaboration	
	Complete, timely and routine information sharing	Engagement with local stakeholders
Level 1: No Capacity	no information sharing (regular & outbreaks)	no engagement with Village, District and Provincial stakeholders
Level 2: Limited Capacity	partial information shared, irregular information sharing, only during outbreaks	Minimum engagements with 1 local stakeholders
Level 3: Developed Capacity	partial information shared, limited information sharing (on a regular basis)	Minimum engagements with 2 local stakeholders
Level 4: Demonstrated Capacity	complete information shared, regular information sharing (once/more every 2-more months)	regular engagements with 2-3 local stakeholders, involve in local planning
Level 5: Sustainable Capacity	Complete, timely and routine information sharing (bi-weekly/monthly)	regular update and meeting with Village, District and Provincial stakeholders, actively contributing to local planning

The 2<sup>nd</sup> criteria (multi sectoral disease response) consist of 4:

- Timely and joint response (for relevant disease)
- Joint/rapid risk assessment
- Joint investigation
- Role of each actor and engagement with stakeholders

TABLE 3. CRITERIA: MULTI SECTORAL DISEASE RESPONSE

Criteria	Cross Sectoral Disease Response			
	Timely & Joint response (for relevant diseases)	Joint risk assessment	Joint Investigation	Degree of engagement with stakeholders & Role of each Actor defined
<b>Level 1: No Capacity</b>	no response	no RRA	no investigation	no engagement with local stakeholders
<b>Level 2: Limited Capacity</b>	> 24 hours, sectoral responses, no coordination	sectoral RRA	sectoral investigation	unclear coordination with local stakeholders, no role division
<b>Level 3: Developed Capacity</b>	>24 hours, unclear joint response	joint risk assessment: poor quality	joint Investigation: with limited/unclear roles, joint timeline	irregular engagement with local stakeholder, clear role of actors
<b>Level 4: Demonstrated Capacity</b>	<24 hours, limited joint responses	joint risk assessment: complete & comprehensive, limited sharing with decision makers	joint Investigation: with tasks division, SOAP, joint timeline; limited sharing with dec makers	active engagement with local stakeholders but no active involvements in response actions
<b>Level 5: Sustainable Capacity</b>	Timely & Joint response	joint risk assessment: complete & comprehensive, shared with decision makers	joint Investigation: complete steps, comprehensive; shared with decision makers	active engagement where local stakeholders also actively involved in response actions

The 3<sup>rd</sup> criteria (sustainability) consist of 2: training and field implementation.

TABLE 4. CRITERIA: SUSTAINABILITY

Criteria	Sustainability	
	Training	Field implementation
<b>Level 1: No Capacity</b>	no alignment with GOI training structure and mechanism	no support (financial & approvals) by the local government
<b>Level 2: Limited Capacity</b>	training curriculum/modules/SOPs are developed; but not yet aligned with GOI training structure & mechanism	irregular support from local stakeholders
<b>Level 3: Developed Capacity</b>	training curriculum/modules/SOPs are aligned with GOI training structure & mechanism	limited support from local stakeholders
<b>Level 4: Demonstrated Capacity</b>	training curriculum is well embedded in the GOI training system	active support from local stakeholders with unclear budget allocation
<b>Level 5: Sustainable Capacity</b>	training curriculum is well embedded in the GOI training system with replication plan to new areas	active support from local stakeholders, availability of local budget to cover field implementation

#### B. Data collection

The data collection was conducted in the field of 4 One Health pilot areas: Boyolali district, Central Java Province; Bengkalis district, Riau Province; Ketapang district, West Kalimantan Province; Minahasa district, North Sulawesi Province use several methods as a tool. The methods were:

- Collecting secondary data through logbook, data in district services and result of the pre and post test during the training.
- Focus group discussion, among the field officers from 3 sectors (animal health; human health; wildlife health), and master trainers.
- Key informant interview, among structural officials in district and province.
- Questionnaire, list of question in questionnaire was identifying base on performance matrix developed.
- Field observation.

### III. RESULT

The result from the data collection in 4 pilot areas fit in to the performance matrix below. The 4 pilot areas had demonstrated communication, coordination and collaboration skills and had involved local stakeholders.

