A participatory progressive framework to guide development of national animal disease surveillance and early warning capacities in Asia

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Summary
Animal disease surveillance systems in Asia remain constrained by a number of factors. These include: limited sustainable resources to implement field activities other than from external partners, lack of formalised surveillance protocols and plans covering all prioritised diseases, and few analyses conducted on surveillance data to inform decision-makers. These general gaps represent an opportunity to generate guiding principles and build countries' capacities using a systematic approach. This abstract presents the development of a progressive framework designed to support co-development of surveillance and early warning capacities through structured, inclusive dialogue processes with stakeholders from veterinary services and development partners.
FAO convened a regional consultation held in Bangkok in December 2025. There were 45 participant stakeholders from nine countries, including government representatives, international organizations, and technical partners. Using participatory methodologies, participants jointly developed a stepwise framework structured across five surveillance domains.
The resulting framework defines progressive capacity levels and milestones that allow countries to clearly identify steps to take to build their surveillance and early warning capacities adapted to their specific situation. Applying this framework at a sub-regional level will facilitate collaborative approaches to build capacities between countries, development partners and economic communities such as the Association of Southeast Asian Nations (ASEAN).

Introduction
Animal and zoonotic diseases continue to challenge food security, livelihoods, and public health systems across Asia. The region's diverse livestock production systems, complex value chains, and high levels of animal movement contribute to the emergence and spread of transboundary animal diseases and zoonoses. In response, countries have made significant efforts to strengthen surveillance and early warning systems.
Despite these investments, surveillance systems remain uneven in their performance and sustainability. Persistent challenges include limited use of surveillance data to inform decisions, few operational surveillance protocols covering all countries' prioritised diseases, and resources that are often dependent on external projects, along donors' priorities.
Improving surveillance effectiveness requires moving beyond traditional, top-down approaches toward collaborative and participatory models, where strategies are co-developed through dialogue between national stakeholders and development partners. Such approaches can enhance ownership, ensure alignment with local contexts, and improve the translation of evidence into action.
Countries in Asia and the Pacific, as well as regional partners such as ASEAN have requested guidance to support the development of their animal disease surveillance capacities by identifying specific actions they may take based on their national contexts.
To address this gap, a regional consultation was convened to develop a progressive framework for strengthening animal disease surveillance and early warning systems in Asia. A central objective of the workshop was to identify guiding principles and develop a foundation for a progressive pathway to build surveillance and early warning capacities for countries in Asia and the Pacific.

Materials and Methods
A regional consultation was conducted in Bangkok, Thailand, from 2 to 4 December 2025, bringing together 45 participants from nine Asian countries, as well as representatives from international organizations, regional bodies, and development partners. Participants included epidemiologists, laboratory specialists, policymakers, and programme implementers.
A participatory approach was adopted to facilitate multi-actor dialogue to develop a progressive pathway to surveillance and early warning capacities that reflect countries' needs. During the workshop, participants provided their inputs through participatory exercises which ensured consensus and shared ownership.
The framework was developed through a four-step process.
Five **core tracks** of surveillance systems were identified, with additional sub-tracks further refining the pathway.
Participants co-developed **endpoint statements** for each sub-track, representing an ideal, developed capacities for each of these components of a surveillance/early warning system.
Through participatory ranking exercises, participants developed the **baseline and intermediate capacities** from the endpoint statements. This step ensured that the pathway reflected a logical progression from beginning to

end.
Finally, participants defined **capacity level milestones** as indicators for transition between levels.
Previous regional consultations and existing surveillance assessments informed the process. This ensured alignment with established tools while introducing a stronger focus on stakeholder engagement.

Results
The consultation resulted in a draft progressive framework structured around five core tracks and associated sub-tracks, consisting of baseline and mid-point capacities leading to endpoints representing fully realised capacities (Table 1). Between each step in the progressive framework, milestones provide guidance on moving from one capacity level to the next.
The draft progressive framework was circulated amongst participants to validate the outputs of the workshop. Continuing work is planned through 2026 to further refine as the *Progressive Framework for Surveillance and Early Warning Capacity-Building In Asia and the Pacific* through a technical working group. This group will identify measurable indicators and link the framework with existing surveillance system evaluation methodologies such as the Food and Agriculture Organization of the United Nations' Surveillance Evaluation Tool (SET).
The consultation workshop demonstrated that co-development processes can lead to greater alignment of priorities between implementers of surveillance and development partners, while guiding countries to reach a common objective for better surveillance and early warning in Asia and the Pacific.

