



Developing and Implementing a Multi-Sectoral Coordination Toolkit for Zoonosis Prevention and Control at Sub-National Levels in Vietnam

This case study details the design, trial, and implementation of the Multi-Sectoral Coordination Mechanism Assessment Toolkit (M-CMAT) for zoonosis prevention and control at sub-national levels in Vietnam. The toolkit provides a structured approach to evaluating coordination mechanisms, identifying strengths and gaps, and informing policy and strategy development to enhance disease prevention.

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Table of Contents

Summary/Abstract.....	3
Abstract.....	3
What is the incremental value that makes this a One Health case?	3
Learning outcomes.....	3
Background and context.....	4
Project Impact.....	8
Project Outlook.....	8
Conclusions.....	10
Group Discussion Questions	10
Acknowledgements	11
Further reading.....	11
References.....	11

Summary/Abstract

Summary

The Multi-Sectoral Coordination Mechanism Assessment Toolkit (M-CMAT) was designed to evaluate and enhance collaboration in zoonosis prevention and control at the sub-national level in Vietnam. This toolkit provides a structured approach to assessing coordination mechanisms, identifying strengths and gaps, and supporting policy and strategy development for effective disease prevention.

Abstract

Assessing multi-sectoral coordination at the sub-national level is crucial for quantifying the extent of cross-sectoral collaboration, identifying strengths, and pinpointing weaknesses. Current literature lacks specific assessment tools for evaluating such mechanisms. This paper introduces M-CMAT for zoonosis prevention and control in Vietnam, outlining its necessity, applications, implementation steps, and evaluation indicators.

M-CMAT consists of 14 indicators developed based on Joint Circular No. 16/2013/TTLT-BYT-NN&PTNT, issued on May 27, 2013, which guides coordination in preventing and combating zoonotic diseases. Each indicator is classified into five levels corresponding to the degree of multi-sectoral coordination. These indicators are grounded in Vietnamese legal documents related to cross-sectoral collaboration for zoonotic diseases prevention, detection, and response.

M-CMAT was successfully piloted in three provinces representing Vietnam's Northern, Central, and Southern regions. The results were shared through an online workshop to encourage broader implementation. Participant feedback indicated that M-CMAT is a promising tool for quantifying multi-sectoral collaboration in zoonotic disease prevention and control. It assists provincial and district managers in improving coordination efforts and developing policies and strategies for local infectious disease prevention.

What is the incremental value that makes this a One Health case?

This case contributes to existing knowledge by introducing and validating M-CMAT, a novel tool for assessing and enhancing cross-sectoral collaboration in zoonotic disease prevention at sub-national levels. Unlike previous frameworks, which primarily evaluate coordination at national levels, M-CMAT provides a structured, quantifiable method for measuring collaboration among human health, animal health, and environmental sectors at the provincial and district levels.

By piloting the toolkit in three diverse regions and refining its indicators through stakeholder engagement, this study fills a critical gap in One Health governance. The study highlights M-CMAT's practical applications in guiding policy development, strengthening inter-agency partnerships, and improving strategic planning for infectious disease prevention at the local level.

Learning outcomes

1. Explain the importance of multi-sectoral coordination in zoonotic disease prevention and control at sub-national levels.
2. Describe the design, testing, and implementing process of M-CMAT.

3. Analyze the effectiveness of M-CMAT in assessing coordination mechanisms cross different provinces.
4. Evaluate the strengths and limitations of M-CMAT's 14 indicators in quantifying multi-sectoral collaboration.
5. Apply the M-CMAT framework to assess multi-sectoral coordination in each local or regional context.
6. Compare the M-CMAT with other One Health assessment tools and its unique contributions.
7. Develop recommendations for improving multi-sectoral coordination based on M-CMAT findings.
8. Propose strategies for scaling up M-CMAT toolkit to enhance One Health governance at national and international levels.

