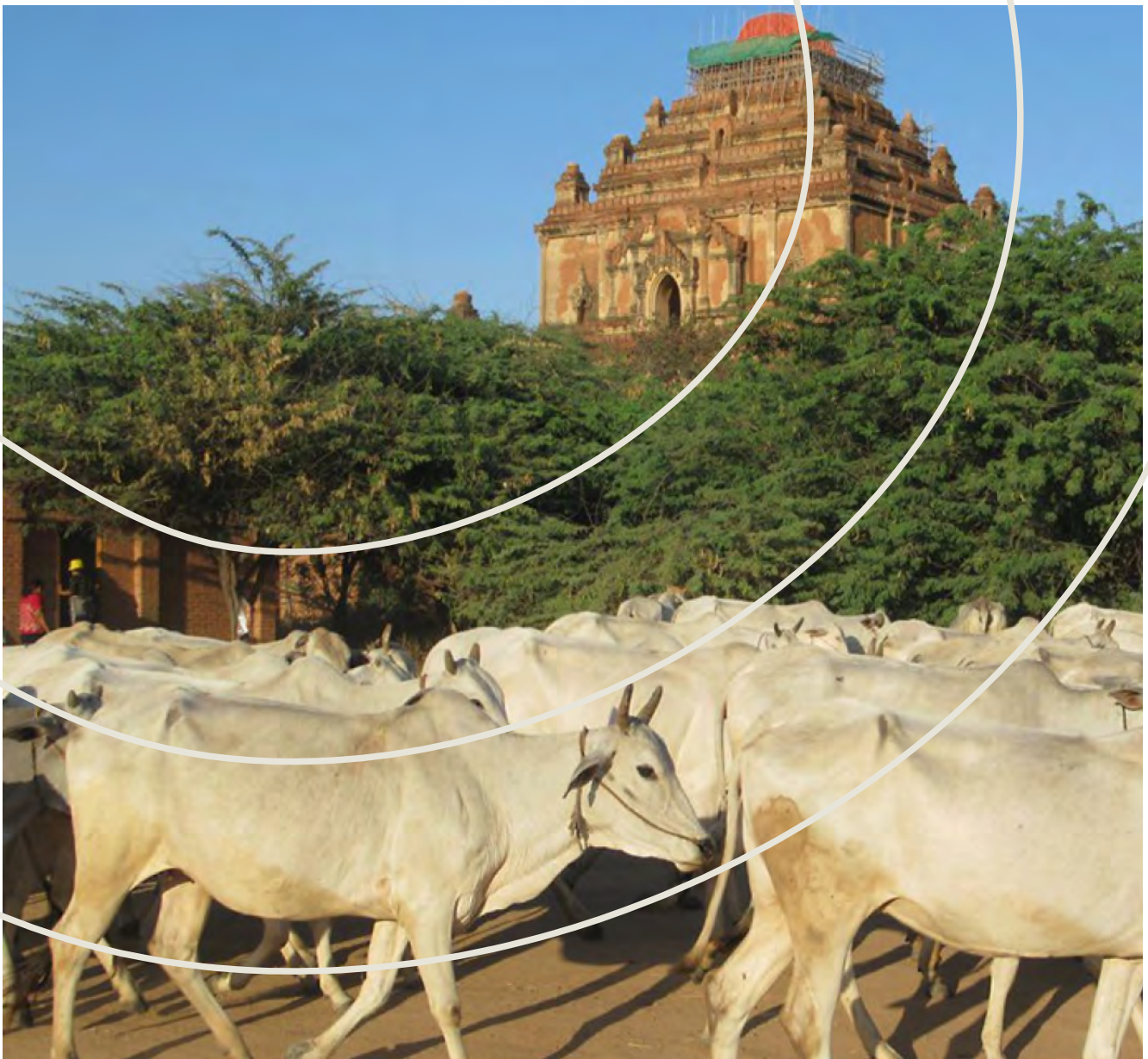


Evaluation of the South-East Asia and China Foot and Mouth Disease (SEACFMD) Campaign from 1997-2020



Peter Windsor and Harish Tiwari



World Organisation
for Animal Health



WOAH SUB-REGIONAL REPRESENTATION FOR SOUTH-EAST ASIA (SRR-SEA)
C/O Department of Livestock Development, 69/1 Phayathai Road, Bangkok 10400 Thailand
Tel: (+66 2) 653 4864 * Fax: (+66 2) 653 4904 * Email: srr.seasia@woah.int

Recommended citation:

World Organisation for Animal Health (WOAH). 2023. *Report on the Evaluation of South-East Asia and China Foot and Mouth Disease (SEACFMD) from 1997 to 2020*. WOAHS Sub-Regional Representation for South-East Asia, Bangkok, Thailand.

All World Organisation for Animal Health (WOAH, founded as OIE) publications are protected by international copyright law. Extracts may be copied, reproduced, translated, adapted, or published in journals, documents, books, electronic media and any other medium destined for the public, for information, educational or commercial purposes, provided prior written permission has been granted by the WOAHS. Certain texts may not be subject to copyright law and can therefore be reproduced at will. If this is the case, it will be clearly stated at the beginning of the article.

The designations and denominations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WOAHS concerning the legal or development status of any country, territory, city, or area or of its authorities, or concerning the delimitation of its frontiers and boundaries. The mention of specific companies or products of manufacturers, whether these have been patented, does not imply that these have been endorsed or recommended by WOAHS in preference to others of a similar nature that are not mentioned.

© World Organisation for Animal Health (WOAH), 2023. All rights reserved

Table of Contents

ACKNOWLEDGEMENTS	vi
LIST OF ABBREVIATIONS	vii
LIST OF FIGURES	ix
LIST OF TABLES	x
EXECUTIVE SUMMARY	xi
Chapter 1. Historical perspectives	1
1.1 Introduction	2
1.2 Methodology	3
Chapter 2. Literature review	4
2.1. A review of literature	5
2.2. Review of SEAFMD/SEACFMD Regional Plan & Roadmaps, other documents & reports	5
2.2.1. Campaign Plan 2001-2004	5
2.2.2. Roadmap 2006-2010	7
2.2.3. Roadmap 2011-2015	8
2.2.4. Roadmap 2016-2020	8
2.2.5. Roadmap 2021-2025	9
2.3. Review of PVS pathway reports	9
2.3.1. Performance of veterinary services in the region	12
2.4. Campaign Review and Evaluation reports	12
2.5. Issues identified from the review of published literature	13
2.6. Review of Recent Developments for Consideration	16

Chapter 3. Stakeholder consultations	18
3.1. Stakeholder consultations	19
3.2. Priorities for the Review Process	19
3.2.1 Improved Technical Services Capacity	19
3.2.2 Governance and Policy	19
3.2.3 Coordination and Advocacy	19
3.2.4 Shared Understanding of Performance Indicators	20
3.3. Equity	20
3.4. Recommendations	23
3.5. Methodology for stakeholder consultations:	24
3.5.1. Comprehensive survey	21
3.5.2. Abbreviated survey	21
3.5.3. Focus group discussions	22
Chapter 4. Technical services capability	23
4.1. Introduction	24
4.2. Technical Services Capability	25
4.2.1. Biosecurity	25
4.2.2. Disease Control Zones	26
4.2.3. Border quarantine facilities and regulations	28
4.2.4. Control of animal movement	29
4.2.5. FMD vaccination programs	30
4.2.6. Animal disease diagnostic facilities	32
4.2.7. Disease Surveillance System	33
4.2.8. Epidemiological capacity: data collection, analysis, reporting, evidence-based decision making	35
4.2.9. Transparency in reporting	37
4.2.10. Public awareness of FMD	38
4.2.11. Disease communication	40
4.3. Assessment of technical capacities according to stakeholder role and affiliation	40
4.4. Summary of contribution of SEACFMD campaign to technical services capacity	44

Chapter 5. Governance and policy	45
5.1. Introduction	46
5.2. Veterinary and animal health services	46
5.3. Veterinary public health services	46
5.4. Alignment of national policies with regional and other member countries	48
5.5. Legislation on the trade of animals and animal products	50
5.6. Legislation on food safety risks	50
5.7. Assessment of governance and policy according to stakeholder role and affiliation	53
5.8. Summary of SEACFMD campaign contribution to governance and policy	54
Chapter 6. Coordination and advocacy	56
6.1. Introduction	57
6.2. Coordination of activities of the national task force on FMD control	57
6.3. Coordination on emergency disease response (including other TADs; HPAI, ASF)	57
6.4. Coordination with other stakeholders towards a One Health approach	58
6.5. Attracting financial commitments from national, international, and local donors	60
6.6. Attracting political commitment to FMD control	60
6.7. Assessment of coordination and advocacy by stakeholder roles and affiliations	61
6.8. Summary of SEACFMD campaign contribution to coordination and advocacy	62
Chapter 7. OECD M&E framework	64
7.1. Introduction	65
7.1.1. Relevance	65
7.1.2. Coherence	66
7.1.3. Effectiveness	66
7.1.4. Efficiency	67
7.1.5. Impact	67
7.1.6. Sustainability	68
7.2. Equity	68

Chapter 8. Recommendations & Conclusion	70
8.1. Introduction	71
8.2. Recommendations from the review of documentation and literature	71
8.3. Recommendations from the consultations with stakeholders	72
8.4. Recommendations from Focus Group Discussions	73
8.4.2. Border quarantine facilities:	73
8.4.3. Public awareness	73
8.4.4. Animal disease diagnostic facilities:	73
8.4.5. Advocacy for political commitment:	73
8.4.6. Biosecurity	73
8.4.7. FMD vaccination	73
8.4.8. Regional alignment of national FMD policies	74
8.4.9. Veterinary animal health services	74
8.4.10. Advocacy for financial commitment	74
8.4.11. Animal movement control	74
8.5. Conclusion	74
 REFERENCES	 74
 APPENDICES	 77
Appendix A. Letter request you to complete the online survey below???	78
Appendix B. Questionnaire for stakeholder interviews for review of SEACFMD campaign (1997-2020)	79
Appendix C. Survey to assess its performance in the SEACFMD campaign (1997-2020)	82

Acknowledgements

The review and evaluation of SEACFMD Campaign was conducted by Dr Peter Windsor and Harish Tiwari, University of Sydney, Australia.

This review would not have been possible without the support and contribution of the Southeast Asia and China Foot and Mouth Disease (SEACFMD) Campaign member countries and the many participant stakeholders dedicated to progression of FMD control in Southeast Asia and beyond. The review team is grateful to the efforts of all participants involved in sharing their vast array of experiences and ideas, suggestions, and responding to Survey questionnaires. Those contributing to Focus Group Discussions, both online and in-person at the 25th SEACFMD National Coordinators meeting in Bali on October 3-5, 2022, are gratefully acknowledged.

