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KEMENTERIAN SUMBER-SUMBER UTAMA DAN PELANCONGAN
NEGARA BRUNEI DARUSSALAM

National Bridging Workshop Capitalizing on IHR and PVS – Brunei Darussalam

22-24 April 2025



Bandar Seri Begawan, Brunei Darussalam

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ABBREVIATIONS & ACRONYMS

AGC	Attorney General's Chambers
BCCO	Brunei Darussalam Climate Change Office
BDFA	Brunei Darussalam Food Authority
Brunei CDC	Brunei Centre for Disease Control and Prevention
DEHS	Department of Environmental Health Services
DLS	Department of Laboratory Services
DOAA	Department of Agriculture and Agrifood
DOF	Forestry Department
DOFI	Department of Fisheries
EHD	Environmental Health Division
FAO	Food and Agriculture Organization of the United Nations
IHR	International Health Regulations
IHR MEF	International Health Regulations Monitoring and Evaluation Framework
JASTRe	Jabatan Alam Sekitar, Taman dan Rekreasi (Department of Environment, Parks and Recreation)
JEE	Joint External Evaluation
MinDEF	Ministry of Defence
MOD	Ministry of Development
MOD (TCP)	Ministry of Development (Town and Country Planning)
MOFE	Ministry of Finance and Economy
MOH	Ministry of Health
MOHA	Ministry of Home Affairs
MPRT	Ministry of Primary Resource and Tourism

MFA	Ministry of Foreign Affairs
NBW	National Bridging Workshop
NDMC	National Disaster Management Centre
OH	One Health
OH JPA	One Health Joint Plan of Action
PMO	Prime Minister's Office
PVS	Performance of Veterinary Services
<u>PWD</u>	Public Works Department
QPT	Quadripartite
SOP	Standard Operating Procedures
SPAR	State Party Self-Evaluation and Annual Reporting
TAWG	Technical Area Working Group
TOR	Terms of Reference
TOT	Training of Trainers
TWG	Technical Working Group
UBD	Universiti Brunei Darussalam
UNEP	United Nations Environment Programme
WF	Work Force
WFD-OT	Workforce Development Operational Tool
WHO	World Health Organization
WOAH	World Organisation for Animal Health

INTRODUCTION

BACKGROUND

- The World Health Organization (WHO), the World Organisation for Animal Health (WOAH), the Food and Agriculture Organization (FAO) and the United Nations Environment Programme (UNEP) together known as the Quadripartite (QPT), are the main international organizations responsible for proposing references and guidance for the public health, animal health and environment sectors respectively. This Quadripartite has been active promoters and implementers of an intersectoral collaborative approach between institutions and systems to prevent, detect, and control diseases among animals and humans.
- WHO Member States adopted a legally binding instrument, the International Health Regulations (IHR, 2005), for the prevention and control of events that may constitute a public health emergency of international concern (PHEIC). Various assessment and monitoring tools have been developed by WHO such as the IHR Monitoring and Evaluation Framework (MEF), which includes inter alia the State Party Self-Evaluation and Annual Reporting (SPAR) and the Joint External Evaluation (JEE) Tool.
- WOA is the international organization responsible for developing standards, guidelines and recommendations for animal health and zoonoses; these are laid down in the WOA Terrestrial and Aquatic Animal Health Codes and Manuals. WOA has also developed the Performance of Veterinary Services (PVS) Pathway, which is composed of a range of tools to assist countries in the evaluation of the capacities of their veterinary services and in addressing the main gaps.
- FAO is committed to support member countries in strengthening the capacity of their animal health systems to reduce the risk and impact of animal health threats. FAO also promotes a One Health approach as part of agri-food system transformation to anticipate, prevent, detect and control diseases that spread between animals and humans, tackle antimicrobial resistance, ensure food safety, prevent environment-related human and animal health threats, as well as combatting many other challenges impacting food security.
- UNEP is the leading global environmental authority that sets the global environmental agenda and specifically joined the Quadripartite Alliance to strengthen the environmental dimension of One Health. Recognizing the significance of the environment in the One Health framework, UNEP recently joined as fourth partner hosting the National Bridging Workshops in the region.
- The WHO IHR-MEF and the WOA PVS Pathway approaches provide the ability for countries to determine strengths and weaknesses in their respective functions and promote prioritization and pathways for improvement. Furthermore, they engage countries in a routine monitoring of their overall level of performance and help to determine their needs for compliance with internationally adopted standards.
- The joint use of WHO IHR-MEF tools and PVS Pathway can result in better alignment of capacity building approach and strategies between human and animal health services of a country. The National Bridging Workshop (NBW) is a three-day workshop which brings together stakeholders from various sectors including from food safety and environment sectors to work on the linkages between these frameworks and develop joint planning to improve their collaboration.
- At the workshop, participants are briefed about the requirements and activities related to Multilateral Environmental Agreements (MEAs) and their relevance to One Health and the efforts towards addressing health risks. Prior to the NBW, a dedicated briefing session for environment sector stakeholders was held to highlight the concept of One Health and its importance in addressing health risks and triple planetary environmental crises of climate change, biodiversity loss and pollution; and to identify suitable facilitators for the NBW from the environment sector and subsequent One Health activities.
- The workshop follows a methodology developed by WHO and WOA and used in nearly 60

countries. The method used is very dynamic and interactive, based on group exercises with a gamified approach and user-friendly materials which enables the identification of synergies, the review of gaps and the development of a joint roadmap between the relevant sectors.

OBJECTIVES OF THE WORKSHOP AND EXPECTED OUTCOMES

The primary purpose of this workshop is to facilitate multisectoral collaboration and strengthen the use of the One Health approach by identifying commonalities and gaps in the implementation of IHR, PVS and other environment-related frameworks and agreements in Brunei Darussalam. The workshop outcomes will serve as a platform to enhance the country's preparedness and response capacities for multiple-hazards and other public health threats.

This workshop is expected to yield the following outcomes: enhanced collaboration between relevant sectors, a comprehensive gap analysis report, a detailed joint action plan, and planned capacity-building activities. The workshop forms a critical component of the situational analysis phase in the development of Brunei Darussalam's National One Health Strategic Plan. It offers an invaluable opportunity to reinforce Brunei's public health, veterinary and environment systems, ensuring a more robust national response to health threats at the human-animal-environment interface.

The NBWs focus on the following strategic objectives:

- To provide an opportunity for national human health, animal health and environmental health services to meet and discuss specifically on their collaboration.
- To increase awareness and understanding on capacity assessment tools used by the different sectors (ex: SPAR/JEE, PVS, environment conventions), how they can be connected and used to explore joint strategic and operational planning.
- To evaluate the current collaboration between the three sectors in 16 key technical areas.
- To plan for strategic and operational activities to strengthen One Health collaboration.

The agenda of the workshop is available at [Annex 1](#).



The NBW road poster illustrates the process, with actors from relevant sectors coming together to embark on 7 sessions that lead to the development of a joint NBW Roadmap

REPORT ON THE SESSIONS

From 22 to 24 April 2025, the NBW of Brunei was held in Bandar Seri Begawan. The workshop was hosted at the kind invitation of the Government of Brunei Darussalam, with organizational and technical support from UNEP, FAO, WHO and WOA. H.

The workshop was attended by 49 official participants from the following sectors: Ministry of Health, Ministry of Primary Resources and Tourism, Ministry of Development, Ministry of Home Affairs, Brunei Darussalam Food Authority, Universiti Brunei Darussalam, Ministry of Education, Ministry of Religious Affairs, Brunei Climate Change Office, Attorney General's Chambers, and Ministry of Defence.

The workshop used an interactive methodology and a structured approach with user-friendly materials, including case studies, videos, and other facilitation tools. All the participants received a *Participant Handbook* which contained all necessary information such as the objectives of the workshop, instructions for working group exercises, and expected outcomes of each session. Sessions were structured in a step-by-step process as detailed in the following pages of this report.

OPENING SESSION

Welcoming of the participants and opening remarks were provided by: Yang Mulia Dr Hj Rafidah binti Hj Gharif, Acting Permanent Secretary, Ministry of Health; Yang Mulia Dyg Noralinda binti Hj Ibrahim, Deputy Permanent Secretary II, Ministry of Primary Resources and Tourism (MPRT) and Dr Narinderjeet Kaur, Team Lead, WHO Health Emergencies Programme (WHE) for Country Office Malaysia, Brunei Darussalam and Singapore, on behalf of the Asia-Pacific Quadripartite.