TABLE 4. COMMUNICATION, COORDINATION AND COLLABORATION SKILLS IN PILOT AREAS

Criteria	Boyolali district	Bengkalis district	Ketapang district	Minahasa district
Complete, timely and routine information sharing	Level 3: developed capacity	Level 3: developed capacity	Level 3: developed capacity	Level 3: developed capacity
Engagement with local stakeholders	Level 4: demonstrated capacity	Level 4: demonstrated capacity	Level 3: developed capacity	Level 4: demonstrated capacity

TABLE 5. MULTI SECTORAL DISEASE RESPONSE IN PILOT AREAS

Criteria	Boyolali district	Bengkalis district	Ketapang district	Minahasa district
Timely & Joint response (for relevant disease)	Level 4: demonstrated capacity	Level 3: developed capacity	Level 3: developed capacity	Level 4: demonstrated capacity
Joint risk assessment	Level 1: no capacity	Level 1: no capacity	Level 1: no capacity	Level 1: no capacity
Joint investigation	Level 4: demonstrated capacity	Level 2: limited capacity	Level 3: developed capacity	Level 4: demonstrated capacity
Role of each Actor & engagement with stakeholders	Level 3: developed capacity	Level 3: developed capacity	Level 3: developed capacity	Level 3: developed capacity

- More than 80 % field officers in 4 pilot areas have understood and implemented integrated response.
- More than 25 % of zoonoses cases have been responded using one health approach.
- Joint risk assessment not yet implemented.

TABLE 6. SUSTAINABILITY IN PILOT AREAS

Criteria	Boyolali district	Bengkalis district	Ketapang district	Minahasa district
Training	Level 3: developed capacity	Level 3: developed capacity	Level 3: developed capacity	Level 3: developed capacity
Field Implementation	Level 4: demonstrated capacity	Level 3: developed capacity	Level 3: developed capacity	Level 4: demonstrated capacity

- One health implementation in the field has been seen in all pilots
- Sustainability efforts at the local level must still be pursued,

### IV. DISCUSSION

A series of One Health (OH) activities have been carried out since January 2016 for field officers in pilot areas involving 3 sectors (animal health, public health and wildlife health): advocacy & commitment meetings, module harmonization, Master Trainers training, sectoral basic training and One Health joint training and simulation (cross sector). Therefore, need to Conduct monitoring and evaluation of the implementation of One Health activities in the prevention and control of zoonotic diseases and EIDs in order to know the problems and needs, and find solutions in the implementation of the program.

For the wildlife sector, One Health's was new thing and it's was enriches how they seen their jobs in others perspectives. One of the most significant is how the field officers on the wildlife sector on biosafety how they treat the sample and wildlife. In addition the wildlife health sector feels the importance of coordination and communication with other sectors related to wildlife health and zoonoses.

The most significant changes were the increased reports of animal bites case, suspected rabies and intensive cross sectoral coordination. On technical capacities the most significance changes is the knowledge related to zoonoses and EIDs and the skills to prevent and control rabies, HPAI, and anthrax. For local decision makers (head of animal health offices, head of health offices), the most perceived change is the presence of more intensive coordination and communication that impact on earlier disease detection and faster response.

## V. CONCLUSION

In general, capacity building programs (one health training and simulation) that has been conducted was supporting the field officers activities particularly on the prevention and control of zoonoses (particularly rabies and diseases investigation). However the One Health program is not directly related to the BKSDA (Conservation Agency) or the National Park (wildlife health sector) activities.

## VI. RECOMMENDATION

In the future, this One Health monitoring tool was need to improved and standardized and can be used for all areas that implemented One Health. Continuing monitoring and evaluation was absolutely necessary to assess the zoonoses and EIDs prevention and control program.

## ACKNOWLEDGEMENTS

I would like to express profound gratitude to the donors and acknowledge the support of the Government of Indonesia: Directorate of Animal Health, Ministry of Agriculture;

Central Java province and Boyolali district Services; Riau province and Bengkalis district Services; West Kalimantan and Ketapang district Services; North Sulawesi province and Minahasa district Services; Ministry of Health; Directorate Conservation and Biodiversity, Ministry of Environment and Forestry.

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