This initiative was coordinated by Karma Rinzin (WOAH Sub-Regional Representation for Southeast Asia) with assistance from Ronello Abila, Ashish Sutar and Bolortuya Purevsuren (WOAH Sub-Regional Representation for Southeast Asia). The preparation of the survey questionnaires, communications with relevant stakeholders and completion of this report, was assisted by the positive contributions of staff in the WOAHSRRSEA.

This review was made possible through the generous fund support of the Australian Government Department of Agriculture, Forestry and Fisheries Project on Enhanced capacity of countries in South-East Asia to detect, control and prevent the spread of priority transboundary animal diseases.

List of abbreviations

ACIAR	Australian Centre for International Agricultural Research
AMR	Antimicrobial Resistance
APCOVE	Asia Pacific Consortium of Veterinary Epidemiology
ARAHIS	ASEAN Regional Animal Health Information System
ASEAN	Association of South East Asian Nations
ASF	African Swine Fever
CAHWs	Community Animal Health Workers
CSF	Classical Swine Fever
DCZ	Disease Control Zone
EID	Emerging Infectious Disease
EIDPPRR	Emerging Infectious Disease Prevention Preparedness Response and Recovery
Epi	Epidemiology
EU	European Union
EuFMD	European Commission for the Control of Foot and Mouth Disease
FAO	Food and Agriculture Organization of the United Nations
FAO RAP	FAO Regional Office for Asia and the Pacific
FETP	Field Epidemiology Training Programme
FMD	Foot and Mouth Disease
FMDv	Foot and Mouth Disease virus
GAHP	Good Animal Health Practice
GDP	Gross Domestic Product
GF-TADs	Global Framework for the Progressive Control of Transboundary Animal Diseases
GHGe	Green House Gas emission
GMS	Greater Mekong Subregion
HPAI	Highly Pathogenic Avian Influenza
HS	Haemorrhagic Septicaemia
IAEA	International Atomic Energy Agency
iSIKHNAS	Indonesia Animal Health System
KII	Key Informant Interviews
Lao PDR	Lao People's Democratic Republic
LMZ	Lower Mekong Zone
LSD	Lumpy Skin Disease
M-T-M	Malaysia-Thailand-Myanmar
MyZ	Myanmar Zone

NC	National Coordinators
NTF	National Task Force
OHA	One Health Approach
OIE	Office International des Epizooties
PCP-FMD	Progressive Control Pathway for Foot and Mouth Disease
PPR	Peste des Petits Ruminants
PRC	People's Republic of China
PVS	Performance of Veterinary Services
RAWS	Regional Animal Welfare Strategies
RR	Regional Representation
RRL	Regional Reference Laboratory
RRLFMD	Regional Reference Laboratory for Foot and Mouth Disease
SARS	Severe Acute Respiratory Syndrome
SEACFMD	South-East Asia and China Foot and Mouth Disease
SEAFMD	South East Asia Foot and Mouth Disease
SRR	Sub-regional Representation
TAD	Transboundary Animal Diseases
TB	Tuberculosis
UMZ	Upper Mekong Zone
WAHIS	World Animal Health Information System
WHO	World Health Organization
WOAH	World Organisation for Animal Health
WOAH RCU	World Organisation for Animal Health Regional Coordination Unit

List of Figures		p.
Chapter 1		
1.1.	Member endemic countries that constituted the SEAFMD platform in 1997	2
1.2.	Map of the SEACFMD campaign region showing endemic and free member countries of the campaign in 2012	3
1.3.	Map of the SEACFMD campaign region showing endemic and free member countries in SEACFMD in 2022	3
Chapter 2		
2.1.	Flowchart of strategies adopted in successive roadmaps 1997 - 2020	7
2.2.	A schematic depiction of the gaps identified by the PVS evaluations carried out in the member countries of the region.	10
2.3.	Cattle transported across the upper Mekong destined for PRC via Luang Namtha province, Lao PDR, now as a formal movement, compared with cattle swum from Cambodia into Vietnam as a continuation of 'informal' movement in the GMS	11
Chapter 3		
3.1.	Flow chart of the methodology followed during the present review of the SEACFMD campaign 1997 -2020	21
Chapter 4		
4.1.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on biosecurity practices.	26
4.2.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on biosecurity practices.	27
4.3.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on disease control zones.	28
4.4.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on biosecurity practices.	28
4.5.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on border quarantine measures.	30
4.6.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on border quarantine measures.	30
4.7.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on animal movement control.	31
4.8.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on animal movement control.	31
4.9.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on vaccination campaign.	33
4.10.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on vaccination campaign.	33
4.11.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on diagnostic facilities.	34
4.12.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on diagnostic facilities.	34
4.13.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on disease surveillance systems.	35
4.14.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on disease surveillance systems.	35
4.15.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on epidemiological capacity.	36
4.16.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on epidemiological capacity.	37
4.17.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on transparency in reporting.	38
4.18.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on transparency in reporting.	38
4.19.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on public awareness.	39
4.20.	Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on public awareness.	39
4.21.	Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on disease communication.	40

4.22.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD on disease communication.	41
4.23.	Radar chart showing comparative perception of the improvement of priority areas during SEACFMD campaign 1997-2020 based on the roles of the stakeholders.	42
4.24.	Radar chart showing comparative perception of the improvement of priority areas during SEACFMD campaign 1997-2020 based on the roles of the stakeholders	42
4.25.	Radar chart showing comparative perception of the improvement of priority areas during SEACFMD campaign 1997-2020 based on the roles of the stakeholders	43
4.26.	Radar chart showing comparative perception of the improvement of priority areas during SEACFMD campaign 1997-2020 based on the roles of the stakeholders	43
Chapter 5		
5.1.	Bar chart survey responses of participant status ‘contributors’ on the impact of SEACFMD on veterinary and animal health services.	47
5.2.	Bar chart survey responses of participant status ‘contributors’ on the impact of SEACFMD on disease communication.	47
5.3.	Bar chart survey responses of participant status ‘contributors’ on the impact of SEACFMD on veterinary public health services.	48
5.4.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD on veterinary public health services.	49
5.5.	Bar chart survey responses of participant status ‘contributors’ on the impact of SEACFMD on alignment of national policies with regional aspirations.	49
5.6.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD on alignment of national policies with regional aspirations.	50
5.7.	Bar chart survey responses of participant status ‘contributors’ on the impact of SEACFMD on animal/animal products trade.	51
5.8.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD regarding legislations on animal/animal products trade.	51
5.9.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD regarding legislations on food safety risks.	52
5.10.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD regarding legislations on food safety risks.	52
5.11.	Radar chart showing performance of the SEACFMD campaign on aspects of governance and policy according to stakeholders’ contribution.	53
5.12.	Radar chart showing performance of the SEACFMD campaign on aspects of governance and policy according to stakeholder affiliations.	54
Chapter 6		
6.1.	Bar chart survey responses of participant status ‘contributors’ on the impact of SEACFMD on performance of National Task Force.	58
6.2.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD on performance of National Task Force.	58
6.3.	Bar chart survey responses of participant status ‘contributors’ on the impact of SEACFMD on emergency disease response.	59
6.4.	Bar chart survey responses of participant status ‘affiliations’ on the impact of SEACFMD on emergency disease response.	59
6.5.	Radar chart showing performance of the SEACFMD campaign in the aspects of coordination and advocacy according to stakeholders’ affiliations.	61
6.6.	Radar chart showing performance of the SEACFMD campaign in the aspects of coordination and advocacy according to stakeholders’ affiliations.	62
List of Tables		
Chapter 2		
2.1.	Summary of historical FMD outbreaks as reported on the WRLFMD website in 2018	6

Executive summary

The South-East Asia and China Foot and Mouth Disease (SEACFMD) Campaign is a regionally coordinated programme to combat foot and mouth disease (FMD) in South-East Asia, China and Mongolia. There has been substantial progress through the implementation of the SEACFMD Campaign and completion of 5 phases of implementation from 1997 to 2020: Phase 1 (1997–2001), establishing the Campaign; Phase 2 (2001–2005), refining strategic direction and components of the Campaign; Phase 3 (2006–2010), improving coordination and partnership efforts; Phase 4 (2011–2015), refining of FMD control strategies with targeted vaccination and enhanced technical coordination; Phase 5 (2016–2020), continuing a sustainable approach to FMD control with expansion of the Progressive Control Pathway for FMD (PCP-FMD). The SEACFMD Campaign now enters its 6th phase of implementation, guided by the SEACFMD Roadmap 2021–2025, which mainly focuses on reinvigorating FMD prevention and control efforts in SEACFMD member countries. In addition to continuing the key elements of FMD prevention and control during this 6th phase, an in-depth evaluation of the SEACFMD Campaign, from its establishment in 1997 up to 2020, is required. This evaluation in the purpose of the current review.

This evaluation process started with desktop reviews of the published documents from the SEACFMD Campaign, scientific literature, and other relevant material. This was followed by a series of virtual consultations with the SEACFMD Members, key stakeholders, and experts involved in the Campaign; as well as an online survey and face-to face focus group discussion. Several strengths and gaps were identified, and key recommendations were provided to address these gaps. Importantly, there was general agreement that the structural expansion of SEAFMD through SEACFMD to involve more countries beyond the Greater Mekong Subregion (GMS) was appropriate, considering the increasing interconnectedness of FMD virus pools. There was also an agreement that the evolution of the SEAFMD Phases, now SEACFMD, , provided a robust mechanism that facilitated progress, particularly with the introduction of the PVS and PCP tools. Furthermore, respondents from diverse roles and affiliations unanimously agreed that the SEACFMD Campaign

has been highly successful in fostering strong relationships among technical staff, facilitating fruitful coordination, collaboration and communication between member countries. However, successes in nurturing long-term political and financial commitments to sustain interventions were seen as insufficient.

Among the several gaps and recommendations, the following represent the most critical gaps and key recommendations, providing guidance for the future SEACFMD Campaign.

1. Inadequate political commitment and resourcing

Despite the importance of the SEACFMD Campaign, several countries still lack the political will to prioritize it, which hinders progress and limits its effectiveness. Some governments in the region do not allocate sufficient funding to support its implementation, leading to resource shortages for vaccination, surveillance, and other critical measures needed to control the spread of the disease. Similarly, FMD-free countries require resources to maintain their prevention and preparedness efforts. Therefore, advocacy and other appropriate interventions are needed to secure policymakers' support for the successful implementation of SEACFMD Campaign.

2. Lack of surveillance capacity

An effective surveillance system is essential for identifying and controlling FMD outbreaks. However, many SEACFMD members still lack the capacity for early detection and response, effective laboratory diagnosis, and a full understanding of the dynamic epidemiological changes of FMD. This can lead to delays in detecting and responding to outbreaks, increasing the risk of the disease spreading. To address this gap, investment is needed to enhance the region's capacity to detect, diagnose and respond to FMD outbreaks in a timely and effective manner. Additionally, a better understanding of the epidemiological patterns of the disease, including the various virus strains, is crucial to support effective prevention and control measures.