In her welcoming remarks, Yang Mulia Dr Hajah Rafidah binti Gharif, the Acting Permanent Secretary of the Ministry of Health, emphasized Brunei Darussalam's strong commitment to operationalizing the One Health approach. She highlighted the country's alignment with global frameworks such as the Quadripartite One Health Joint Plan of Action and the ASEAN Leaders' Declaration on One Health Initiatives. Acknowledging the growing complexity of health threats, she stressed the urgent need to dismantle sectoral silos and foster integrated systems for collaboration, information sharing, and joint response to health security challenges.

She called upon all participants to move beyond dialogue and prioritize actionable outcomes, including the development of a clear multisectoral collaboration mechanism with defined roles, resource mobilization strategies, and measurable milestones. The Acting Permanent Secretary expressed gratitude to Global Affairs Canada for their support through the ASEAN MBT Program and recognized the efforts of the national One Health project team in organizing the workshop. She concluded with a call for collective determination to enhance health security and build a safer future for all.

Yang Mulia Dayang Noralinda binti Haji Ibrahim, the Deputy Permanent Secretary of the Ministry of Primary Resources and Tourism in her remarks acknowledged the remarks of the Deputy Permanent Secretary of the Ministry of Health. She also highlighted the importance of adopting a multisectoral approach to address emerging health challenges through the new One Health Platform. She highlighted the workshop as a critical opportunity for strengthening collaboration across sectors and communities to collectively safeguard human, animal, and environmental health while contributing to sustainable development. She expressed hope that the knowledge and tools shared during the workshop would help Brunei Darussalam advance its commitment to operationalizing and implementing the One Health approach. She also encouraged participants to actively engage in discussions, develop a practical and actionable One Health Roadmap, build strong networks, and

recognize their roles in operationalizing One Health. The Deputy Permanent Secretary also extended appreciation to the international facilitators for their support and welcomed them warmly to Brunei. Concluding her speech on a festive note, she wished everyone Selamat Hari Raya and encouraged guests to enjoy the local hospitality and culture.

Dr Narinderjeet Kaur Dadar Singh, Health Emergency Officer, WHO Country Office for Malaysia, Brunei Darussalam and Singapore, representing the Asia Pacific Quadripartite organizations highlighted that the four organizations together were committed to advancing a coordinated and collaborative approach to One Health, ensuring the safety and well-being of people, animals, plants and the environment; that this NBW would have an ambitious (but achievable) goal to strengthen collaboration between relevant sectors in Brunei Darussalam; and that the workshop would offer a unique opportunity for Brunei Darussalam to align efforts, address shared challenges, identify priorities and build a NBW Roadmap to better prevent, detect, prepare and respond to health threats all together.

SESSION 1: THE ONE HEALTH CONCEPT AND NATIONAL PERSPECTIVES

The workshop approach and methodology were presented by WOA. It was emphasized that the workshop was neither an evaluation nor a training, but was aimed at developing a national roadmap to improve the collaboration and coordination between the key OH sectors, mainly human health, animal health (including aquatic and wildlife), food safety and environment sectors.

A video with an integrated quiz on “One Health and Quadripartite vision” was then shown followed by a presentation from the Asia Pacific QPT Secretariat (UNEP) on the work of the Asia Pacific Regional Quadripartite. The aim was to explain the mission and the work of the QPT to the participants, especially the technical support available across the six action tracks of One Health Joint Plan of Action (OH JPA) to the countries.

The three sectors (human, animal and environment) then presented their structure, priorities and challenges, as well as ongoing One Health activities and collaborative actions as follows:

The human health sector outlined the country’s vision, mission, and commitment to enhancing public health through an inclusive, equitable, and high-quality healthcare system. Key leadership figures were introduced, highlighting the institutional structure driving the human health initiatives in Brunei Darussalam. The presentation underscored Brunei’s active engagement in multisectoral collaboration at the human-animal-environment interface. Key initiatives include the Brunei Darussalam Anti-Microbial Resistance Committee (BDAMRC), National IHR Committee (NIHRC), National Action Plan for Health Security (NAPHS), Adaptation and Resilience Working Group (ARWG), Stakeholder Awareness and Stewardship Taskforce, National COVID-19 Steering Committee, and Zoonotic Joint Task Force. The key lessons shared focused on effective intersectoral collaboration facilitated through shared platforms, expertise exchange, and sharing of experiences, streamlined reporting, and data sharing mechanisms. The main recommendation included the critical need to integrate human, animal, and environmental health under the One Health approach, strengthening surveillance and response systems across all sectors, building resilience in both human populations and ecosystems, and embracing a "Health in All Policies" approach to achieve "Health for All."

The animal health sector presentation described first where the Livestock Industry and Veterinary Services (LIVS) Division stood within the Department of Agriculture and Agrifood (DOAA) of the Ministry of Primary Resources and Tourism (MPRT). The main goal of the Division is to implement agricultural standards. Organigram, roles and function of the Division were described along with the competent veterinary authority program of DOAA (livestock development, animal husbandry, animal health and diseases control, veterinary public health, veterinary laboratory services and regulatory, compliance and enforcement). The roles of the LIVS on the national OH approach was also described

such as the role of the animal health sector in the IHR through their participation in the National Task Force for Zoonotic Diseases and the Brunei Darussalam Antimicrobial Resistance Committee. The LIVS are also working on OH through ASEAN, especially with the ASEAN Sector Working Group for Livestock (ASWGL), WOAHA and the Quadripartite.

A representative of the Forestry Department of the Ministry of Primary Resources and Tourism (MPRT) presented an overview of existing legal frameworks and instruments related to the management, protection and conservation of forests in Brunei, such as the Forest Act, National Forestry Policy, as well as various sustainable forest management-related initiatives. Reference was also made to other relevant legislations and policies such as the Wildlife Protection Act, as well as the National Biodiversity Policy and Strategic Plan of Action 2024-2030 developed in alignment with the Kunming-Montreal Global Biodiversity Framework. The National Biodiversity Policy and Strategic Plan of Action 2024-2030 has 4 Goals and 18 Targets, covering thematic areas related to sustainable management, conservation and protection of biodiversity, sustainable utilization of biodiversity, capacity, awareness and inclusiveness, as well as fair and equitable sharing of benefits. It is developed and guided by principles of Maqasid Al-Shari'ah, Wawasan Brunei 2035 as well as commitments in response to the Paris Agreement and Sustainable Development Goals, and provides a strong foundation for the efforts towards strengthening environmental dimensions of One Health.

Outcomes of Session 1:

At the end of the session, the audience agreed that:

- Multisectoral collaboration among the animal health, human health, and environment sectors does occur, but it is primarily activated during outbreaks. With improved coordination mechanisms and preparedness, more can be achieved at the human-animal-environment interface.
- These three sectors share common concerns and challenges and often carry out similar activities. Existing competencies can be pooled and leveraged more effectively through a structured collaborative approach.
- FAO, UNEP, WHO and WOAHA actively promote the One Health approach and can provide technical assistance to countries to enhance multisectoral collaboration at the central, local, and technical levels.

SESSION 2: IDENTIFICATION OF COLLABORATION GAPS

Participants were divided into five working groups of mixed participants from each sector. Groups were provided with a case study scenario (Annex 2) based on diseases relevant to the local context developed in collaboration with national representatives.

Using the experiences from previous events and current capacities in place, the groups discussed how they would have realistically managed these situations and evaluated the level of collaboration between the relevant sectors for 16 key technical areas (Listed on Figure 1a). These activities/areas of collaboration were represented by color-coded *technical area cards*: green for “good collaboration”, yellow for “some collaboration”, and red for “collaboration needing improvement” [Figure 1(a) and 1(b)].

Figure 1(a): List of 16 technical areas used for evaluating the level of collaboration between the sectors for a case scenario with provisions to tick a specific color code and outline key justifications.

Coordination at central level				
Coordination at local level				
Coordination at technical level				
Legislation and regulations				
Finance				
Prevention				
Communication with media				
Communication with stakeholders				
Field investigation				
Risk assessment				
Joint Surveillance				
Laboratory				
Response				
Education and training				
Emergency funding				
Human resources				
Prevention				



Figure 1(b): Participants working in groups to discuss the evaluation of the level of collaboration between the sectors for 16 key technical areas with feedback to plenaries.

Following the working group discussions, each group presented and justified the results of their work on a plenary session - Output 1 summarizes the results from each group.

Outcomes of Session 2:

- Areas of collaboration were identified, and joint activities discussed.
- Level of collaboration among the three sectors for 16 key technical areas was assessed (Output 1).
- The main gaps in the collaboration were identified.