Background and context

Zoonotic diseases, those transmitted from animals to humans, represent a significant public health concern in Vietnam (Dinh et al., 2006; Reynolds et al., 2006; Vu Tra My et al., 2014). This is due to the country's rich biodiversity and high population density (GSO., 2020), and significant dependence on agriculture and animal husbandry (Gerber et al. 2005, Dinh, 2017). The prevalence of zoonotic diseases in Vietnam highlights the urgent need for multi-sectoral collaboration. Vietnam faces a substantial burden of zoonotic diseases, including avian influenza, rabies, leptospirosis, and, more recently, COVID-19. These diseases arise from complex interactions between humans, animals, and the environment. Effectively addressing zoonotic diseases requires a collaborative approach that integrates expertise from multiple sectors, including public health, veterinary services, environmental agencies, the agricultural sector, and education and communication.

By leveraging the strengths and expertise of various sectors, Vietnam can develop and implement comprehensive strategies to prevent and control zoonotic diseases. Recognizing the importance of multi-sectoral collaboration, the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Health (MOH) published the Vietnam Integrated National Operation Program on Avian Influenza, Pandemic Preparedness, and Emerging Infectious Diseases (MARD-MOH., 2011), issued Joint Circular No. 16/2013/TTLT-BYT-NN&PTNT on May 27, 2013, guiding coordination in preventing and combating diseases transmitted from animals to humans (MARD-MOH., 2013), and recently developed the Viet Nam One Health Strategic Plan (OHSP) for zoonotic diseases for the period from 2016 to 2020 (MARD-MOH. 2016).

To quantify the level of multi-sectoral collaboration in zoonosis prevention and control, PREPAREDNESS AND RESPONSE.ORG developed a set of indicators for evaluating the multi-sectoral coordination mechanism at the national One Health (OH) platform (OH-P4P. 2019). However, these indicators are not suitable for local (province and district) assessments due to the absence of established OH platform at these levels. Therefore, a new set of indicators has been developed and piloted in three provinces: Thai Nguyen, Thua Thien Hue, and Can Tho.

This new set of indicators serves as a reference toolkit for managers at the provincial and district levels, allowing them to evaluate multi-sectoral coordination mechanisms, identify strengths and weaknesses, and implement improvements. The toolkit aims to enhance the development and execution of policies and strategies to promote multi-sectoral coordination in preventing infectious diseases at the local level.

This article introduces M-CMAT, covering its necessities, applications, implementation steps, and evaluation indicators. Additionally, it shares the results of applying M-CMAT in three provinces in Vietnam.

Purpose:

The purpose of this study is to create a valid M-CMAT to (i) quantify the level of multi-sectoral cooperation in preventing diseases transmitted between humans and animals at the local level; (ii) creates an environment conducive to self-assessment; (iii) provides insights into why some localities have better multi-sectoral coordination and (iv) assists provincial and district managers in directing and improving coordination efforts, and in developing policies and strategies for local infectious disease prevention. It will be verified whether the toolkit generates reliable data using a series of pilot tests.

The Multisectoral Process: The process of designing, testing, and implementing M-CMAT for zoonosis prevention and control at sub-national levels involved the following four key phases:

Literature Review and Framework Development

To create the toolkit, the authors reviewed several resources for toolkit development, including the One Health Systems Mapping and Analysis Resource Toolkit (OH-SMART), WHO-IHR, and the One Health for Planning and Performance (OH-APP) toolkit described by PREPAREDNESS AND RESPONSE.ORG (OH-P4P, 2019). The OH-P4P was used to assess the organizational capacity and performance of the Vietnam OH platform in 2017. Due to the absence of a One Health platform or partnership at the sub-national level in Vietnam, a set of indicators for assessing multi-sectoral coordination for zoonosis prevention and control at the sub-national level needs to be developed.

Toolkit Design and Development

The toolkit addresses common questions raised by local partners in the context of multi-sectoral coordination for zoonosis disease prevention and control at the local level: (i) Are we collaborating? If yes, what is the level of coordination and collaboration? (ii) What outputs result from multi-sectoral coordination?

To evaluate collaboration and coordination, we use the multi-sectoral cooperation agreement signed by the relevant departments. This forms the basis for assessing the level of coordination and collaboration. Based on these considerations, we have designed and drafted a guideline for using the multi-sectoral cooperation agreement toolkit. This toolkit integrates the status of multi-sectoral coordination at the local level with the results of multi-sectoral coordination.