3. Access to quality vaccines and effective vaccination

While vaccines are an important tool for preventing and controlling FMD, challenges related to their availability remain. Many countries continue to face shortage of quality vaccines. Additionally, several factors hinder the implementation of effective vaccination programs, including limited resources, poor infrastructure, and logistical challenges. Ensuring access to quality vaccines, addressing challenges in implementing effective vaccination strategies, and focusing on vaccine serotypes and matching, vaccine efficacy, and vaccine delivery logistics and capacities in member countries are all critical to controlling the spread of the disease and achieving the goals of the SEACFMD Campaign.

4. Weak regional biosecurity

Uncontrolled animal movement is a significant risk factor for the spread of FMD in the region, including the introduction of new virus strains. While the SEACFMD Campaign includes measures to control animal movement, there are challenges in enforcing these measures effectively. Biosecurity practices are crucial in limiting the spread of FMDv across animal populations. The SEACFMD Campaign has encouraged improved biosecurity practices between and within member countries to suppress FMDv transmission and restrict the impacts of emerging disease outbreaks. However, recent incursion of FMD into a previously free country (FMD incursion in Indonesia) and rapid spread of emerging TADs such as African swine fever (ASF) and lumpy skin disease (LSD) in South-East Asia, exemplifies the weakness of regional biosecurity systems and their failure to keep pace with the increasing TAD risks following rapid regional socio-economic development.

To address this gap, there is a need for risk assessment studies, appropriate legislation and stronger enforcement of regulations. Effective awareness campaigns for livestock farmers and traders about the risks of uncontrolled animal movement are also necessary. Furthermore, enhanced collaboration between countries in the region is essential to mitigate the risks of cross-border animal movement. Strengthening regional biosecurity strategies is key to prevent the spread of FMD and emerging TADs, including eliminating informal cross-border movement of livestock and their products, improving border controls and quarantine facilities.

5. Inadequate emergency preparedness and response capacity

Emergency preparedness and response is a mechanism to ensure that a particular country is equipped to handle animal disease emergencies by developing capabilities for early warning rapid reaction to disease outbreaks. However, recent experiences with the FMD incursion in Indonesia, as well as the spread of ASF and LSD in Southeast Asia, have showed that many SEACFMD member countries are not adequately prepared to respond to such emergencies.

Effective coordination and a clear chain of command are critical for the prevention and control of FMD and other emerging infectious diseases. There is lack of dedicated organizational structure with a clear chain of command in many countries. This is crucial to ensure that activities are implemented in a coordinated manner and that there is a clear line of authority for decision-making and implementation during the emergencies.

To address these gaps, adequate preparation before an emergency occurs is essential to ensure sufficient capacity, legislative support, resources, and a clear incident command system that adopts a whole-of-system approach. This will allow countries to execute their emergency disease response plans effectively. The focus should be on preparedness and contingency planning systems aimed at preventing the introduction of the disease into territories, early detection of disease events, and rapid response to disease emergencies to contain outbreaks and minimize their impact.

Members and development partners should also prioritise capacity-building programmes for emergency preparedness planning and conducting simulation exercises to improve response to disease emergencies.

6. Insufficient private sector participation

The SEACFMD Campaign has recognised the important role of the private sector in FMD prevention and control. Some SEACFMD members have demonstrated successful Public-Private-Partnerships (PPP), with shared responsibilities and resources in FMD control, particularly to improve and expand the implementation of vaccination programmes. However, the evaluation indicated that private sector participation remains insufficient. To address this, fostering dialogue between public and private sectors -including livestock traders, livestock associations, federations, vaccine manufacturers, and others- will be critical to move forward.

Members are encouraged to refer to WOAH tools, including PVS targeted support on PPP based on the *Guidelines for Public-Private-Partnerships in the Veterinary Domain* (PPP handbook), PPP e-learning courses, and best practices from the WOAH PPP database. Promoting dialogue, initiatives, and partnerships between the public and private sectors will be essential to building resilience and ensuring sustainable control of FMD and other important TADs.

Chapter 1

SEACFMD Campaign
(1997- 2020)

Historical perspectives



1.1. Introduction

Foot and Mouth Disease (FMD) in livestock is a significant transboundary animal disease (TAD) with major deleterious impacts on both global and national economies. FMD has been recognised in Southeast Asia (SEA) for approximately 150 years and affects most of the region, now classified as Pool 1 of the 7 recognised FMD virus (FMDv) pools. The disease remains endemic and poses a persistent threat to food security, livestock trade, and farmer livelihoods (Kompas, Nguyen, and Ha, 2015). FMD outbreaks are a serious concern, as control measures in the region are generally fragmented.

To address this, an integrated approach was launched by the World Organisation of Animal Health (WOAH, founded as OIE) in 1990 with seven founding members: Cambodia, Lao PDR, Malaysia, Myanmar, The Philippines, Thailand, and Vietnam- countries where the disease was endemic (Figure 1.1.). Indonesia joined in 1999, recognizing the importance of regional coordination to maintain its FMD-free status. In 2010, Brunei, the People's Republic of China, and Singapore also joined the Campaign, significantly expanding its geographic coverage. Consequently, SEAFMD was renamed the South-East Asia and China Foot and Mouth Disease (SEACFMD) Campaign. In 2016, Mongolia became its 12th member (WOAH 2016).

The key driver for countries to launch the SEACFMD Campaign was the understanding that FMD, like other TADs, can only be controlled through coordinated efforts among countries. Additionally, the guiding principles for the SEAFMD Campaign focused on improving trade opportunities, enhancing food security, and alleviating poverty in the region. The first regional SEAFMD meeting, sponsored by the International Atomic Energy Agency (IAEA), took place in 1997 and has since become an annual event. SEACFMD has been described as a 'major, difficult and highly ambitious activity covering 12 countries in which approximately 30% of the world's population reside and where there is massive production of FMD-susceptible animals including pigs, cattle, buffaloes and small ruminants.'

After initiating the SEAFMD Campaign in 1997, a Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) was launched in 2004 as a joint initiative of FAO and WOAH, with expected participation from WHO for zoonoses. The programme aimed to achieve the prevention, detection, and control of TADs, addressing their regional and global dimensions by leveraging the strengths of the international organizations to achieve common objectives. Both SEAFMD and GF-TADs facilitate regional alliances in TAD control, providing

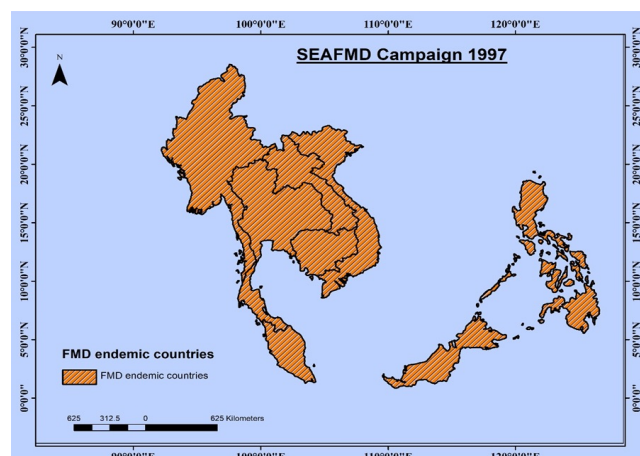


Figure 1.1. Member endemic countries that constituted the SEAFMD platform in 1997

capacity building and assistance in establishing programmes for the specific control of certain TADs based on regional priorities.

FAO and OIE subsequently developed a Global FMD Control Strategy, which was endorsed by representatives from over 100 countries and international and regional partners at the Second OIE/FAO Global Conference on FMD Control held in Bangkok, Thailand, in 2012.

GF-TADs aim to reduce the global burden of FMD and the risks of reintroducing the disease into FMD-free areas. Like the SEACFMD Campaign, it recognises that some FMD-free countries need assistance in maintaining their status. The Global Strategy now combines two critical tools:

- The Progressive Control Pathway for Foot-and-Mouth Disease (PCP-FMD), developed by FAO and EuFMD, and further endorsed by the OIE, which guides endemic countries through a series of incremental steps to better manage FMD risks.
- The WOAH Performance of Veterinary Services Pathway (PVS), which evaluates the national Veterinary Services of countries to assist with achieving compliance with WOAH quality standards.

The progress of the Global FMD Control Strategy is assessed at the regional level using roadmap platforms and structures that enable the formulation of harmonised programmes. These facilitate the exchange of information on virus circulation, diagnostic developments, vaccination, biosecurity, and other TAD control initiatives. Regional roadmaps are developed from coordinated actions within the seven recognized major FMDv Pools, with a long-

term shared vision for the control and eradication led by the GF-TADs FMD working group, in collaboration with WOA and FAO regional Offices, regional economic communities, regional organizations, EuFMD, and participating nations.

There has been substantial progress in SEAFMD's evolution into the SEACFMD Campaign, with the addition of China and, more recently, Mongolia (Figure 1.2.). Participants in the SEACFMD Campaign have demonstrated enhanced veterinary services capacities, improved rural livelihoods, strengthened farm-based economies, and increased transboundary trade of livestock and animal products in most countries in the Greater Mekong Subregion (GMS). The Campaign has completed five phases of implementation., and has influenced national, regional, and global stakeholders to progress toward the aspirational goal of eliminating FMD in SEA. Phase 6 of the Campaign included an evaluation of the SEACFMD Campaign's progress to provide guidance for its future. The evaluation aimed to identify successes and gaps to inform future strategies for the Campaign. To identify these successes and gaps, we reviewed the published Roadmaps, PVS reports, Project / Campaign evaluation reports, scientific literature and other documents to systematically assess progress. This review informed a survey questionnaire process to gather information on the performance of SEAFMD now SEACFMD, since its inception in 1997 until 2020.

1.2. Methodology

The methodology used in this review process was to conduct an extensive study of the relevant literature relating to the development of SEAFMD and SEACFMD control strategies, including the sequential Regional Plan, initial Roadmap from 2001-2004, then Roadmaps 2006-2010, 2011-2015, 2016-2020, and finally 2021-2025. The analysis of FMD PCP Pathway reports, PVS reports, the available Campaign Review and Evaluation reports, and the published scientific literature enabled identification of numerous issues of relevance. This review includes perspectives of relevant recent developments, including other TAD incursions (e.g., ASF, LSD), the COVID-19 pandemic that preceded the review, and the significant outbreak of FMD in Indonesia that occurred soon after the commencement of the review process in early 2022.