SESSION 3: BRIDGING ALONG THE ASSESSMENT TOOLS

Documentary videos with quizzes introduced the international legal frameworks followed by human health (IHR 2005), animal health (WOAH standards) as well as the tools available to assess the country's capacities: the annual reporting and JEE tools for public health services and PVS Pathway for veterinary services. A video presentation from UNEP highlighted the importance of engaging the environment sector into One Health and what UNEP was doing on One Health in that way. The differences and connections between these tools were explained. Further discussions on complimentary tools and initiatives comprised the below:

A large matrix (IHR-PVS matrix), cross-connecting the indicators of the IHR MEF (in rows) and the indicators of the PVS Evaluation (in columns) was set-up and introduced to the participants [Figure 2 (a) and Figure 2(b)].

Through an interactive approach, working groups were invited to plot their selected *technical area*

cards onto the matrix by matching them to their corresponding indicators. A plenary analysis of the outcome showed clear gap clusters and illustrated that most gaps were not disease-specific but systemic.



Figure 2 (a): Workshop participants being introduced to the IHR–PVS matrix



Figure 2 (b): Mapping of the gaps by positioning the selected cards from all five cases scenarios on the IHR-PVS matrix provides a snapshot of the status of collaboration across technical areas in Brunei

The main gaps (clusters) identified were discussed, this time on a systemic level (all case scenarios combined). Overall, we could see that coordination at technical level, communication, risk assessment and emergency funding scored the best, legislation/regulation, coordination at national and local (community) level, finance, prevention, joint surveillance and response had average score, the main gaps were seen in field investigation, education/training, human resources and the lower score went to laboratory.

Four new working groups were made for the second half of the workshop, this time by technical areas (TAWGs) to cover all aspects of collaboration where improvement is needed at the systemic level:

- TAWG 1: Coordination (high/local/technical), Legislation and Finance
- TAWG 2: Surveillance, Laboratory and Risk Assessment
- TAWG 3: Field investigation and Emergency Response
- TAWG 4: Prevention and Risk communication (media and stakeholders)

Additionally, each TAWG was asked to integrate cross-cutting thematic areas such as ‘Human resources’ and ‘Education and Training’

Outcomes of Session 3:

- Understanding that tools are available to explore operational capacities in each of the sectors was improved.
- Understanding of the contribution of the veterinary sector to the IHR was improved.
- Awareness of the connections between the IHR MEF and the PVS Pathway was strengthened.
- Jointly reviewing the results of capacity assessments may help identify synergies and optimize collaboration.
- Understanding of the environment sector’s synergies with IHR MEF and PVS Pathways was strengthened.
- Understanding that most gaps identified are not scenario-specific but systemic was ascertained.

SESSION 4: EXTRACTION OF ASSESSMENT RESULTS

New TAWGs with representation from all previous groups were organized as per the distribution detailed above.

The matrix was used to link the identified gaps to their relevant indicators in the IHR MEF and in the PVS Pathway. Guiding questions included in the form of the One Health National Bridging Workshop (NBW) Roadmap Environmental Integration Assessment Tool, together with the Global Action Plan on Biodiversity and Health under the Convention on Biological Diversity were presented to facilitate environment sector representatives’ engagement in the discussions. Each working group then opened the assessment reports (JEE, PVS Evaluation) and extracted the main findings and recommendations relevant to their technical area [(Figure 3(a) and Figure 3(b)].



Figure 3 (a): Participants working in groups to consider the gaps and recommendations made in the JEE and in the PVS reports, within their respective technical areas.



Figure 3(b): Gaps and recommendations identified by TAWG 1.

Outcomes of Session 4:

- Participants gained a clear understanding of the assessment reports for both sectors, their purpose and their structure, and explored links between both assessment reports and environmental protection efforts in Brunei.
- The main gaps relevant to each technical area and related to coordination and collaboration between sectors were extracted.
- Similarly, main recommendations from the existing reports were extracted.

SESSION 5: JOINT ROAD PLANNING

Using the same four TAWGs as the previous session, participants were asked to identify, for each technical area, priority activities that the sectors should implement to improve their collaboration in the future. This brainstorming used several items as information sources:

- The report sheets from Session 2, which highlight the key gaps for all technical areas and for the different diseases / case scenarios used.
- The key gaps and recommendations extracted from the JEE, PVS reports during Session 4.
- The technical activity cards, which give several examples of possible joint activities.
- Most importantly, the experiences of all the participants working on a daily basis in the human health, veterinary and environmental health sectors in Brunei Darussalam.



Figure 4: The group working on Coordination, Legislation and Finance were using the results of the previous sessions to identify joint activities to improve the collaboration between the sectors in this domain.

Outcomes of Session 5:

- Clear and achievable activities were identified to improve multisectoral collaboration between the sectors for all technical areas selected.

SESSION 6: FINALIZATION OF THE JOINT ROADMAP

After brainstorming, priority activities were discussed and validated with international and national facilitators. Participants were then asked to fill in the *Activity Cards* for each activity, detailing the desired date of implementation, the responsible lead focal points, as well as the detailed process of implementation of an activity, the importance of identifying an activity that is as operational as possible, with very clear and precise actionable steps.

The difficulty of implementation and the expected impact of each activity were evaluated using red and blue stickers respectively using a semi-quantitative scale (1 for less difficult to implement or less impact to 3 for most difficult to implement or high impact) (Figure 5).

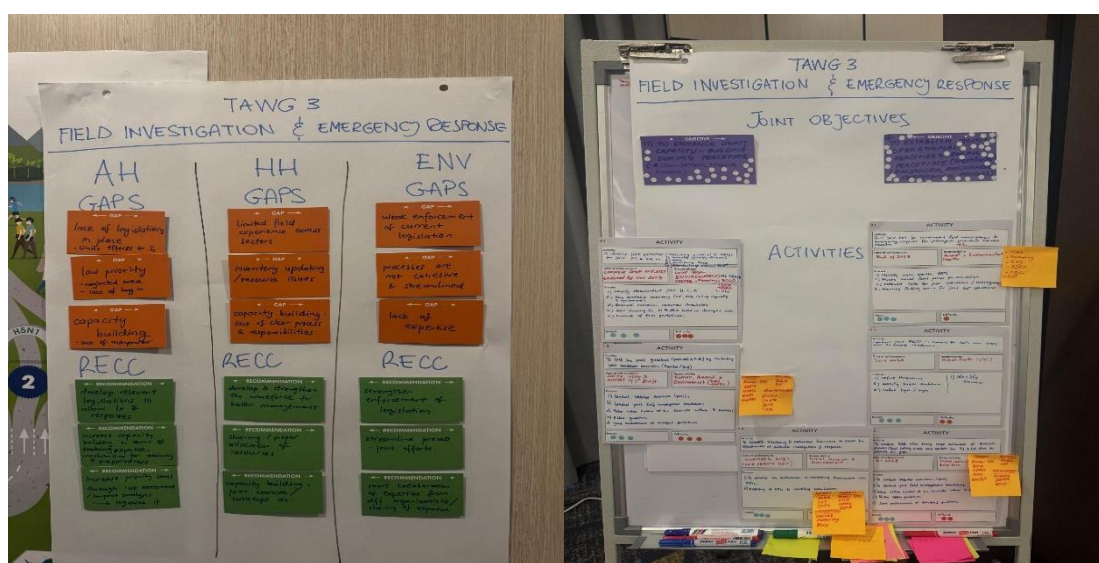


Figure 5: Example of how the gaps identified in JEE and PVS were used to develop action plan and gauge its impact and difficulty of implementation.

Activity cards that were linked (by theme, or by process) were then regrouped under one *Objective card*, to start structuring the roadmap. A World Café exercise was then organized to enable participants to contribute to the action points of all technical areas [Figure 6(a)]. Each group had a rapporteur whose duty was to summarize the results of their work to the other groups. Each group rotated between the different boards to contribute and provide feedback on all technical areas. Rotating groups used post-it notes to leave their comments on the objectives and activities of other groups when they felt that an amendment or a clarification was necessary [Figure 6(b)].

At the end of the World Café, each group returned to their original board and the rapporteur summarized the feedback received. Groups were given enough time to address changes or additions suggested by the other participants. Objectives and activities were fine-tuned accordingly. Overall, the four groups identified a total of 10 key objectives and 20 activities. The detailed results are presented in [Output 2](#).



Figure 6 (a): Participants filled the objective and activity cards to be inserted in the NBW roadmap.