The draft M-CMAT includes 14 indicators, each classified into five levels corresponding to the degree of multi-sectoral coordination. These indicators are developed based on Vietnamese legal documents pertaining to cross-sectoral collaboration for zoonosis disease prevention, detection, and response. For each indicator, only one level can be selected, representing the best description of the implementation status in each province and district. The assessment toolkit is divided into two parts: Part 1: Assessing Current Multi-Sectoral Cooperation: Includes 8 main indicators and Part 2: Assessing Results of Multi-Sectoral Coordination: Includes 6 indicators.

A two-day workshop titled "Developing Guidelines for the Use of M-CMAT" was held on May 30-31, 2024, in Hanoi. The workshop was attended by 24 significant partners, including representatives from the MOH, MARD, Provincial Centers for Disease Control and Prevention (CDC), Sub-Department of Livestock and Animal Health (Sub-DLAH), and member universities.

The objectives of the workshop were to introduce and pre-finalize guidelines for the M-CMAT and to guide local Multisectoral Coordination Mechanisms (MCM) in developing action plans. Group discussions allow participants to provide feedback on the indicators, leading to the refinement of the guidelines. Experiments tested the evaluation tool via Google Forms, offering valuable suggestions for improvements, such as adding demographic fields and clarifying question examples.

Pilot testing M-CMAT in three provinces

Pilot study can be pre-testing or trying out of a particular research instrument (Baker, 1994). Additionally, pilot studies may also try to identify potential practical problems in following the research procedure. For example, in a recent Scottish study of maternity care the pilot phase demonstrated that the proposed means of distributing the questionnaires would not be adhered to (van Teijlingen et al. 2001). In June 2024, a pilot program for the M-CMAT toolkit was conducted involving 48 local human health, animal health, and environmental health officers from three provinces and cities. These participants represented key stakeholders involved in zoonosis prevention and control at the sub-national levels across three provinces: Thai Nguyen, Thua Thien Hue, and Can Tho. Stakeholders included representatives from provincial Department of Agriculture and Rural Development (DARD), Department of Health (DOH), Department of Natural Resources and Environment (DNRE), CDC, Sub-DLAH, District Health Centers (DHC), and District Veterinary Stations.

These participants were invited to attend a workshop where they were introduced to the guidelines for using M-CMAT and implemented self-assessments based on pre-designed indicators. The collected data was analyzed to identify patterns, strengths, and areas requiring improvement.

The M-CMAT toolkit was successfully piloted in these three provinces of Vietnam. It proved to be an adaptable and scalable process, effective at quantifying the level of cross-sectoral coordination and collaboration for zoonosis prevention and control.

The results of the pilot assessment in the three provinces (Thai Nguyen, Thua Thien Hue, and Can Tho) are as follows:

Table 1. Current status of multi-sectoral cooperation in three selected provinces