This desktop review process informed the approach for conducting the stakeholder consultations and developing the comprehensive survey that incorporated the OECD M& E framework (Appendix A). Online key informant interviews (KII) were organised with selected individuals to seek initial responses in a 'road test' of the comprehensive survey. This enabled modifications to the questionnaire

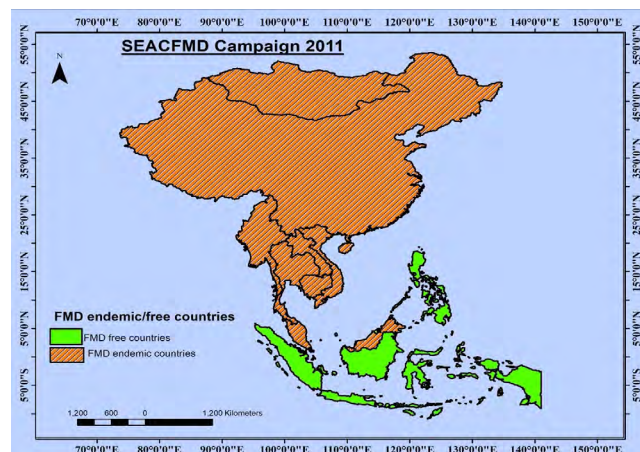


Figure 1.2 Map of the SEACFMD Campaign region showing endemic and free member countries of the campaign in 2011.

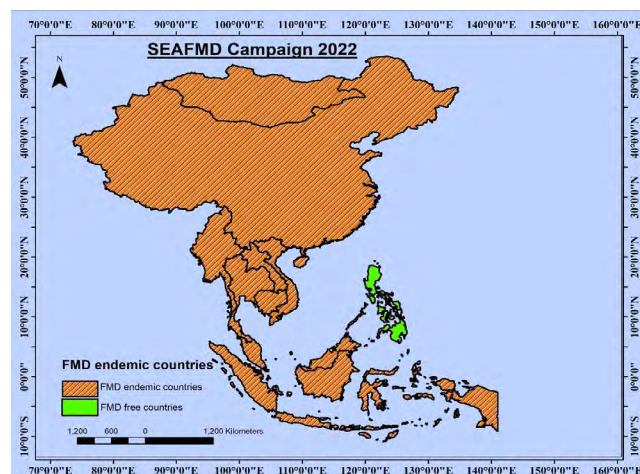


Figure 1.3 Map of the SEACFMD Campaign region showing endemic and free member countries in SEACFMD in 2022

that helped refine the questions and the qualitative data obtained. The survey was forwarded to all the stakeholders on the list developed in consultation with the WOA Sub-Regional Representation for South-East Asia (SRR-SEA). An abbreviated survey was then developed to enable quantitative analysis and increase survey responses (Appendix B).

A presentation on the initiation and design of the review was delivered online to participants attending the 26th Meeting of the WOA Sub-Commission for FMD in South-East Asia, China, and Mongolia, held online from 16 to 17 March 2022. A presentation on the substantive progress of the review and preliminary analyses of the survey data was delivered to participants at the 25th SEACFMD National Coordinators Meeting in Bali on October 3-5, 2022, followed by a focus group discussion (FGD) among delegates in attendance to document additional recommendations for the future of the SEACFMD Campaign.

Chapter 2

SEACFMD Campaign
(1997- 2020)

Literature review



2.1. A review of literature

The list of documents analysed for this review included:

- a. SEAFMD and SEACFMD Control Strategy/ Roadmap documents and reports
- b. PVS (Performance of Veterinary Services) reports and tools developed /implemented for evaluation of the FMD Control programme
- c. Cost-utility analysis of the interventions at the national and regional levels, where available
- d. National Annual Reports and policies for FMD control
- e. Published systematic reviews and scholarly literature on the subject
- f. Outbreak reports/country summaries/WAHIS alignment

2.2. Review of SEAFMD/SEACFMD Regional Plan & Roadmaps, other documents & reports

Historically, FMD has been recognised in South East Asia (SEA) for approximately 150 years (Table 1), with early outbreaks recorded in Indonesia, Malaysia and The Philippines. Serotype O is currently dominant throughout SEA, although multiple topotypes have emerged recently and continue to circulate. Serotype A and Asia 1 have caused outbreaks in most countries in the region, except for Indonesia. Serotype C was confined to historical outbreaks in The Philippines between 1976 and 1994. Singapore only reported a serotype A outbreak in 1973, with Brunei Darussalam never reporting an outbreak (Table 2.1).

The SEAFMD Campaign commenced in 1997, preceding the First OIE/FAO Global Conference on FMD, held in Asunción, Paraguay, in June 2009, where Assistant DG of FAO, Hiroyuki Konuma advised attendees that:

‘For the Global Strategy to succeed it needs more than the partnership of FAO and OIE; it needs the producers and marketing sectors to participate as well as the veterinary services, the pharmaceutical and vaccine companies, and it will need sustained support from financial institutions and the generosity of funders’

At the Second WOA/FAO Global Conference on FMD in Bangkok in 2012, there was recognition that FMD was a ‘failure of the food security system’ and momentum of these two global FMD conferences led to FAO and WOA/FAO developing a Global FMD Control Strategy. The joint FAO/OIE Working Group presented the first outline of the Strategy during the 79th General Session of the World Assembly of Delegates of the OIE in May 2011, and it was further developed in consultation with experts, national and regional authorities, policymakers, development partners and private industry. The Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) launched in 2004 was based on the lessons learned from FMD control under the SEACFMD Campaign.

2.2.1. WOA/FAO SEAFMD regional plan and programme outputs; Campaign Plan 2001-2004

With the aim of documenting progress and providing a strategic framework, Roadmaps were designed to offer broad guidance to the countries of the region. In the following paragraphs, the Roadmap documents released to guide each Phase of the SEACFMD Campaign are discussed, with a summary of the Roadmap strategies presented in the flowchart (Figure 2.1).

The initial Strategy document outlined the broad strategic direction to foster closer cooperation between member countries. It identified an action plan and defined the priorities to be implemented in the second phase (2001-2004). The components of the first SEAFMD plan include:

- a. International coordination and support
- b. Programme Management, Resources and Funding
- c. Public Awareness and Communications
- d. Disease Surveillance, Diagnosis, Reporting and Control
- e. Policy and legislation to support Disease Control and Zone Establishment
- f. Regional research and technology transfer
- g. Livestock sector development, including private-sector integration
- h. Monitoring and evaluation

Country	Disease status	O	A	Asia 1	C	Untyped
Brunei Darussalam	FMD-free without vaccination					
Cambodia	Endemic	1989, 1992, 1994, 1998-2000, 2004-2008, 2010-2013, 2015-2016	2006-2008, 2015-2016	1980-1981, 1988, 1990-1991, 1993-1994, 1997		2006, 2009, 2011
Indonesia	Endemic	1952, 1956-1958, 1962 (Bali), 1972-1974, 1983				September 1887 (Malang, East Java), 1892 (East Java, Sumatra), 1902 (Sulawesi), 1906 (Kalimantan, Madura Island), 1907 (Sulawesi), 1911 (West Nusa Tenggara), 1913 (Madura Island)
Lao PDR	Endemic	1978, 1981-1982, 1984, 1987-1990, 1993, 1998-2001, 2003-2013, 2016-2017	2003, 2006-2008, 2014-2015	1984, 1991-1993, 1996, 1998		
Malaysia	Endemic	1978-1981, 1983-1984, 1992, 1994-1996, 1999, 2000-2016	1973, 1995, 1997, 2002-2005 2007-2014	1985-1986, 1999		1860s, 1909 (Kedah), 1910 (Penang), 1917 and 1929 (Pahang), 1936 (Perak and Selangor), 1938 (Perak)
Myanmar	Endemic	1956-1958, 1971, 1977-1978, 1982, 1989, 1996, 1998-2011, 2015-2017	1971, 1978, 2010, 2015	1958, 1971, 1977-1978, 1982, 1989, 1991, 1997, 2000-2001, 2005, 2017		
Philippines	FMD free without vaccination	1954, 1958-1959, 1965-1968, 1972-1975, 1984?, 1988-1991, 1994-2005	1941? 1975-1981		1976-1981, 1983-1990, 1994	30 June 1902, 1920, enzootic between 1930 and 1939
Singapore			1973			
Thailand	Endemic	1958, 1960, 1980, 1991-1992, 1994-1995, 1999-2017	1953-1957, 1960, 1973, 1986-1988, 1991-1993, 1997-2017	1954-1958, 1960, 1985, 1987?, 1990-1991, 1994-1996, 1998		
Vietnam	Endemic	1956, 1967, 1969, 1997, 1999-2018	2004-2007, 2009-2010, 2012-2017	1992, 2005-2007		

Table 2. 1 Summary of historical FMD outbreaks as reported on the WRLFMD website in 2018

(<http://www.wrlfmd.org>) and published in a review of FMD in SEA (Blacksell *et al.* 2019)

The Roadmap documents articulate the necessity of FMD control in the region, recognizing it is detrimental to the growth of livestock farming sector trade and hence contributes to poverty in rural populations. The plan emphasised the development of strategies to manage the threat of the dispersal of diseases through unregulated trade, including strengthening animal health services sufficiently to cater for smallholder farmers. Although WOAH was involved with the commencement of the FMD control programme in many nations of the region from the early 1990s, the first SEAFMD plan recognised the need for coordination with other international organisations, including FAO and IAEA. Funding from IAEA was critical for supporting the initial regional meetings from 1997.

A multidisciplinary approach was advocated, using a framework linking animal health, production systems, priority initiatives, surveillance systems, international cooperation, and public-private partnership to control and eventually eradicate FMD from the region. Further, the regional approach for the member countries included developing an achievable national business plan that would be implemented and managed by the SEACFMD National coordinator in each member country. This nominee was to be a SEAFMD Sub-commission member by default, annually advising the progress made to the WOAH SRRSEA and the annual SEAFMD meeting. The strategic priorities identified in this plan included:

- a. epidemiology, surveillance, and diagnosis
- b. animal movement management
- c. strengthening livestock health and production systems
- d. planning and financing

Of interest is that the SEAFMD then SEACFMD approach was promoted as a model for coordination of control of other TADs, particularly the emerging infectious diseases (Schneider *et al.*, 2016) of zoonotic potential, including Highly Pathogenic Avian Influenza (HPAI). This disease emerged as a global health risk in the early new millennium, as an unprecedented outbreak of H5N1 HPAI involving nine countries in East and Southeast Asia in 2004.

2.2.2. WOAH SEAFMD regional plan and programme outputs; Roadmap 2006-2010

At the commencement of the SEAFMD Campaign, Indonesia was the only SEA nation declared free from FMD. However, during the second phase, certain islands within Malaysia and the Philippines were certified as FMD-free. The disease remained endemic in Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam, with sporadic outbreaks reported from peninsular Malaysia.