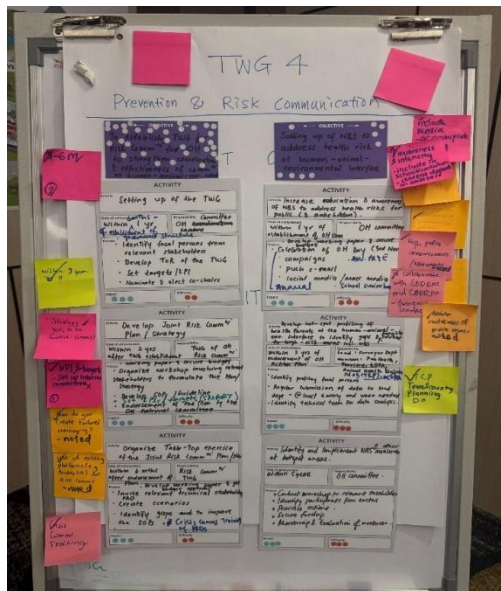


Figure 6 (b): Objectives and activity cards completed by participants

Prioritization of Objectives

To prioritize the objectives identified by the technical working groups, participants were given five small white stickers each, to identify which five objectives (and their constituting activities) they considered as of highest priority.

A total of 254 votes were cast, with objective ‘Establish data sharing system (surveillance and lab) across multisectors’ ranked highest with 39 votes (15.4%), followed by ‘Enhance the OH coordination system’ and ‘Alignment of relevant financing mechanism’ with 35 votes each (13.8%), and ‘Establish the joint operational readiness during peacetime’ with 34 votes (13.4%). ‘To establish the TWG for risk communication for OH to strengthen coordination and effectiveness of communication at the interface’ is also considered a priority with 33 votes (13.05%), and other priority objectives are provided in Figure 7.

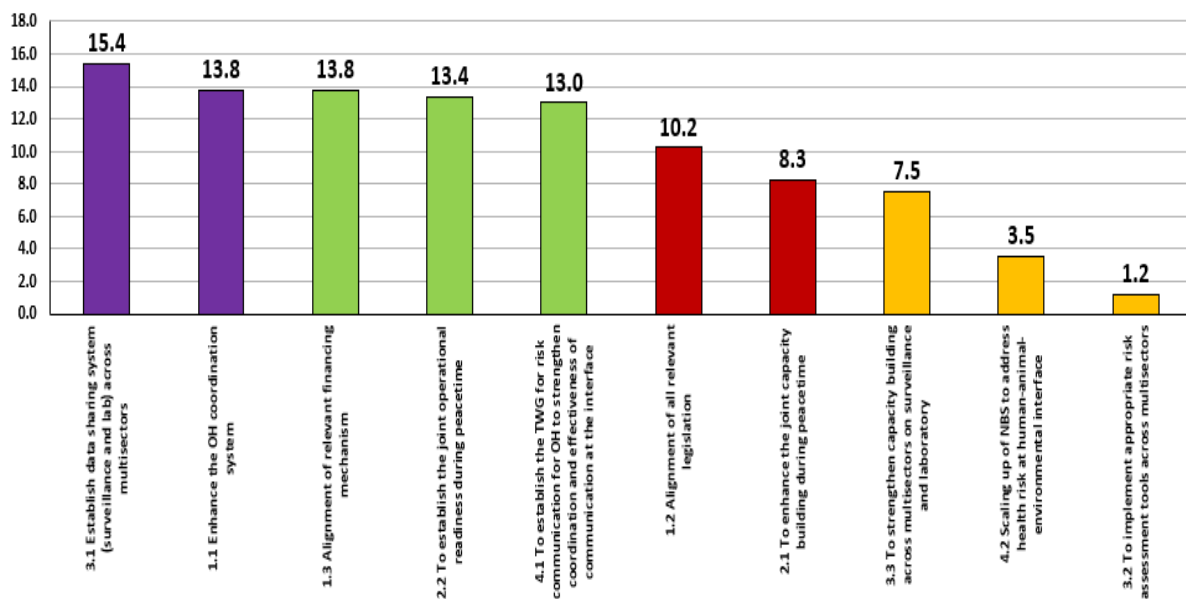


Figure 7: Prioritization of the Brunei IHR/PVS Roadmap objectives (%) - Total number of 254 votes

Outcomes of Session 6:

- Harmonized, concrete and achievable roadmap with buy-in and ownership of all the participants who felt they contributed to all areas of the roadmap was confirmed.
- Prioritization of the activities was conducted.

SESSION 7: WAY FORWARD

Session 7 focused on the way forward aiming to collaboratively develop the One Health Multisectoral Coordination Mechanism that will guide the implementation and monitoring of the NBW Roadmap and the implementation of One Health in the country. The session was organized and facilitated by the MOH One Health Project team.

The session opened with a presentation to highlight the results of the stakeholder engagement study conducted in February and March 2025, which consisted of 13 consultation meetings attended by 50

participants from different sectors and relevant departments. The stakeholder engagement allowed to assess the understanding of One Health across sectors, and gain insights on current experience in Multisectoral Collaboration, as well as existing efforts on One Health implementation. Participants were then divided into groups to discuss advantages and disadvantages of four proposed governance models and suggest potential modifications. The four governance models were drafted based on already existing multisectoral mechanisms and building on the outcomes of the stakeholder engagement.

The proposed governance models were:

- Model A – Autonomous body within the PMO, supported by Technical Working Groups (building on the current structure of the BCCO)
- Model B – Co-chairmanship structure, with Technical Working Groups (building on the current structure of the BDAMRC)
- Model C – Single leadership structure, with Thematic Working Groups (building on the current structure of the NIHRC)
- Model D – Rotating leadership structure, with Thematic Working Groups (building on the current structure of the ASEAN Summit)

Participants generally agreed that an autonomous body (Model A) would be the ideal governance model, offering dedicated allocation of financial and human resources, strengthening the country's commitment on One Health, and facilitating its integration in national development plans. However, they also acknowledged that establishing such a structure would require substantial time, resources and political commitment, potentially delaying implementation.

Model C was universally ruled out, as participants emphasized that leadership should be a joint effort of multiple ministries and sectors. Model D, which proposed rotating leadership, was also criticized due to concerns about workplan interruptions or delays during rotations, and unclear responsibility and accountability in transition periods.

The co-chairmanship structure (Model B) emerged as the most viable solution for advancing One Health while ensuring its institutionalisation across all relevant ministries. However, the plenary discussion underlined the need to revise the multisectoral coordination mechanism proposed by this model with the following considerations:

- Higher-level reporting system to enable engagement beyond the Permanent Secretaries currently identified as members of the Steering Committee.
- Co-chairmanship at the working group level to increase accountability.
- Technical Working Groups (i.e., Coordination Legislation and Finance; Surveillance, Laboratory and Risk Assessment; Field Investigation and Emergency Response; Prevention and Risk Communication; Education and Training) instead of Thematic Working Groups (i.e., Emerging Endemic and Neglected Zoonotic Diseases; Antimicrobial Resistance; Food Safety, Environment Integration), as the latter may be too prescriptive and could potentially lead to gaps in collaboration.
- Identification of priority areas of collaboration, building on existing multisectoral committees and action plans (i.e., BDAMRC and ZJTF) while aligning with global priorities such as AMR, food safety, climate change, emerging infectious diseases, and biodiversity conservation.

The consensus achieved was that while Model A represents the long-term aspiration and institutional goal, Model B is recognised as the immediate and practical approach for implementation in the short-to medium-term. Model B provides a realistic entry point that enables immediate and tangible progress, ensuring momentum is maintained as Brunei Darussalam works towards establishing a more permanent structure under Model A.

It was discussed and agreed that a small group of focal points will be invited to provide inputs on the next steps to continue the discussion and finalise the One Health Multisectoral Coordination Mechanism for Brunei Darussalam. Focal points will be selected from each ministry to ensure a balance representation of sectors. All participants were asked to act as catalysts, advocating for One Health supporting the implementation of NBW Roadmap in their respective departments and ministries.

Outcomes of Session 7:

- Possible governance models for the national Multisectoral Coordination Mechanism were analysed and discussed, identifying advantages and disadvantages for each of them
- Way forward for the implementation of the roadmap was presented and discussed.
- Ownership of the workshop results by the country was confirmed.