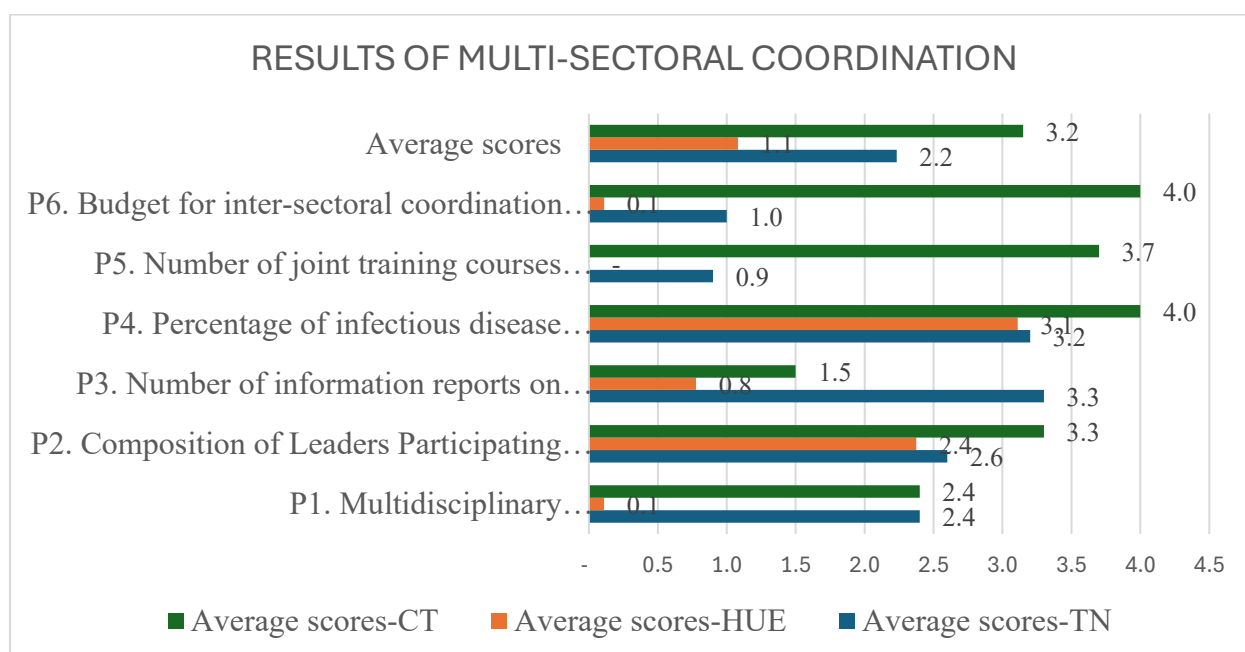
Indicators	Average scores Thai Nguyen	Average scores Thua Thien Hue	Average scores Can Tho
C1.1: One Health multi-sectoral coordination regulation or plan	3.6	3.7	4.0
C2.1 Assignment of a focal unit for coordination and its responsibilities	3.3	3.5	3.9
C3.1: Status of sudden information sharing	3.6	1.9	3.8
C4.1: Status of periodic information sharing	3.5	2.5	3.8
C5.1: Investigation and handling of joint disease outbreaks	3.4	3.6	4.0

C6.1: Joint communication on disease prevention	1.3	1.4	4.0
C7.1: Organize joint training (with interdisciplinary medical and veterinary training).	0.9	0.3	4.0
C8.1: Jointly coordinate inspection and supervision of general activities at lower levels.	2.4	1.4	2.8
Average scores	2.8	2.3	3.8

Source: Pilot testing M-CMAT in three provinces

Evaluation results indicate significant variation in the average scores for the status of multi-sectoral cooperation across three selected provinces. Thua Thien Hue province has the lowest average score at 2.3, while Can Tho city has the highest at 3.8. The average score for each indicator also differs greatly between provinces. In Can Tho city, most indicators have an average score around 4, except for one indicator, "Joint coordination of inspection and supervision of general activities at lower levels," which falls below 3.

The two indicators with the lowest average scores are related to joint communication on disease prevention and the joint organization of training courses. These are among the important contents of the government circular. The reason for this is that each sector often has varying goals and priorities.



Source: Pilot testing M-CMAT in three provinces

Overall, the average score for multi-sectoral coordination results is much lower than the score assessing the current situation. Provinces with higher average scores for the status of multi-sectoral cooperation also achieve higher average scores for the results.

Importantly, after pilot testing, all participants commented that the toolkit was easy to understand, evaluate, and implement. However, since this is a self-assessment and subjective, it is necessary to expand the number of participants in the assessment, including managers and professional staff, and to add qualitative information to each indicator. Some participants also noted that pilot testing provided insights into the status of multi-sectoral collaboration in zoonosis prevention in each participating province. If we apply this toolkit in periodic

assessments, we will be able to measure progress in multi-sectoral collaboration in each locality.