The Roadmap for Phase 3 reinforced the previous strategic direction of striving for political support, improving international coordination, enhancing animal health by

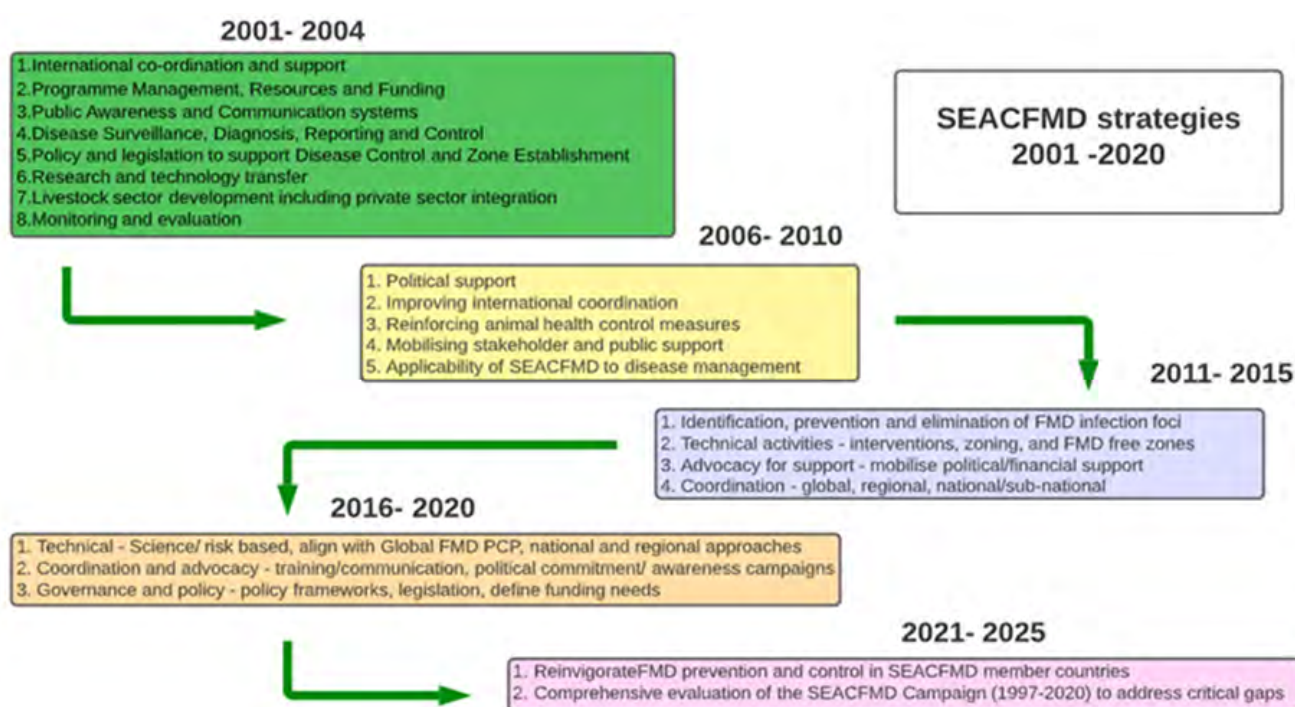


Figure 2.1. Flowchart of strategies adopted in successive roadmaps

strengthening veterinary services, and mobilising stakeholders and public-private partnerships. In addition to the continued use of established epidemiological tools, such as risk analysis, a key feature of this Roadmap was the encouragement of robust surveillance systems and the expansion of diagnostic/laboratory capabilities for emergency disease preparedness and contingency planning for all member countries. It also recommended updating existing legislation and implementation mechanisms, including provisions for a viable compensation strategy.

Phase 3 was a period of consolidating the gains from the previous two phases. Although the strategic tools planned for this phase were to be implemented and strengthened, a critical focus was to extend FMD control zones into disease eradication zones, emphasizing the reduction of outbreaks outside the recognised control/eradicated zones. One of the significant goals of this phase was to establish special funds and resources for emergency preparedness.

During Phase 2, a zoning approach identified six priority zones in the region for the prevention, control, and eradication of FMD. These zones included the Malaysia-Thailand-Myanmar zone (MTM), Upper Mekong zone (UMZ), Lower Mekong zone (LMZ), the FMD-free zone in The Philippines (provisionally free from 2006), the Red River delta zone of Vietnam, and Myanmar zones (MYZ).

An improved understanding of FMD transmission patterns was achieved during this phase, largely due to investigations of the temporal and spatial distribution of FMD. The spread of FMD was primarily attributed to animal movements, both legal and illegal (preferably known as 'informal'). This was identified through the alignment of outbreak clusters with the periodic and seasonal movement patterns of livestock, such as the increased trade of animals following the rice harvest and for festivals.

2.2.3 WOA SEACFMD regional plan and programme outputs; Roadmap 2011-2015

The strategy for the fourth phase of SEAFMD aimed to build on the achievements of the previous phases by increasing the number of disease-free zones and reducing overall prevalence. The definition and identification of 'hotspots', 'nodes', and other vulnerable points for disease control along the animal movement pathway was an important initiative. The previous phase witnessed the expansion of the Campaign with the addition of Brunei Darussalam, Singapore, and China as new members and the renaming of the program as the South-East Asia and China Foot and Mouth Disease (SEACFMD) Campaign.

In addition to consideration of the needs of new member countries and aligning the programme's efforts with the changing dynamics of the region's socio-economic patterns, Phase 4 activities expanded to include other emerging infectious diseases and zoonoses (e.g., rabies). Key achievements of the SEACFMD Campaign included the progressive strengthening of the engagement of the Regional Coordination Unit (RCU) i.e. WOA SRRSEA (SEACFMD Campaign Secretariat) in Bangkok, with various member countries to help drive the Campaign. The RCU promoted increased political and resource commitments, mainly from Australia (e.g., through AusAID), alongside contributions from national governments in ASEAN and other external donors, including the Governments of France, Japan, New Zealand, Switzerland, and the European Union. The RCU also fostered collaborations with other international agencies, including FAO and ACIAR, supporting initiatives and achievements in research and development, vaccination coverage, more effective zoning, raising awareness of the need for improved biosecurity measures, and promoting continued investment to maintain FMD-free status in certified countries, particularly The Philippines and Indonesia. Substantial progress was also made in strengthening legislation and enhancing the capacity of the veterinary workforce in member countries.

During this fourth phase, FMD, HPAI and Classical Swine Fever (CSF), were recognised as priority TADs in the region, to be controlled under the broader Global Framework for Progressive control of Transboundary Animal Diseases (GF-TADs). This phase also introduced the Performance of Veterinary Services (PVS) assessment strategy for progressively strengthening in-country veterinary services. The PVS involves a thorough evaluation and gap analysis, documenting areas of veterinary capacity weakness and enabling strategic interventions and planning to modernise veterinary services and improve relevant legislation. The PVS aims to identify the shortcomings of the existing animal health and production systems, including evaluation of the role of Community Animal Health Workers (CAHWs). The PVS has proven to be a powerful mechanism in guiding the allocation of resources to strengthen the veterinary service response capabilities, from ground level to national level.

2.2.4 WOA SEACFMD regional plan and programme outputs; Roadmap 2016-2020

The Roadmap document of Phase 5 of the Campaign describes a scientific, risk-based approach, building on the increasing number and quality of evidence-based studies that had been accumulating in the region. The

Roadmap included published information on the risks associated with animal movements, the socio-economic impacts of the disease, serotype incursions, vaccination efficacy, biosecurity responses, and other findings from outbreak investigations conducted during previous phases and Phase 5. Despite substantial progress in the Mekong region, the over-ambitious goal of eradicating FMD by 2020 was quickly recognized as unachievable. The Phase 5 Roadmap documented the increasing constraints faced by the Campaign, particularly the persistence and increase of unregulated livestock trade and their products. It emphasised ongoing deficiencies in resources, administration, and institutional support. These challenges were further exacerbated by a lack of effective collaborations between various line ministries within and between member countries, compounded by a continued shortfall in financial commitments.

Throughout the SEACFMD Campaign, efforts to combat FMD in low-income countries have been hampered by shortages of skilled human resources needed to establish a robust countrywide disease surveillance system and an effective disease response capability. Other constraints in several endemic countries included a dilution of central authority power to implement interventions at the provincial level. Moreover, there has been limited private sector engagement and a predominant reliance on international donor support for the Campaign, recognised by some as a significant impediment to progress. Phase 5 recommended that long-term investments in the Campaign were essential to enhancing collaborations, strengthening existing institutions, and encouraging behaviour change among farmers engaged in smallholder and mixed subsistence farming systems.

Phase 5 strategies aimed to create a more sustainable approach to FMD control and prevention in the region by supporting three distinct components: (a) technical capabilities, (b) coordination and advocacy, and (c) governance and policy. The suggested interventions were based on empirical evidence from ongoing studies conducted in the region during previous and current campaigns. These components also incorporated cross-cutting themes, such as communication, capacity building, research and development, and monitoring and evaluation. In a shift from previous iterations, this Roadmap described the goals, objectives, tools, and activities sequentially within a strategic framework, providing greater clarity and highlighting the gaps, challenges, and shortcomings of the FMD control Campaign during earlier phases.

2.2.5 WOAHS SEACFMD regional plan and programme outputs; Roadmap 2021-2025

As the Campaign progresses into Phase 6, the regional plan objectively documents the achievements registered by the programme over the past 23 years. Significant improvements in FMD control have been registered in the region, including in the core competencies essential for TAD control. The priority areas for this phase are numerous and include: more rigorous outbreak investigations; the development of laboratory and epidemiological networks alongside capacity building for veterinary services; a better understanding of the dynamic nature of the disease's epidemiology by addressing new isolates, vaccine matching demands, and changing animal transport patterns; enhancing risk analysis of livestock and product movements; identifying 'hotspots' and 'nodes'; the development of more effective quarantine measures and disease control zones (DCZS); improving disease reporting and communication; and gaining a clearer understanding of the resource limitations within each of country in both the region and the SEACFMD programme.

The document also describes the lessons learned and the impediments compromising the Campaign's success. These include varying levels of commitment among member countries, which affects the formulation and updating of legislation and compliance; challenges in securing financial and other resources; political instability leading to insecure commitments; inadequate implementation of veterinary capacity-building efforts; and poor execution of routine FMD control activities, particularly vaccination, biosecurity, and emergency responses to outbreaks.

The Roadmap also highlights the rapidly changing patterns of meat consumption in the region, reflecting the increasing wealth in the area. The emergence of new markets has resulted in more long-distance animal movements and a greater demand for improved biosecurity, particularly in light of increasing incursions of TADS and EIDs.

2.3. Review of PVS pathway reports

The PVS pathway missions have provided an objective assessment of the strengths and gaps in national veterinary services, highlighting the capacity of member countries to deliver on the PCP for FMD and to control other TADs. While member countries in the region are at various stages of the PVS Pathway, including the evaluation stage and gap analysis phase, several have applied the advised interventions following the gap analysis and received follow-up reports. A flowchart of the gaps identified in PVS reports from the countries in the region is presented (Figure 2.2.).