Discussion
The progressive framework developed through this consultation provides a practical model for building national surveillance and early warning systems while maintaining collaborative approaches at the regional level.
A key contribution of this work is to demonstrate that co-development processes can be systematically integrated into surveillance framework design. This approach enhances the relevance and feasibility of surveillance strategies that are, as they are informed by the perspectives and experiences of all stakeholders involved who thus feel ownership of the product.
Limitations include the reliance on expert consultation rather than empirical implementation. Further work is needed to test the framework in practice and evaluate its impact on surveillance outcomes.

Conclusions
The progressive framework developed through this consultation provides a structured pathway to build surveillance and early warning capacities at national level, while maintaining a collaborative approach at the sub-regional level. It allows countries to follow steps towards fully realised capacities while adapting their development processes to their specific contexts.
By institutionalizing dialogue processes and promoting co-development of strategies, the framework enhances the alignment between development partner and national priorities, and operational realities. It offers a scalable model for improving surveillance system performance and supporting effective responses to animal and zoonotic disease threats.

Table 1. Endpoints developed for each sub-track of the progressive pathway for surveillance and early warning capacities in Asia and the Pacific

Track 1 – Planning, design and evaluation	
Sub-track 1.1 Institutional organisation	Formalized legal frameworks and strategies with clearly defined objectives and institutional roles – developed with input from local, community, private-sector and multisectoral stakeholders - guide surveillance planning and implementation. Governance structures ensure planning reflects local priorities and embrace technological innovation in the design and implementation of surveillance activities.
Sub-track 1.2 Risk assessment	Capacity assessments and performance reviews are systematically carried out by a trained national animal-health workforce, with recommendations routinely used to improve surveillance effectiveness, functionality, and sensitivity, to plan and prioritize corrective actions, and to guide resource prioritization and mobilization.
Sub-track 1.3 Evaluation	Trained workforce assess risks (likelihood and impacts) of disease incursion and spread - including through joint risk assessments - in routine and emergency situations. Findings systematically guide evidence-based surveillance planning, prevention and control strategies, and risk communication to safeguard farmers, the public, and support safe trade.
Track 2 – Implementation of surveillance	
Sub-track 2.1 Surveillance methods	Animal health trends are regularly and consistently monitored, including (all) priority and emerging diseases, through the cost-effective, harmonized application of validated surveillance methods, ensuring sensitivity and timeliness across all administrative levels enabling evidence-based decision making.
Sub-track 2.2 Surveillance workforce	Surveillance activities are delivered by sufficient, fully competent and equipped workforce, including public and private sectors across all sectors and all administrative levels in both routine and emergency situations.
Track 3 – Laboratory	
Sub-track 3.1 Diagnostics	A fully integrated, interoperable, documented and quality-assured laboratory network provides timely, accurate, and well-interpreted diagnostic results and data that consistently inform relevant stakeholders and national surveillance decisions.
Sub-track 3.2 Laboratory data and networks	High quality, and effective sample referral system and diagnosis are sustainably provided nationwide through an accredited laboratory system applying validated techniques for all prioritised and emerging diseases.
Track 4 – Information systems	
Sub-track 4.1 Epidemiology data collection	Complete, accurate, standardized, verifiable and timely data from all types of surveillance is consistently collected and collated, across all administrative levels for monitoring and reporting of all priority and emerging diseases.
Sub-track 4.2 Data management and utilisation	Accurate surveillance and risk information is communicated in an appropriate, transparent, user-friendly and timely manner tailored to all relevant stakeholders at all levels (and internationally), both routinely and during emergencies.
Track 5 – Information sharing and advocacy	
Sub-track 5.1 Communications	Accurate surveillance and risk information is communicated in an appropriate, transparent, user-friendly and timely manner tailored to all relevant stakeholders at all levels (and internationally), both routinely and during emergencies.
Sub-track 5.2 Intersectoral collaboration	A formalized, documented, sustainable and effective "multi-sectoral" mechanism coordinates high-level policy, routine and transparent information exchange with all relevant stakeholders, and harmonized and joint planning and responses.

Table 1. Endpoints developed for each sub-track of the progressive pathway for surveillance and early warning capacities in Asia and the Pacific

Keywords: Surveillance, Early warning, Progressive pathway, Partnerships.