All the material used during the workshop, including movies, presentations, documents of references, results from the working groups, photos, videos were uploaded on a shared drive with a link shared to all participants accessible at: [One Drive Link](#) & [Google Drive Link](#)

WORKSHOP OUTPUTS

OUTPUT 1: ASSESSMENT OF LEVELS OF COLLABORATION FOR 16 KEY TECHNICAL AREAS

Technical area	Avian Influenza	Ecosystem collapse	AMR	Haze/Fire	Salmonellosis	Score
Coordination at high Level	1	0	1	2	1	5
Coordination at local Level	0	1	1	2	1	5
Coordination at technical Level	1	1	1	1	2	6
Legislation / Regulation	1	2	1	0	1	5
Finance	1	1	1	2	0	5
Communication w/ media	1	1	1	2	1	6
Communication w/ stakeholders	1	1	1	2	1	6
Field investigation	1	1	0	1	1	4
Risk assessment	0	1	2	2	1	6
Joint surveillance	1	1	1	1	1	5
Laboratory	1	1	0	0	1	3
Response	1	1	0	2	1	5
Education and training	0	1	1	2	0	4
Emergency funding	0	1	1	2	2	6
Human resources	0	0	2	1	1	4
Prevention	0	1	1	1	2	5

For each scenario, the performance of the collaboration between the human health and the animal health sectors is color-coded: green for “good collaboration”, yellow for “some collaboration”, and red for “collaboration needing improvement”. The score uses a semi-quantitative scale (2 points for a green card, 1 for a yellow card and 0 for a red card).

OUTPUT 2: NBW ROADMAP - OBJECTIVES AND ACTIONS IDENTIFIED PER TECHNICAL AREAS

Difficulty of implementation: Low +, Moderate ++, Very difficult +++

Impact: Low impact +, Moderate impact ++, High impact +++

Action	Timeline	Difficulty (1-3 scale)	Impact (1-3 scale)	Responsibility	Process
TECHNICAL AREA 1: COORDINATION, LEGISLATION AND FINANCE					
Objective 1: Enhance the One Health Coordination System					
1.1 Establish a One Health governance structure	Q1 2026	+++	+++	Co-Lead: MOD, MPRT, MOH, JASTRE, DOAA, DEHS, DLS, PMO, MOFE, BDFA, MFA	<ol style="list-style-type: none"> 1) Identify and nominate interim group/taskforce 2) Establish a working paper to include the organizational structure, governance and TORs 3) Submit document for approval by senior management of respective agencies 4) Issue executive order of establishment of the OH governance structure and issue the appointment letter to operationalize the mechanism 5) Identify and involve NGOs and Academia
1.2 Finalize One Health stakeholders mapping	Q2 2025	++	+++	Co-Lead: MOD, MPRT, MOH, JASTRE, DOAA, DEHS, DLS, PMO, MOFE, BDFA, MFA	<ol style="list-style-type: none"> 1) Conduct a stakeholder engagement and validation workshop of the current stakeholders mapping draft
1.3 Develop a One Health Action Plan	Q4 2027	+++	+++	Co-Lead: MOD, MPRT, MOH Other ministries/agencies to input as relevant or required	<ol style="list-style-type: none"> 1) Leverage on existing platform, eg ZJTF, BDAMRC to develop a draft 2) Define objectives, strategies, and actions for the surveillance, detection and response to One Health threats in Brunei 3) Consider including, where feasible, priority diseases or events for surveillance, strategies

					<p>for integrated surveillance, platform for data-sharing</p> <p>4) Outline implementation phases, resource allocation and capacity-building activities as part of the Action Plan</p> <p>5) Include R&D component</p> <p>6) Align with sectoral Strategic Plan as well as regional and international commitments, eg. ASEAN OH JPA, WHO Pandemic Agreement</p>
Objective 2: Alignment of relevant legislations to incorporate the One Health approach					
2.1 Establishment of a legislative framework for One Health activities	Q2 2030	+++	+++	AGC, MOD, MPRT, MOH, JASTRE, DOAA, DEHS, DLS, PMO, MOFE, BDFA, MFA	<p>1) Request for support to AGC</p> <p>2) Review, identify, and enhance existing legal documents and legislations pertinent to One Health available in country through a workshop/meeting consultation</p> <p>3) Identify international legal documents related to OH initiatives</p>
Objective 3: Alignment of relevant financing mechanism to support One Health actions					
3.1 Establishment of a financing mechanism process for One Health activities	Q3 2026	+++	+++	Co-lead: MOD, MPRT, MOH, JASTRE, DOAA, DEHS, DLS	<p>1) Identify existing budget allocation for each department from different ministries that are relevant for OH through a workshop/meeting consultation</p> <p>2) Review and assess sufficiency of budget allocation for OH activities</p> <p>3) Explore external donors and partners to support OH activities</p>
TECHNICAL AREA 2: SURVEILLANCE, LABORATORY AND RISK ASSESSMENT					
Objective 4: Establish data-sharing system (surveillance & lab) across multi-sectors					
4.1 Develop a Memorandum of Understanding (MoU) across multi-sectors for routine data sharing of surveillance results of prioritized diseases	Ongoing	+++	+++	MOH, MPRT, BCCO, BDFA, MOD, AGC, PMO	<p>1) Organize multisectoral meetings to define data and information to be shared</p>

					<ul style="list-style-type: none"> 2) Organize a series of meetings with all relevant sectors at national level to draft the MoU 3) Circulate the drafted MoU for feedback and revision 4) Organize a validation workshop for official endorsement
4.2 Develop TORs and SOPs for routine data sharing of surveillance results	01/05/2026 (6 months)	++	+++	MOH, MPRT, MOD, BDFA (technical working group)	<ul style="list-style-type: none"> 1) Review and assess current database within each sector and relevant data as defined in activity 4.1 2) Identify a suitable data sharing platform to be adapted across all sectors 3) Organize a technical meeting with the relevant sectors at national level to develop TORs and SOPs in line with the MoU 4) Validation of the TORs and SOPs by all relevant sectors 5) Designate a focal person in each sector
Objective 5: Implementation of an appropriate risk assessment tools across multi-sectors					
5.1 Explore/adopt risk assessment (RA) tools that can be used across multi-sectors	01/06/2026 (7 months)	+	+++	MOH, MPRT, BDFA, MOD, BCCO	<ul style="list-style-type: none"> 1) Review and assess the suitability of available RA tools for diseases or event prioritization of national importance 2) Conduct risk profiling for disease or event prioritization of national importance 3) Conduct an annual joint multi-agency RA exercise
Objective 6: Strengthen capacity building across multi-sectors					
6.1 Capacity building for surveillance & laboratories	Ongoing	+	+++	MOH, BDFA, MPRT, MOD, Higher Education Institutions	<ul style="list-style-type: none"> 1) Seek external trainers based on their expertise 2) Develop and deliver training on data analysis 3) Develop and deliver training on laboratory methods/technicians

					<ul style="list-style-type: none"> 4) Develop and deliver training on sampling methodology 5) Conduct annual table-top exercise 6) Ensure laboratories related to One Health are ISO accredited
TECHNICAL AREA 3: FIELD INVESTIGATION AND EMERGENCY RESPONSE					
Objective 7: To enhance joint capacity-building during peacetime (cross-sectoral technical planning)					
7.1 To develop joint guidelines (including protocols and SOPs) for joint FI & ER on i) zoonotic (priority diseases), ii) AMR, iii) food-borne illnesses and iv) climate change induced threats	Complete draft mid 2027 Endorsed by Nov 2028	+++	+++	Lead sectors Environmental Health JASTRe + DOF (Forestry)+BCCO+DOF (Wildlife Division)+DOAA+Labs	<ul style="list-style-type: none"> 1) Identify stakeholders from A, E and H 2) Map available inventory (HR, PPE, testing capacity & equipment) 3) Establish activation resources thresholds 4) Joint training for FI & ER based on developed SOPs
7.2 To test the joint guidelines (protocols and SOPs) by conducting joint simulation exercises (tabletop / drill)	2027, after 3 months of 1st draft	+++	+++	Human: Brunei CDC, BDFA, NDMC, EHD, MinDEF Animal: DOAA, DOFI Environment: DOF (forestry), JASTRe, BCCO, MOD (PWD)	<ul style="list-style-type: none"> 1) Conduct joint tabletop exercises 2) Conduct joint field investigation simulations 3) After Action Review (AAR) of the exercise within 3 months 4) Refine Guidelines 5) Joint endorsement of Developed guidelines
Objective 8: To establish joint operational readiness during peacetime (operational, manpower, mechanism, competency, process)					
8.1 To form joint Rapid Response Teams (RRTs) for coordinated field investigations & Emergency response for prioritized zoonotic diseases	End of 2025	+	+++	DOAA DOF (Forestry) EHD BDFA CDC DOF (Wildlife Division)	<ul style="list-style-type: none"> 1) Identify sector specific RRTs 2) Ensure named focal points for activation 3) Establish TORs for joint operations / investigations 4) Identify funding source for joint RRTs operations
8.2 To conduct joint FETP (1-2 weeks) for RRTs once every year to ensure readiness	June 2026	++	+++	MOD, MPRT, MOH	<ul style="list-style-type: none"> 1) Define frequency 2) Identify trainers 3) Specific target audience