The PVS gap analysis report (2013) on **Brunei Darussalam** identified deficiencies in the organisational structure and capacity, especially within the Biosecurity Department, along with gaps in legislation requiring stricter compliance and enforcement by stakeholders. Critically, animal disease programmes in the country lacked effectiveness, with the vaccination strategy failing to achieve the required impact for timely disease eradication. Laboratory support was found to be misaligned with the challenges faced by veterinary services, and while emergency diseases contingency plans were in place for HP AI, they were missing for FMD (Weaver *et al.*, 2013).

The evaluation report on **Mongolia**, conducted in 2007, recommended improvements in passive surveillance, capacity building of veterinary services through training, the provision of sufficient FMD vaccines, and the strengthening of legislation to control the illegal movement of animals and livestock products between Mongolia and its neighbours, China, and Russia (Milius and Safarov, 2007).

According to the PVS report on **Thailand** published in 2012, there were fewer field veterinarians in the country compared to sufficient support staff at the national, provincial or district levels. FMD control has remained a priority within national programmes, with one FMD-free zone established. However, the report identified deficiencies in vaccine production facilities and the constant threat of incursions into the newly established FMD-free

zone. In 2012, animal identification and traceability systems were still in the early stages of development (Hutter *et al.*, 2012).

The PVS evaluation of **Malaysia** (2016) was critical of the country's legislative provisions and recommended a harmonised approach across the whole country. For example, disease control zoning was implemented only in Sabah and Sarawak, and it was recommended to extend this to the peninsular region. The report appreciated the progress in providing laboratory support to the Animal Health services but noted deficiencies in infrastructure, maintenance and staffing at laboratories that could compromise diagnostic capacity. A significant shortcoming in Malaysia was the inconsistent approach to animal movement control and identification, with recommendations to adopt a uniform system for animal identification. Additionally, critical deficiencies in overall staffing and resource distribution were highlighted (Schneider *et al.*, 2016).

Lao PDR requested PVS evaluations and gap analyses in 2011 and 2012. The gap analysis report recommended interventions based on two strategies, especially for FMD PCP application. These included an endemic disease-oriented strategy aligned with the regional Roadmap to prevent, control and eradicate FMD; and a market-oriented strategy to identify disease free-zones for exporting cattle and buffalo to regional markets (Bastiansen *et al.*, 2012). The report suggested reducing the number of border crossings and equipping them with facil-

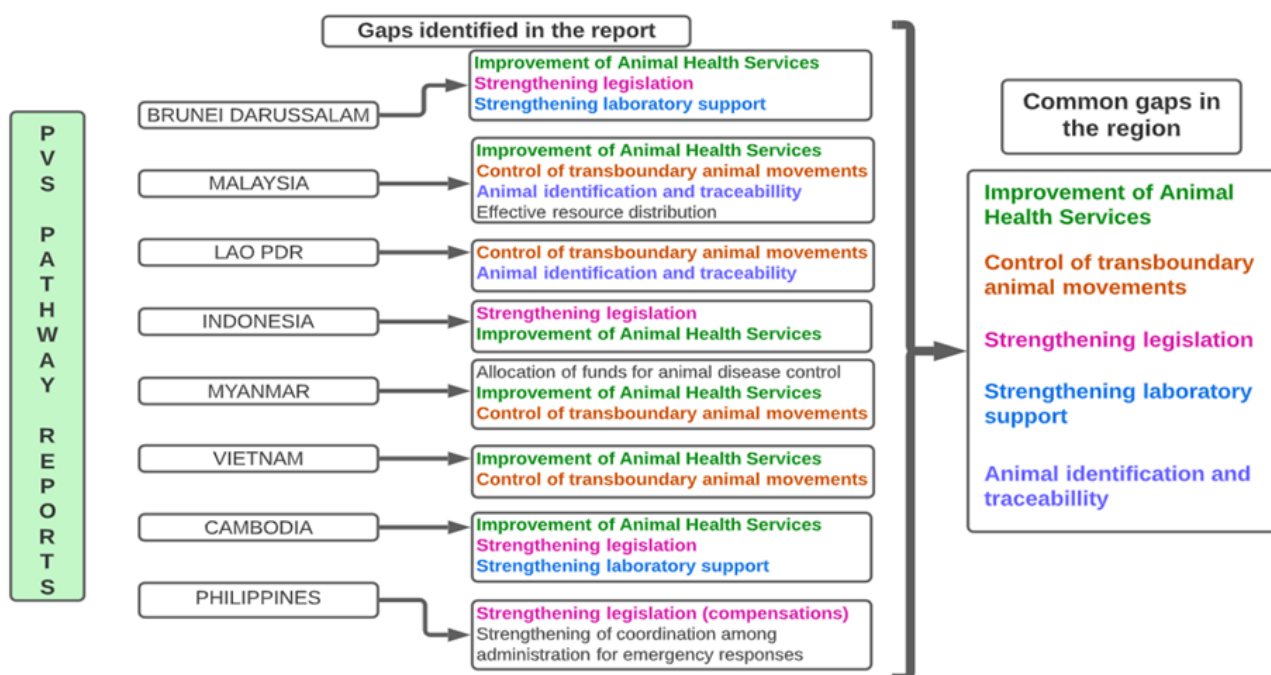


Figure 2.2. A schematic depiction of the gaps identified by the PVS evaluations carried out in member countries of the region.

ities for import/export inspections, including quarantine measures. It also indicated that Lao PDR could progress on the FMD PCP and establish an animal identification and traceability system.

PVS gap analysis reports for **Indonesia, Myanmar, and Vietnam** were completed in 2010 (Batho *et al.*, 2010; Fermet-Quinet, 2010; Gautier *et al.*, 2010). The Indonesian report highlighted activities focused on other TADs, such as rabies, brucellosis and HPAI. At the time, it was assumed that Indonesia would remain free from FMD without vaccination. However, the recent incursion of FMD and the subsequent outbreak response underscored the importance of recommendations to strengthen the veterinary workforce's capacity for prevention, early detection, and rapid response to all exotic diseases, including FMD and PPR. Legislative improvements were also recommended to support the country's export objectives for products of animal origin, though the timeline for achieving these objectives is now uncertain.

The situation in Myanmar reportedly requires significant impetus, beginning with increasing national budget allocations for improving veterinary services. At the time of the gap analysis report, the budget allocation was low, with recommendations to increase it tenfold to match the livestock GDP. Although FMD was endemic in Myanmar, the introduction of a new strain (Serotype A) in cattle was a critical epidemiological event requiring thorough investigation into transboundary animal movements. Recommendations for Myanmar, Malaysia, and Vietnam emphasised improving the structure of animal health services to ensure more consistent veterinary support delivery. The need for consistent border security measures for international animal movements and inspection procedures was

also highlighted. The gap analysis report for Vietnam recommended continuing the current PCP plan in coordination with the WOA SEACFMD programme.

The follow-up PVS report from Myanmar (2018) appreciated the progress made under the National FMD Plan, supported by SEACFMD. The plan led to regional workshops that developed and implemented a risk-based strategic plan aligned with the SEACFMD roadmap. The veterinary services made progress in providing technical training to livestock value chain professionals, with national coordination of the plan, as well as strengthening the laboratory network and human resource development. However, the plan had limited focus, targeting high-risk townships crucial for live cattle trade with the PRC. Additionally, challenges such as staffing shortage, limited technical capacity, insufficient funding, inadequate biological production, control of cross-border animal movement, and poor passive surveillance were documented (Weaver *et al.*, 2018).

Interestingly, the follow-up reports from two other countries raised diverse concerns about their progress on the FMD PCP. In **Cambodia**, the 2017 follow-up report identified numerous issues, including understaffing, lack of resources, limited budgets for promoting changes in practices and implementing interventions, an insufficient vaccine supply, and weak overall veterinary service capability. Significant under-reporting of cases was noted, and laboratories were not adequately equipped to provide reliable test reports. Cambodia remains one of the countries where substantial efforts are needed to progress on the FMD PCP (Weaver *et al.*, 2018).

The PVS follow-up mission to **the Philippines** in 2017 recommended strengthening coordination of emergency



Figure 2.3. Cattle transported across the upper Mekong destined for the PRC via Luang Namtha province, Lao PDR, now as a formal movement, compared with cattle swum from Cambodia into Vietnam as a continuation of 'informal' movement in the GMS.

responses between different levels of administration, reflecting concerns about the balance between central and provincial authorities in efficiently delivering TAD control and eradication programmes. It suggested using an incident command system to enhance coordination and recommended raising investment in livestock and veterinary services sector. Additional funding was also recommended for vaccine procurement and the establishment of a compensation programme.

While PVS reports are arguably not precise indicators of FMD control status in member countries, as they are conducted at different points in time and reflect the varied socio-economic development between countries, they provide valuable insights into the gaps and priorities of participating countries. They offer a baseline for measuring progress following the evaluations and help align with annual SEACFMD meetings, country FMD control plans, and future reports. Additionally, they provide useful information for selecting performance indicators used in this review.

2.3.1. Performance of veterinary services in the region

A common determinant influencing the progress of the FMD PCP in member nations is the efficiency of veterinary services. Regional FMD control through the SEACFMD Campaign commenced in 1997, and since then, numerous other livestock pandemics have emerged in the region, including HPAI, ASF and LSD, as well as re-emerging zoonotic and pandemic diseases, such as COVID-19. The efficiency of veterinary services in a nation is characterised by:

- a. progress in technical capacities,
- b. the availability and effective utilisation of human and financial resources,
- c. the efficiency of coordination with stakeholders, and
- d. legislation and compliance mechanisms that govern market access and safe international trade in livestock and animal products.

A comprehensive analysis of all the PVS reports from SEA countries published between 2006 and 2014, revealed significant shortcomings in the veterinary services of member states. In most member countries, veterinary services are hindered by:

- a. insufficient staffing, a lack of effective chain of command;
- b. poor coordination between stakeholders and particularly private agencies and livestock industry participants;

- c. inadequate border inspection procedures;
- d. poor data management systems; and
- e. uncontrolled and unchecked movement of animals and their products.

The report also identified shortcomings in outbreak investigations that lead to gaps in the reporting system and poor traceability of live animals and animal products. The other challenges of veterinary services include poor and weak disease communications, with a lack of awareness and administration of legal provisions due to inadequate legislative regulations (Poirier, 2014).

2.4. Campaign Review and Evaluation reports

The SEAFMD/SEACFMD Campaign has undergone both internal and external evaluations during its 2.5-decade history. The external evaluation report of 1999, following the formal launch of the programme in 1997, commended the commitment of member countries, while noting that the status of FMD and the progress of control efforts varied significantly across the region. The report indicated the requirement for a country-specific timeline for future progress, acknowledging the complexities involved in FMD control. It highlighted the challenges of eradicating the disease from the region, especially with the emergence or incursion of novel FMD viral strains and the low national awareness of the FMD control programme within member countries. Key recommendations included enhancing understanding of FMD diagnosis, surveillance, and epidemiology, as well as strengthening livestock movement control and overall national animal health systems (Murray et al., 1999).