Sharing pilot testing results and finalizing M-CMAT

The VOHUN National Coordinating Office (NCO) organized an online workshop to share the entire process of designing, testing, and implementing M-CMAT in practice. The workshop participants included representatives from provincial CDCs and Sub-DLAH. Additionally, by Kobo-Toolbox software, over ... participants from 11 provinces were able to utilize M-CMAT to self-evaluate the current state of multisectoral collaboration in zoonosis prevention in their provinces within their provinces.

Most participants appreciated having M-CMAT, and some provinces pledged to apply this toolkit to assess the level of multi-sectoral coordination in zoonosis disease prevention in their locality. Recommendations for improving some indicators were also proposed by some delegates. This workshop supports knowledge-sharing among provinces and produces follow-up actions for applying M-CMAT.

Project Impact

The successful implementation of M-CMAT has had tangible benefits for local communities in Vietnam, particularly in areas prone to zoonotic diseases. Strengthened coordination mechanisms have resulted in more effective surveillance and response systems, reducing the risk of outbreaks. With improved collaboration among health, veterinary, and environmental agencies, public health interventions have become timelier and more efficient, ensuring that communities receive faster and more coordinated support during disease outbreaks.

Beyond immediate health benefits, the project has played a key role in raising awareness and fostering community engagement. Through targeted outreach and discussions led by local authorities, community members have gained a deeper understanding of zoonotic diseases and the importance of inter-sectoral collaboration. This increased awareness has not only enhanced public trust in health and veterinary services but also encouraged community participation in disease prevention efforts.

M-CMAT has also contributed to better resource allocation and more effective policy implementation at the local level. By providing a structured assessment framework, the toolkit has enabled provincial and district authorities to optimize resources for disease prevention and control. Evidence-based policymaking, guided by M-CMAT assessments, has strengthened One Health initiatives and improved their implementation at the sub-national level, ensuring a more strategic and efficient use of available resources.

Perhaps most importantly, the project has laid the foundation for long-term sustainability. By institutionalizing multi-sectoral coordination efforts, M-CMAT ensures that improvements made during the project continue beyond its initial implementation phase. Ongoing monitoring and evaluation using the toolkit will help communities maintain and refine their coordination mechanisms over time, reinforcing Vietnam's capacity to prevent and respond to zoonotic disease threats in the years to come.

Project Outlook

Project Reception and Stakeholder Engagement

The M-CMAT project was well received by stakeholders, including provincial and district-level public health authorities, veterinary services, environmental agencies, and academic institutions. The three pilot provinces: Thai Nguyen, Thua Thien Hue, and Can Tho, actively participated in the assessments, demonstrating strong interest in improving multi-sectoral

coordination for zoonotic disease prevention. The following are important facets of stakeholder reception:

- Stakeholders found the toolkit practical and useful for identifying strengths and weaknesses in coordination.
- Some stakeholders highlighted difficulties in data collection and the need for capacity-building to effectively implement the toolkit.
- Provincial authorities expressed interest in incorporating M-CMAT into regular monitoring processes for One Health governance.

Achievements of the Project

A key achievement of the project has been the ability to assess coordination effectiveness across sectors through a structured framework based on 14 key indicators. This has given provincial and district authorities a clearer understanding of the strengths and weaknesses of their existing coordination mechanisms, allowing them to prioritize areas for improvement. The data collected through M-CMAT assessments have also played a crucial role in guiding policymakers in refining their strategies for zoonotic disease prevention and control. As a result, several provinces have committed to initiate action plans to enhance inter-agency collaboration and response mechanisms.

Pilot testing of M-CMAT was conducted in three provinces of Thai Nguyen, Thua Thien Hue, and Can Tho, allowing for an in-depth analysis of region-specific challenges and strengths in multi-sectoral coordination. These assessments provided valuable insights into existing collaboration mechanisms and highlighted areas for improvement. The project also emphasized capacity building by training provincial and district managers on the use of M-CMAT, ensuring that local stakeholders can effectively apply the tool. Additionally, an online dissemination workshop facilitated knowledge sharing, enabling the exchange of best practices and lessons learned.