					4) Define topic / type
8.3 To conduct AAR after every major outbreak of zoonotic diseases / food safety event and update the FI & ER plan to address the gaps	Q1 2028	++	+++	Human: Brunei CDC, BDFA, NDMC, EHD, MinDEF Animal: DOAA, DOF (Wildlife Division) Environment: DOF (Forestry), JASTRe, BCCO	1) To conduct joint tabletop exercises 2) To conduct joint field investigation simulations 3) AAR of the exercise within 3 months 4) Refine guidelines 5) Joint endorsement of developed guidelines
8.4 To establish monitoring & evaluation framework to assess the effectiveness of outbreak investigation & response	Nov 2031 (One Health Day)	+++	+++	Animal: DOAA, DOF (Wildlife Division), DOFI Human: Brunei CDC, EHD, NDMC, BDFA Environment: JASTRe, DOF (Forestry), BCCO	1) To develop an evaluation & evaluation framework with Key Performance Indicators (KPIs) 2) Feedback on effectiveness of outbreak response through KPIs to stakeholders
TECHNICAL AREA 4: PREVENTION AND RISK COMMUNICATION					
Objective 9: Establishment of TWG for Risk Communication for One Health to strengthen coordination and effectiveness of communication at human-animal-environmental interface					
9.1 Set up the TWG on Risk Communication for One Health	Within 6 months of establishment of the establishment of the OH coordination mechanism (see activity 1.1)	++	+++	One Health Committee	1) Identify focal persons from relevant stakeholders 2) Develop TOR of the TWG 3) Set targets/KPIs 4) Nominate and elect co-chairs
9.2 Develop Joint Risk Communication Plan/Strategy	Within 2 years after TWG establishment	+++	+++	TWG of One Health Risk Communication	1) Develop a working paper and secure budget 2) Organize a workshop involving relevant stakeholders to formulate the Plan/Strategy 3) Develop SOPs/Guideline 4) Set KPIs/targets (SMART) 5) Endorsement of the Plan by the One Health National Committee
9.3 Organize Table-Top exercise of the Joint Risk Communication Plan/Strategy	Within 6 months after endorsement of Plan	++	+++	TWG of One Health Risk Communication	1) Develop a working paper and get budget approval

	(see activity 8.2)				<ol style="list-style-type: none"> 2) Invite relevant technical stakeholders, Public Relations Officers (PROs) 3) Create scenarios 4) Identify gaps to improve the SOPs 5) Conduct Crisis Communications Training of PROs
Objective 10: Scaling up of Nature-based Solutions (NbS) to address health risk at human-animal-environmental interface					
10.1 Increase education and awareness of NbS to address health risks for target groups (general public and stakeholders)	Within 1 year of the establishment of the OH coordination mechanism (see activity 1.1)	+++	+++	One Health Committee	<ol style="list-style-type: none"> 1) Develop working paper to secure budget 2) Organize annual campaigns for the One Health Day Celebration (3rd November of every year) 3) Development of joint communication materials: thematic campaigns, social/mass media 4) Development of school curriculum on One Health matters in collaboration with relevant stakeholders.
10.2 Develop a hotspot profiling of health threats at the human-animal-environment interface to identify gaps and possible solutions to high-risk areas including NbS	Within 2 year of the endorsement of the OH Action Plan (see activity 1.3)	+++	+++	Lead: Surveyor department (Ministry of Development) Co-lead: MOH, Forestry, BDFA, Animal Health Division, MOD (TCP), MOHA	<ol style="list-style-type: none"> 1) Identify hotspot profiling team and focal points in respective agencies 2) Implement regular submission of data to Lead department (every 6 months or upon ad-hoc request) 3) Identify technical team for data analysis
10.3 Identify and implement NbS and other measures at hotspot areas	Within 5 years	+++	+++	One Health Committee	<ol style="list-style-type: none"> 1) Conduct a workshop for relevant stakeholders 2) Identify relevant actors from different sectors to implement NbS 3) Prioritize NbS-related actions to be implemented 4) Secure funding 5) Establishment of a M&E of measures

WORKSHOP EVALUATION

An evaluation questionnaire was completed by 49 participants to collect feedback on the relevance and utility of the workshop.

The overall assessment shows a high degree of satisfaction (100%, 3.6/4). The least preferred session was Session 4 on Extraction of Assessment Results (95%, 3.2/4). It could be explained by the fact that some participants weren't familiar with the JEE and PVS assessments. The impact on the work in each "unit" is lower than expected (79%, 3.1/4). This could be explained by the high rate of environment sector participants less familiar with the OH approach and the role that they can play. The recommendation of the workshop to other countries was rated as absolutely and likely at 95% and 5% respectively.

The results are presented below:

Workshop evaluation	Satisfied' or 'Fully satisfied'	Average rating (/4)
Overall assessment	100%	3,6
Content	100%	3,7
Structure / format	98%	3,5
Facilitators	100%	3,7
Organization (venue, logistics...)	93%	3,4

	Average	% sat
Session 1	3,4	100%
Session 2	3,4	98%
Session 3	3,3	98%
Session 4	3,2	95%
Session 5	3,4	98%
Session 6	3,5	100%

Session 7	3,4	98%
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Impact on...	High' or 'Very High' impact	Average rating (/4)
Your technical knowledge	91%	3,2
The work of your unit	79%	3,1
AH-PH collaboration in country	95%	3,4

Would you recommend this workshop to other countries?	
Absolutely	95%
Likely	5%
Likely not	0%
No	0%

ANNEX 1: WORKSHOP AGENDA

DAY 1	
08:30 – 09.00	Registration of participants
09.00 – 10.20	<p><u>Opening Ceremony</u></p> <ul style="list-style-type: none"> • Doa recitation (10') • Guests of Honor: Deputy Permanent Secretaries from Ministry of Health and Ministry of Primary Resources and Tourism (20') • Representatives from the Asia-Pacific Regional Quadripartite (5') • Introduction of participants – Mentimeter® (10') • Group Picture (10') • Coffee break (25')
10.20 – 12.00	<p><u>Session 1: One Health Concept & National Perspectives</u></p> <p>This initial session lays the foundation by introducing the One Health concept and the collaborative efforts of the Quadripartite organizations. Following this, in-depth presentations from each national sector provide a comprehensive understanding. A supplementary documentary showcases successful intersectoral collaborations worldwide, highlighting shared approaches, references, and strategic visions.</p> <hr/> <ul style="list-style-type: none"> • Workshop approach and methodology – PPT (10') • MOVIE 1: Tripartite One Health collaboration and vision (15') • Veterinary Services and One Health – PPT (15') • Public Health Services and One Health – PPT (15') • Environment Sector and One Health – PPT (15') • QnA (10') • MOVIE 2: Driving successful interactions - Movie (20')
Lunch (12:00-13:30)	
13.30 – 16.30	<p><u>Session 2: Identification of collaboration gaps</u></p> <p>Participants are divided into working groups; each assigned a hypothetical scenario of a zoonotic or food-borne disease outbreak, or an emerging health risk from the environment. They engage in discussions on response strategies and assess the level of collaboration across the three sectors for 16 key technical areas.</p> <hr/> <ul style="list-style-type: none"> • Introduction to the working group exercise (15') • Working groups by disease (100') • Coffee break (15') • Restitution (60')

DAY 2

08.30 – 10.50	<p>Session 3: Bridging the assessment tools</p> <p>Assessment tools used by the different sectors (ex: SPAR/JEE, PVS) are presented. Joint areas and activities identified are mapped onto a giant matrix consisting of the indicators of WHO's IHR MEF and WOA's PVS Pathway. This process enables participants to visualize the gaps identified in each capacity and to distinguish disease-specific versus systemic gaps.</p> <ul style="list-style-type: none">• MOVIE 3: IHR, SPAR and JEE (20' with QnA)• MOVIE 4: PVS Pathway (20' with QnA)• MOVIE 5: Environment framework and tools (20' with QnA)• Mapping gaps on the IHR/PVS matrix (50')• Coffee break (10')• Analysis of results on the matrix – Plenary discussion (20')
10.50 – 12.15	<p>Session 4: Extraction from assessment tools</p> <p>Participants are divided into technical area working groups and receive the key findings and recommendations from the assessment reports conducted in their country (SPAR/JEE, PVS Evaluation, etc.). The findings and recommendations are shared and discussed and participants identify how they can be synergized and addressed jointly in the future.</p> <ul style="list-style-type: none">• Setting up of working groups and introduction to the working group exercise (15')• Extract main gaps and recommendations from the assessment reports (PVS, SPAR/JEE, other assessments), in relation to gaps identified on the matrix (70')
Lunch (12:15-13:30)	
13:30– 16:30	<p>Session 5: Collaborative Road Planning</p> <p>Results obtained from the case studies, the various discussions and the assessment reports are used to brainstorm activities and develop a realistic and achievable Roadmap to improve the collaboration between the sectors.</p> <ul style="list-style-type: none">• Introduction to the working group exercise (10')• Identification of Activities (Working groups by technical topic) (80')• Coffee break (20')• Circulation of Facilitators and validation of activities (70')