In 2003, the WOA/ASEAN mid-term evaluation of the programme expressed satisfaction with the Campaign's progress, noting that its influence extended beyond FMD control to broader animal health activities in member countries. The report acknowledged the success of the progressive zoning approach, efforts to build regional support, and improved communication networks between member countries. The role of the WOAHRUCU in documenting the implementation of the various components of the SEAFMD roadmaps was also commended. However, the evaluation observed a lack of coordination between member countries and insufficient high-level political support. It recommended strengthening veterinary services, enhancing emergency management systems, improving communication and public awareness efforts, and fostering engagement with the private sector (Murray et al. 2003).

An independent review in 2008 assessed the SEACFMD Campaign and explored its potential as a model for managing other livestock and animal diseases in the region. This review recognised the SEAFMD programme, managed by the RCU, as a model of excellence in regional coordination for animal health, having led the proposal for an effective regional FMD strategy progressing towards elimination in 2020. The report acknowledged progress in building the capacities of veterinary and diagnostic services, along with the successful implementation of progressive zoning strategies in some member countries. However, the report was also critical of staffing issues with the RCU, which could threaten the SEAFMD programme's sustainability. Further, the report highlighted the lack of gender-disaggregated data, making it difficult to fully assess the socio-economic impacts of the Campaign. A significant recommendation of the report was to implement an outcome-focused monitoring and evaluation process, including a framework for establishing baselines, reviewing strategies, and developing outcomes, both at the national and regional levels (Scoullar and Perkins, 2008).

A review by the Government of Australia covering a decade of efforts (2006-2015) to combat pandemics and emerging infectious diseases in Asia and the Pacific identified positive outcomes in South-East Asia. These outcomes were built on existing, although underdeveloped, capacities, providing a modest platform for responses to future zoonotic disease emergencies (Schierhout et al., 2017). The review identified the most substantial outcome in animal health as the development of the regional disease control model for FMD, which Australia has supported since 1997 (SEAFMD, SEACFMD). Although FMD is not a zoonosis, the model provided a foundation for controlling zoonotic diseases and strengthening veterinary systems for better outbreak investigations. The model was later adapted for ASEAN's animal disease control strategies for HPAI and rabies. The review particularly noted the strengthening of animal health surveillance systems, particularly in Indonesia, where the iSIKHNAS system achieved impressive engagement with farmers and strong ownership at all levels of the veterinary service in the pilot area.

The 2017 report also highlighted significant challenges, including the low level of investment in public veterinary services by governments in the region and the generally low priority given to zoonotic disease and human health risks by animal health services outside of emergency situations (Schierhout et al., 2017). Given the scale of the challenge to improve animal health systems, is the report acknowledged that targeted and sustained donor support would be essential. It suggested that Australia's efforts in animal health focus on diseases of economic importance, with additional benefits in strengthening systems for zoonoses

control. A specific entry point remains FMD, which poses the most severe biosecurity threat to Australian livestock production. Targeted support for animal health surveillance in SEA was recommended to foster regional cooperation and transparency in reporting EIDs with human pandemic potential, such as HPAI. Using a One Health approach, the report further recommended that such support should be based on epidemiological risk assessments of new and existing zoonoses, building on existing capacity and systems.

2.5. Issues identified from the review of published literature

There is an increasing abundance of published literature on FMD control in SEA, addressing most aspects of the disease. It includes the history of FMD (Nampanya et al., 2016; Blacksell et al., 2019), virology and immunology (Blacksell et al., 2019; Buckle et al. 2021), epidemiology (Miller et al., 2018), socio-economic impacts (Nampanya et al. 2016; Young et al. 2016; Wada et al. 2022), vaccination strategies (Blacksell et al., 2019; Han et al., 2022; Nampanya et al., 2018; Rast et al., 2010; Xaydalasouk et al., 2021), biosecurity (Young et al., 2016), and strategic disease control (Blacksell et al., 2019; Windsor et al., 2011). The information has been regularly shared with SEACFMD members at annual meetings and continues to inform strategic disease control initiatives.

At this Campaign stage, the literature emphasises that more effective FMD control requires the development of improved regional biosecurity and reduced 'informal' movement of livestock and their products throughout the GMS. However, because of this widespread failure in biosecurity, a critical issue in the interim is increasing FMD vaccination, focusing on vaccine serotypes and matching, strategies and efficacy, as well as delivery logistics and capacities.

Important logistical lessons were learned from delivering an extensive FMD vaccination programme between 2012 and 2016 in northern Lao PDR, which are relevant to future FMD vaccination programmes, while ensuring the momentum of FMD control with vaccination is sustainable (Nampanya et al., 2018).

These include:

- a. Continuation of the vaccination programme every 5–6 months for several years is required, particularly in targeted FMD high-risk areas,
- b. Increasing vaccination days from 1 to 2–3 days per village to enable most of the adult cattle and buffalo in the village to be vaccinated, aimed at increasing vaccination coverage (observations indicated that a

field vaccination day would vaccinate a maximum of 100–200 animals per day),

- c. Increasing FMD vaccine availability and vaccination coverage by providing FMD vaccines for village veterinary workers to continue vaccination in their villages (one or two 100cc FMD vaccine bottles),
- d. Provision of improved animal restraint facilities to supplement the use of bleeding poles, including portable yards and animal crushes, and superior vaccination equipment, using vaccine guns with protective sheaths to minimise self-administration for staff conducting vaccinations,
- e. Considering payment of vaccinating staff based on the number of animals vaccinated per day or per trip (rather than a set per diem),
- f. Improving the current data management system (i.e., the number of adults animal in each village and district) to enable more reliable data on FMD vaccination coverage,
- g. Accompanying vaccination with information and training on improving animal movement controls and biosecurity practices, including law enforcement for the illegal movement of live animals and their products,
- h. Strengthening active and passive disease surveillance and disease reporting at the village, district, provincial and national levels through public awareness campaigns,
- i. Continuation of regular two-stage random sampling serosurveys to provide increasing evidence of FMD control, eventually supporting a potential FMD-free zone with vaccination application to WOA, H,
- j. Continuation of sampling and testing strategies to evaluate post-vaccination responses and ensure the importance of vaccine matching against emerging isolates is maintained,
- k. Continuation of training programmes for vaccination staff and farmers on essential biosecurity to limit the risk of FMD transmission, preferably delivered separately from vaccination days (due to time constraints),
- l. Improving public awareness of FMD risks, transmission, and prevention along with training on production improvement (e.g., forage plantation and utilisation, parasite control, and knowledge of good husbandry practices) to enhance livelihoods.
- m. Promoting understanding of disease risk management at all levels of the livestock husbandry system.

Despite the apparent, albeit temporary, success of this northern Lao PDR FMD vaccination programme, outbreaks returned within a year of cessation, suggesting that while the vaccination programme was effective in suppressing FMD, it was insufficient to eliminate the risk of outbreaks.

Following the cessation of the northern Lao PDR FMD vaccination programme (Nampanya *et al.*, 2018), a cross-sectional seroprevalence study in nine northern Lao provinces was conducted in early 2019, sampling large ruminants ($n = 602$) and goats ($n = 19$) from 30 villages (MacPhillamy *et al.*, 2022). A seroprevalence of 43.7% and 90% was found in the sampled villages with at least one seropositive animal. Notably, an examination of current reporting behaviours of farmers, village veterinary workers and district and provincial officials found that individuals were using their discretion on whether disease events required reporting along the chain of command. This study confirmed the likelihood of FMDv transmission despite the apparent failure to detect clinical cases. It highlighted the necessity of public awareness programmes to increase the reporting of both the presence and absence of clinical disease, like the so-called 'FMD negative reporting' that was introduced in the Philippines FMD eradication programme (Windsor *et al.*, 2011).

FMDv transmission in the absence of clinical detection was further evaluated in a study using serum and dry mucosal swabs. Samples collected from the nasal, oral, and dorsal nasopharyngeal mucosal surfaces of healthy cattle ($n = 84$ in Laos; $n = 125$ in Myanmar) and buffalo ($n = 48$ in Laos; $n = 5$ in Myanmar) immediately after slaughter in three slaughterhouses were evaluated for the presence of viral RNA (Buckle *et al.*, 2021). Testing of swabs using pan-serotypic real-time reverse transcription-PCR (rRT-PCR) and serum using the FMD PrioCHECK non-structural protein (NSP) ELISA found that 7.3% of animals had detectable FMDv RNA in one or more of the three sites (5.3% of nasopharyngeal, 2.3% of oral, and 1.5% of nasal swabs) with no FMDv RNA detected in serum. A third (37.8%) of animals were positive for NSP antibodies, indicating likely past natural exposure to FMDv. Results were comparable for Laos and Myanmar, for cattle and buffalo, with no significant difference between age groups. The presence of FMDv RNA on the oral and nasal mucosa of clinically healthy large ruminants in Laos and Myanmar demonstrates the importance of sampling asymptomatic animals during FMD surveillance programmes. It suggests that subclinical infections may have a role in the epidemiology of FMD.

Similarly, a risk-based partial vaccination strategy was implemented in three southern provinces of Laos (Champasak, Savannakhet and Xiangkhouang), immunising cattle and buffalo during 2016–2020. Two cross-sectional surveys were conducted in 2016/17 and 2020 to evaluate the impact of the vaccination programme (Han *et al.*, 2022). The seroprevalence of 42.5% and 47.5% in 2016/17 and 2020, respectively, indicated there was variable efficacy of the FMD vaccination programme in re-

ducing FMD virus circulation, with increasing incidence of clinical FMD toward the end of the 5-year intervention period, coinciding with reduced vaccine coverage in the last two years of the period. The findings suggested that the risk-based vaccination strategy achieved a marginally protective effect against the circulation of FMDv, with possible limiting factors being operational constraints of public veterinary services, lack of farmers' compliance and unsustainable funding. Providing consistent resource availability for higher vaccination coverage is indicated to successfully control FMD with a risk-based vaccination strategy in Lao PDR and other countries of the region.

The livestock movement patterns in the same three southern provinces of Laos (Champasak, Savannakhet and Xiangkhouang) were also examined by face-to-face interviews with randomly selected villagers (n = 195) and traders (n = 169) in 115 villages in 2019 (Subharat *et al.*, 2021). Livestock owners commonly purchased (mainly breeding) animals from other smallholders (81%) and sold (mainly slaughter) animals to traders (76%) or other smallholders (16%), typically within the same district and province. The median inter-village trade distance was 20–30 km, with an average frequency of 4 trades per village per month. Traders purchased animals from smallholders (71%) and middlemen (25%) located within their district, and it was common for many traders (74%) to retain animals at their property before selling, typically a median of 4 beef cattle per trader. Local trades within the district were far more common (72%) than distant trades, and movements of grazing/fattening large ruminants between villages were reported in 30% of the villages in all three provinces, occurring primarily as short distances (6 km) within the same district or province.