Beyond capacity building, the project contributed to policy and strategy development by providing evidence-based recommendations to enhance One Health governance at the sub-national level. Discussions with local authorities focused on integrating M-CMAT findings into policy planning, reinforcing the tool's role in shaping more effective and sustainable coordination mechanisms. Through these efforts, the project has laid a strong foundation for improving multi-sectoral collaboration and strengthening Vietnam's One Health approach.

Lessons Learned, Limitations, and Future Directions

The implementation of M-CMAT has demonstrated its value as a structured tool for improving multi-sectoral coordination. By allowing provincial authorities to systematically evaluate their coordination mechanisms, M-CMAT has provided a standardized approach to assessing and strengthening cross-sectoral collaboration. Its adaptability across diverse regional contexts in Vietnam underscores its flexibility, making it a relevant tool for different governance structures and local priorities. Furthermore, the ability to generate quantifiable insights has been instrumental in guiding evidence-based policy interventions, ensuring that decision-making is informed by measurable data rather than anecdotal evidence.

Despite its strengths, several challenges have limited the full impact of M-CMAT and highlight areas for improvement:

- **Divergent sectoral priorities:** Differences in mandates—public health focuses on disease control, veterinary services on animal health, and environmental agencies on

pollution—have made it difficult to align on shared objectives, resulting in fragmented efforts.

- **Financial constraints:** Limited funding at the local level has restricted the ability to implement follow-up actions, reducing the effectiveness of M-CMAT-based coordination.
- **Fragmented data systems:** Each sector maintains separate information systems, making data sharing and joint analysis difficult, and hindering comprehensive coordination.
- **Limited cross-sector engagement:** While health and veterinary sectors are actively involved, engagement from environment, education, and community sectors remains weak, limiting the full application of the One Health approach.

To address these limitations and build on the strengths of M-CMAT, future efforts should focus on expanding its implementation, refining its approach, and ensuring long-term sustainability. Scaling up M-CMAT to additional provinces will be essential for improving nationwide multi-sectoral coordination, with a particular emphasis on strengthening collaboration beyond the core health sectors to include education and community engagement. Continuous refinement of M-CMAT indicators, based on pilot feedback, will enhance its relevance and usability, while the development of training programs will improve technical understanding among users. Additionally, exploring a digital version of M-CMAT could streamline data collection and facilitate real-time monitoring.

For long-term sustainability, integrating M-CMAT into Vietnam's One Health Strategic Plan will be crucial. Advocacy efforts should focus on institutionalizing M-CMAT within national policy frameworks while securing funding and technical support from international organizations such as FAO and WHO. Establishing a formal mechanism for periodic assessment and updates will ensure that M-CMAT remains relevant and effective in an evolving public health landscape. By addressing existing challenges and strategically expanding its reach, M-CMAT has the potential to become a cornerstone of Vietnam's multi-sectoral coordination efforts, strengthening the country's capacity to respond to complex health and environmental challenges.

Conclusions

M-CMAT is a comprehensive and adaptable toolkit for supporting multi-sectoral coordination at the sub-national level in Vietnam. It enables provinces and districts to systematically assess and improve collaboration in zoonotic disease prevention. Institutionalizing M-CMAT within national and local frameworks will ensure long-term sustainability and effectiveness.

Group Discussion Questions

1. Why is multi-sectoral coordination critical for zoonotic disease prevention at the sub-national level? What challenges exist in ensuring effective collaboration?
2. How does M-CMAT assess multi-sectoral coordination? What strengths and weaknesses do its 14 indicators present?
3. How does M-CMAT differ from other One Health assessment tools? What makes it a valuable addition?
4. How can the toolkit be adapted and scaled for use in other provinces or countries? What barriers might arise?
5. How can M-CMAT results guide policy and strategy development for zoonotic disease prevention?

6. What are the risks of relying on self-assessment tools like M-CMAT for evaluating coordination mechanisms? How can these be mitigated?
7. How would you apply M-CMAT to assess coordination in a specific local or regional context?
8. What insights were gained from piloting M-CMAT in three provinces? What improvements could be made based on feedback?
9. What strategies could improve multi-sectoral coordination for zoonosis prevention at the sub-national level?

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Further reading

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