DAY 3

8:00 – 10:30	<u>Session 6: Fine-tuning the Joint Roadmap</u> Activities are further fine-tuned, and, through a world-café exercise, participants contribute to all technical areas to consolidate the NBW Roadmap by making sure it is harmonized, operational and achievable.
	<ul style="list-style-type: none">• Introduction to the working group exercise (10')• Fine-tuning of the Roadmap: Objectives and filling out of Activity cards (80')• Coffee break (20')• World Café (80')• Prioritization vote (20')
10:30 - 12:30	<u>Session 7: Way forward</u> The concluding session outlines next steps, linking the developed NBW Roadmap with mandated plans such as the National Action Plan for Health Security or the One Health Joint Plan of Action. Participants also address any country-specific needs, contingent upon the country's current status regarding IHR-MEF, PVS Pathway and One Health capacity.
	<ul style="list-style-type: none">• Next steps (100') (lead by Ministry representatives)• Coffee break (20')

Closing Ceremony and Lunch (12:30-13:30)

ANNEX 2: SCENARIOS USED FOR THE DIFFERENT CASE STUDIES

1. Avian Influenza H5N1

Two persons were admitted to the Suri Seri Begawan Hospital, Belait district, with pneumonia. The first patient is a poultry farm worker, while the second patient is a halal inspector officer who visited the same farm 7 days before the onset of symptoms for a slaughtering procedure inspection. Both individuals have developed fever, cough, sore throat, and body aches, with one experiencing acute respiratory distress requiring intensive care. RT-PCR testing by the Department of Laboratory Services (DLS) confirmed that both patients were positive for the H5N1 subtype of Avian Influenza.

The discovery of more bird carcasses in Seria town has triggered rising public fear, with residents speculating about the spread of the virus beyond poultry farms. At the same time, there has been a notable increase in backyard and SME poultry mortality, prompting the Ministry of Primary Resources and Tourism (MPRT) to conduct a thorough investigation. As a result, poultry markets are seeing a decline in sales, with some businesses reporting significant losses due to reduced consumer confidence.

The outbreak coincides with the migratory bird season (October- April), raising concerns that wild birds, particularly those around the Badas peat swamp forests where multiple dead birds have been found, could have introduced or amplified the virus.

Additionally, the local poultry farm sources its chickens from neighbouring countries, triggering further investigations into whether the infection was introduced through imported poultry. Reports from neighbouring countries indicate ongoing Avian Influenza outbreaks, suggesting possibility of cross-border transmission through poultry trade or migratory birds.

Group members: MPRT, MOH, MOHA, BDFA, UBD, MORA, MOD

Group facilitator: MPRT, MOH and BDFA

2. River ecosystem collapse

A major die-off event of fish, birds and other freshwater species has been reported along the Brunei river. In a stretch of a total 15 km, the river ecosystem has collapsed entirely, and dead organisms and foam patches with a strong odour are continuing to float down the river, which will affect down-stream villages and city centre. This major die-off event has been covered by national and regional media and has gone viral on the internet.

In the past 2 weeks, commercial fishery farms reported high mortality rate and there are reports of wild buffalo along the river showing botulism-like symptoms.

Initial investigations have shown an increased level of salinity in the water, which might be connected to climate change. Additionally, feeding into the river are untreated wastewater discharges of local communities and from a few factories, and reports of unsustainable land use practices in watershed areas that suggest possible water contamination.

Group members: MPRT, MOH, MOD, MOHA, BDFA, BCCO and MINDEF

Group facilitator: MPRT and BDFA

3. Antimicrobial resistance

The Department of Laboratory Services (DLS) is detecting an increasing number of co-occurrences of Colistin Resistance (*mcr-1*) and extended-spectrum β -lactamase encoding genes in *Escherichia coli* isolated from urinary tract infection in adult patients in RIPAS Hospital in Bandar Seri Begawan.

The Veterinary Laboratory Services Unit (VLS) has also reported increasing number of similar resistance pattern in *E. coli* associated mastitis in goats from a local commercial farm. It was found that the waste from the farm drains directly into the general sewage. Additionally, news has been going viral in social media about E-coli being detected in locally-produced vegetables.

Group members: MOH, MPRT, MOD, BDFA and MINDEF

Group facilitator: MOH and MPRT

4. Haze & Forest fire

A few areas in the Sultanate are experiencing localised hazy conditions due to bush and forest fires affecting air quality. These fires are scattered across national residential housing and near forested area. Brunei Darussalam Meteorological Department (BDMD) forecast the amount of rainfall to be slightly below normal and expected the weather to be hot and dry, with increased daily temperatures by a few degrees. The Fire & Rescue Department (FRD) reported a high volume of calls for bush fires in the last few days. The Pollutant Standard Index (PSI) readings recorded from all air quality monitoring stations are relatively higher than normal, although air quality is reported at good to moderate level.

The MOH reported an increase in cases of respiratory illnesses and heat-related health issues as the hot and dry weather persists. The MOH cautioned the public that at moderate PSI readings, minor health effects such as coughs, eye irritations and runny nose may be common. Individuals with asthma, lung and heart diseases, pregnant women, children, the elderly and those with dust allergies are advised to reduce outdoor physical activities while those experiencing difficulty breathing to seek medical treatment.

The public will be kept informed of the air quality situation through radio, television and social media. The public is advised to report immediately any incidences of bush and forest fires to the FRD while they are also closely monitoring the fire situation and increasing the number of patrols to areas prone to forest and bush fires. The department informed the public to refrain from conducting open burning and other actions that can worsen the haze conditions during the dry period. Additionally, news on bush and forest fires from neighbouring countries is an increasing concern, as transboundary haze may significantly aggravate the current situation.

Group members: MPRT, MOH, MOD, MOHA, MOE, BCCO, BDFA and MOE

Group facilitator: MOH and UBD

5. Salmonellosis

During an inter-school competition attended by several government and Arabic schools, a total of 120 people sought medical attention with symptoms of high fever, nausea, vomiting, diarrhoea and severe abdominal pain, 12-36 hours after eating from the catering provided. Of these, 20 (13

students and 7 teachers) were hospitalised. The Department of Laboratory Services (DLS) found that *Salmonella species* were isolated from the stool samples collected. All cases recovered within a week. It was found that the implicated food was from the egg-dish menu. The caterer said that they sourced their eggs from multiple supermarkets, and that they stored the eggs according to food safety standards.

Group members: MPRT, MOH, MOD, MOHA, MORA, MOE, BDFA

Group facilitator: MPRT and MOH

ANNEX 3: LIST OF PARTICIPANTS

#	NAME	JOB TITLE/POSITION	DEPARTMENT	MINISTRY/AGENCY
1	HJH SITI RAIHANI HAJI ABDUL HAMID	DIRECTOR	REGULATORY COMPLIANCE DEPARTMENT	BRUNEI DARUSSALAM FOOD AUTHORITY
2	ABANG MUHAMMAD MASRUR BIN ABANG ZAINUDDIN	SENIOR MANAGER	REGULATORY COMPLIANCE DEPARTMENT	BRUNEI DARUSSALAM FOOD AUTHORITY
3	PG NUR HALIMATUSSAADIAH PG HJ MOHD ALIAS	DIRECTOR	STANDARDS & RISK ASSESSMENT DEPARTMENT	BRUNEI DARUSSALAM FOOD AUTHORITY
4	SYAHINDAH AQLAH BINTI MUHAMMAD REDZUAN	TECHNICAL OFFICER	STANDARDS & RISK ASSESSMENT DEPARTMENT	BRUNEI DARUSSALAM FOOD AUTHORITY
5	SITI KHADIZAH HJ ABD LATIFF	DIRECTOR	TRADE FACILITATION DEPARTMENT	BRUNEI DARUSSALAM FOOD AUTHORITY
6	PG SITI NORASIKIN BINTI PG MAIDIN	MANAGER	TRADE FACILITATION DEPARTMENT	BRUNEI DARUSSALAM FOOD AUTHORITY
7	FATIN NUR NAJWA BINTI HAJI MATZIDI	ACADEMIC ADVISOR	DEFENCE ACADEMY, ROYAL BRUNEI ARMED FORCES	MINISTRY OF DEFENCE
8	LIEUTENANT COMMANDER QURRATU'AINI QAYYIMAH DR. AL-HAJ ZELZY, RBN	SENIOR HEALTH INSPECTOR	ENVIRONMENTAL HEALTH UNIT, MEDICAL & HEALTH SERVICES, ROYAL BRUNEI LAND FORCES	MINISTRY OF DEFENCE
9	MOHAMMAD AKMAL FIKRY YUSRA	ENVIRONMENTAL OFFICER	DEPARTMENT OF ENVIRONMENT, PARKS AND RECREATION (JASTRE)	MINISTRY OF DEVELOPMENT
10	RODZIAH BINTI HAJI ADNAN	SENIOR ENVIRONMENTAL OFFICER	DEPARTMENT OF ENVIRONMENT, PARKS AND RECREATION (JASTRE)	MINISTRY OF DEVELOPMENT
11	DAYANG SUZIELAWATY BINTI HAJI AHMAD	EDUCATION OFFICER	DEPARTMENT OF ADMINISTRATION AND SERVICES	MINISTRY OF EDUCATION
12	FIZAWATI BINTI HAJI KHANAFIAH	EDUCATION OFFICER	DEPARTMENT OF ADMINISTRATION AND SERVICES	MINISTRY OF EDUCATION
13	HAJI MUHAMMAD ALI HAMZAH BIN KASMAT	ACTING ASSISTANT DIRECTOR OF ENVIRONMENTAL HEALTH	DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH
14	DR MOHAMMAD FATHI BIN DATO PADUKA HAJI ALIKHAN	HEAD OF BRUNEI CDC	BRUNEI CDC, DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH
15	DR KYAW THU	MEDICAL OFFICER	BRUNEI CDC, DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH
16	DR MARTINA MELATI BINTI DATO PADUKA HJ KIFRAWI	SENIOR MEDICAL OFFICER	BRUNEI CDC, DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH

17	DR SHAREEFAH KOH KAI SHING	HEAD OF EPIDEMIC INTELLIGENCE AND RESPONSE UNIT, BRUNEI CDC	BRUNEI CDC, DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH
18	DR MICOL FASCENDINI (WORKSHOP ORGANIZING COMMITTEE)	ONE HEALTH CONSULTANT	BRUNEI CDC, DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH
19	DK NURULHUDA BINTI PG MUSA (WORKSHOP ORGANIZING COMMITTEE)	ONE HEALTH TECHNICAL OFFICER	BRUNEI CDC, DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH
20	NUR'IFFAH MUSTAQIMAH BINTI A. KAHAR (WORKSHOP ORGANIZING COMMITTEE)	ONE HEALTH TECHNICAL OFFICER	BRUNEI CDC, DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES	MINISTRY OF HEALTH
21	DR MUHD HAZIQ FIKRY BIN HAJI ABDUL MOMIN	CHIEF SCIENTIFIC OFFICER	DEPARTMENT OF LABORATORY SERVICES	MINISTRY OF HEALTH
22	DK HJH RUWAIDA PDP HJ JABERUDIN	SCIENTIFIC OFFICER	DEPARTMENT OF LABORATORY SERVICES	MINISTRY OF HEALTH
23	HJH MAZMAH HJ AHMAD MORSHIDI	SCIENTIFIC OFFICER	DEPARTMENT OF LABORATORY SERVICES	MINISTRY OF HEALTH
24	DR ERNINA NISDZARINAH BINTI HAJI ABDUL RANI	SENIOR MEDICAL OFFICER	HEALTH PROMOTION CENTRE	MINISTRY OF HEALTH
25	DR HJH RIAMIZA NATALIE HAJI MOMIN	CONSULTANT	INFECTIOUS DISEASES UNIT, DEPARTMENT OF INTERNAL MEDICINE, RIPAS HOSPITAL	MINISTRY OF HEALTH
26	DR HAJAH ROSMONALIZA HAJI AWANG ASLI	CONSULTANT; HEAD OF ID UNIT; HEAD OF DEPARTMENT OF INTERNAL MEDICINE	INFECTIOUS DISEASES UNIT, DEPARTMENT OF INTERNAL MEDICINE, RIPAS HOSPITAL	MINISTRY OF HEALTH
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29	SHAMRIL RAMLE	FIELD OFFICER	BELAIT DISTRICT OFFICE	MINISTRY OF HOME AFFAIRS
30	ABDUL WAFIY BIN MOHD SALLEH	DISASTER MANAGEMENT OFFICER	NATIONAL DISASTER MANAGEMENT CENTRE	MINISTRY OF HOME AFFAIRS
31	BRADY KAH WEI SHENG	DISASTER MANAGEMENT OFFICER	NATIONAL DISASTER MANAGEMENT CENTRE	MINISTRY OF HOME AFFAIRS
32	PENGIRAN MUHAMMAD ABDUL HAFIY BIN PENGIRAN ZAINAL	DISASTER MANAGEMENT OFFICER	NATIONAL DISASTER MANAGEMENT CENTRE	MINISTRY OF HOME AFFAIRS
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34	SITI SYAFIQAH @ FATIN HJ ABD KADIR	AGRICULTURE OFFICER	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
35	MOHAMAD FAA'ID BIN HAJI MOHAMAD KASIM	AGRICULTURE OFFICER (CROPS DIVISION)	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
36	SITI SUNDUSSIAH HAJI ABDULLAH SANI	AGRONOMIST	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
37	DR DIANA DENNIS	HEAD OF LIVESTOCK AND VETERINARY SERVICES	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
38	MOHAMMAD NASRULLAH BIN DIRIS	LIVESTOCK HUSBANDRY OFFICER	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
39	YANTI PUASA	LIVESTOCK HUSBANDRY OFFICER	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
40	AK. DR ZHARIEF AHZHA AL MOUSHAFFA	VETERINARY OFFICER	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
41	DR FAITH SHIE (BACK UP FACILITATOR)	VETERINARY OFFICER	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
42	DR NUR SABRINA HAJI LATIP (BACK UP FACILITATOR)	VETERINARY OFFICER	DEPARTMENT OF AGRICULTURE AND AGRIFOOD	MINISTRY OF PRIMARY RESOURCES AND TOURISM
43	HJH RAHIMAH HJ IBRAHIM	ASSISTANT FISHERIES OFFICER	FISHERIES DEPARTMENT	MINISTRY OF PRIMARY RESOURCES AND TOURISM
44	KHAIRUL HAMIZAH BINTI HAJI JALUDIN	FISHERIES OFFICER	FISHERIES DEPARTMENT	MINISTRY OF PRIMARY RESOURCES AND TOURISM
45	HAJI SHAHRUL KHANAFI BIN HAJI OTHMAN	ASSISTANT SENIOR FISHERIES OFFICER	FORESTRY DEPARTMENT	MINISTRY OF PRIMARY RESOURCES AND TOURISM
46	ZAEIDI HAJI BERUDIN	HEAD OF HEART OF BORNEO, SENIOR FORESTRY OFFICER	FORESTRY DEPARTMENT	MINISTRY OF PRIMARY RESOURCES AND TOURISM
47	HAJI MUHAMMAD TAIB BIN HAJI KEPLI	LEVEL 1 ASSISTANT FORESTRY OFFICER	FORESTRY DEPARTMENT	MINISTRY OF PRIMARY RESOURCES AND TOURISM
48	SITI SYAMSIAH BINTI JUMAAT	EDUCATION OFFICER	ISLAMIC STUDIES DEPARTMENT	MINISTRY OF RELIGIOUS AFFAIRS
49	HJ MUHAMMAD FAUZAN BIN HJ JAMAHAT	FOOD OFFICER, HALAL FOOD CONTROL DIVISION	SYARIAH AFFAIRS DEPARTMENT	MINISTRY OF RELIGIOUS AFFAIRS
50	HAZWANI WAJIAH BINTI JEFERY	SPECIAL DUTIES OFFICER GRADE II	BRUNEI CLIMATE CHANGE OFFICE	PRIME MINISTER'S OFFICE
51	SITI NUR RASHIDAH BINTI HAJI ISMAIL	SPECIAL DUTIES OFFICER GRADE II	BRUNEI CLIMATE CHANGE OFFICE	PRIME MINISTER'S OFFICE
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OVERALL PARTICIPANTS (MINUS WORKSHOP ORGANIZING COMMITTEE AND BACKUP FACILITATORS)				49