Social Network Analysis identified animal movement hubs in the three provinces, suggesting these as targets for FMD control and surveillance. The movements of animals for further use (fattening/ reproduction), long-distance movements and frequent local movements have implications for FMD circulation and inform FMD spread simulation models. Spatio-temporal patterns of FMD incidences in Vietnam identified the wide distribution of serotype O throughout the country, with buffaloes being the most affected species (43.32%) followed by cattle (30.11%) and pigs (26.67%) (Lee *et al.*, 2019). Serotype A was observed in the northeast, central and southern parts of Vietnam. A total of seven clusters were identified (spatial window set for 50%), with the top three observed in the south, followed by the northeast and northwest part of Vietnam; clustering was mainly observed between December and March.

A recent survey on the implementation of FMD vaccination programmes in several SEACFMD endemic countries (OIE, 2021), yielded valuable information on the status, challenges, strategies, and practices adopted. The findings provide a useful baseline for measuring progress towards Output 1.3 of the SEACFMD Roadmap (2021–2025), described as a 'Robust vaccination strategy developed, including access to quality vaccines and vaccination data management and analyses.' The main recommendations from this study, addressed to member countries, include:

- a. Follow a vaccination protocol based on scientific evidence, including the use of a two-dose primary course consisting of a first dose at the age of three to four months and a second vaccination at least three to four weeks after the first dose; and vaccination of animals at six monthly intervals.
- b. Develop or strengthen partnerships with the private sector, such as cattle owners, dairy/beef associations, private veterinarians, and veterinary paraprofessionals to implement FMD vaccination following the OIE PPP Handbook: Guidelines for public-private partnerships in the veterinary domain.
- c. Monitor the vaccination campaign to review the success of vaccine delivery, the level of induced immunity, and their impact on disease and infection.
- d. A systematic investigation of reported outbreaks in vaccinated herds following FAO/OIE Guidelines on FMD vaccination and post-vaccination monitoring is mandatory.
- e. Use vaccines that comply with WOA standards (for those countries in PCP-FMD Stage 3 and above) and ensure that vaccine types are based on circulating FMDv strains.
- f. Procure vaccines from qualified FMD vaccine manufacturers based on EuFMD pre-qualification criteria for FMD and other similar TADs.
- g. All FMD-free countries should identify a vaccine compliant with WOA standards and prepare detailed vaccination plans for implementation in the event of FMD incursions.

Recommendations for WOA from this survey, based on member countries' questionnaire responses and the Mentimeter discussion during the 24th SEACFMD National Coordinators meeting, are also documented (OIE, 2021). These emphasise the importance of complying with WOA standards in the use of high-quality FMD vac-

cines, with referral of FMD samples to the WOA Reference Laboratories to assist in serotype monitoring and vaccine matching. The establishment of a regional FMD Vaccine Bank was also highlighted as a priority.

Socio-economic studies were conducted at the beginning (2016) and end (2020) of a recent vaccination campaign in the three southern provinces of Laos, involving smallholders (n = 1609) across 160 villages, comparing areas with and without FMD control (Wada *et al.*, 2022). Although no significant differences in annual household-level costs and net gains were directly attributable to the absence of FMD, smallholders affected by FMD experienced a 52% higher cattle death rate, a 43% lower goat sale rate, and a 78% lower sale price for pigs compared to those without FMD. Furthermore, smallholders with FMD also purchased livestock at lower rates (cattle 15%; pigs 93%) than those without FMD. Overall, livestock production improved in target villages during the five-year vaccination campaign, while non-target villages experienced a decline. This resulted in USD218 higher net gains in target villages in 2020 compared with non-target villages., alongside reduced disease severity, heightened FMD control, awareness and improved livestock health.

A recent comprehensive historical review of FMD in SEA (Blacksell *et al.*, 2019), concluded that FMD control and eradication are unlikely to be achieved without genuine regional collaboration addressing the many challenges facing the SEACFMD programme, including:

- a. unregulated animal movements,
- b. difficulties of vaccine application and its efficacy,
- c. a low-level field technical capacity with insufficient biosecurity practices,
- d. managing difficulties in the coordination of national and international control programmes,
- e. achieving continued increases in funding for FMD control programmes, mainly to improve technical capabilities and the implementation of disease control tools, including vaccines, surveillance, biosecurity, compliance with movement controls, and public awareness programmes for FMD control.

The review concluded that FMD control and freedom will be difficult to achieve in the short to medium term as each country has its sovereign national disease control and resource allocation priorities. For instance, the modernisation of livestock production systems could occur more quickly for some countries, resulting in policies on

live animal imports or frozen meat that may be inconsistent with others in the trading bloc. The PRC, despite not being an ASEAN member state, is seen as playing a potentially significant role in regional FMD stewardship, particularly as it progresses with implementing quarantine facilities to formalise cattle trade in northern Laos and Myanmar.

The review further suggested that FMD control and freedom require a step-by-step process with continued integration of efforts and approaches, especially in facilitating safe trade, managing disease risks, and implementing effective biosecurity. Formalising regional and global trade systems may help reduce the current risks posed by 'informal' markets in FMD transmission. These factors are vital for achieving control and eventual freedom from FMD in the near future.

2.6. Review of Recent Developments for Consideration

The The rapidly increasing wealth creation in parts of the GMS and beyond has altered dietary habits, increased demand for meat consumption, and boosted the demand for dairy products in the region and beyond, enabling the emergence of new markets. This, in turn, has led to increased animal and product imports and longer-distance animal movements. There is an urgent need for improved regional biosecurity, particularly with the incursions of new TADS and EIDs, which pose threats to food security and increase the risks of socio-economic burdens from disease. The emergence of new TADs, particularly ASF, PPR and LSD, with the recent incursion of FMD into Indonesia after almost 40 years of freedom, exemplifies the weaknesses in regional biosecurity systems and their inability to keep pace with the growing TAD risks resulting from rapid socio-economic development in the region.

The rapid introduction and spread of ASF in the region, even in countries that had previously eradicated FMD (e.g., the Philippines), has severe implications for FMD control, creating competition for scant resources and reallocation challenges. As a high-mortality disease, ASF has prompted more effective emergency responses from regional governments compared to FMD. This situation underscores the importance of a collaborative approach for SEACFMD member countries in adopting robust biosecurity pathways for FMD control.

Of tremendous significance to all stakeholders in the SEACFMD programme has been the COVID-19 pandemic, which emerged in early 2020, creating unprecedented issues for EID management globally, and particularly in the GMS region. A more effective One Health approach

to regional health security has become a priority for development agencies and other donors, with increased emphasis on EIDs and potential zoonoses from animals, particularly in populations at risk of exposure and transmission of viral diseases from wildlife reservoirs (e.g., bats, civets, pangolins, squirrels, raccoon dogs, wild boar, deer, etc.). The Sino-Lao-Vietnamese region, with its common limestone karstic formations, provides countless caves for bats. Such chiropteran presence, coupled with numerous official and non-official border crossings, has enabled the transport of bats and other wildlife from Lao PDR, Vietnam, and Cambodia to the PRC. These countries, rich in biodiversity and wildlife, represent the "breadbasket" of the regional live wild animal trade.

The dynamics of EIDs in both animal and human populations suggest that the sustainability of future TAD programmes, including the SEACFMD programme, may

depend on creating stronger linkages between agencies involved in research on health and disease surveillance activities on livestock, human and wildlife populations. There is a considerable opportunity to apply the lessons learned from COVID-19, particularly on the critical role of enhanced surveillance, biosecurity, vaccination, and public awareness, across the broad community involved in regional health security. Priority issues will likely include improved disease surveillance systems and the urgent development of emergency disease management systems in SEACFMD countries, along with strengthening their capacity to deliver a functional EID PPRR (prevention, preparedness, response, and recovery) capability.

Chapter 3

SEACFMD campaign (1997- 2020)

Stakeholder consultations



3.1. Stakeholder consultations

The extensive review of the relevant literature on the evolving SEAFMD platform, SEACFMD control strategies, FMD PCP Pathway and PVS reports, available campaign reviews, evaluation reports, and published scientific literature enabled the identification of key issues for stakeholder consultations. Incursions of other TADs (e.g., ASF, LSD), the COVID-19 pandemic that preceded the review, and the significant outbreak of FMD in Indonesia, all informed the stakeholder consultations through comprehensive and abbreviated surveys, as well as focus group discussions held at the 25th SEACFMD Coordinators Meeting in Bali on October 3-5, 2022.

3.2. Priorities for the Review Process

The following priorities for further consideration were suggested as relevant to ensuring progress of the SEACFMD Campaign, both at the regional and national levels:

3.2.1. Improved Technical Services Capacity

- a. Progressing understanding and delivery of biosecurity by developing border quarantine facilities, disease control zones (DCZs) and effective regulation of animal movement
- b. Delivering more effective and prolonged strategic FMD vaccination programmes with sufficient coverage of at-risk populations, addressing resource limitations, and enabling improved access to and strategic use of vaccines and vaccine banks
- c. Upgrading diagnostic capabilities and disease surveillance systems, with increased submission of field samples for isolation and vaccine matching
- d. Enhancing epidemiological capacity in data collection, analysis, and reporting, ensuring disease control decisions are increasingly evidence-based and transparent
- e. Improving disease communication and delivering FMD public awareness programmes
- f. Developing in-country quarantine capacity and disease control zones (DCZs)

3.2.2. Governance and Policy

- a. Strengthening national veterinary services through capacity building and education in veterinary public health, from community animal health workers

through to district, provincial, national, and regional support mechanisms.

- a. Improved legislation on the trade of animals and animal products, and addressing food safety risks (e.g., AMR from inappropriate FMD therapy)

3.2.3 Coordination and Advocacy

- a. Development emergency disease response capacity based on the PPRR framework, including the formation of a national FMD Task Force, preferably using a One Health approach
- a. Ensuring sustainable financial commitment and leadership

3.2.4. Shared Understanding of Performance Indicators

For the sustainability of the SEACFMD programme, it was considered necessary that all stakeholders gain a thorough understanding of the initiation, progress, and future goals of the SEACFMD strategy, as well as the key measures preferred to demonstrate achievements. These concepts were grouped under the OECD M&E criteria as follows:

- a. **Relevance.** Is the SEACFMD programme addressing the right issues? Are the SEACFMD objectives and design, including the FMD PCP, responsive to the needs of beneficiaries at the global, country and partner/institutional levels?
- b. **Coherence.** Is the SEACFMD program compatible with other livestock interventions in the country? To what extent do other interventions, particularly those related to livestock trade and health & sanitary policies, support or undermine the SEACFMD programme and the FMD PCP, or vice versa?
- c. **Effectiveness.** Is the SEACFMD programme achieving its objectives? To what extent has the SEACFMD programme achieved, or is expected to achieve, its objectives and results, including documentation of differential progress in the FMD PCP and constraints to progress in the region?
- d. **Efficiency.** How well are the SEACFMD programme resources being used? To what extent has SEACFMD delivered, or is likely to deliver, expected progress, including progress on the FMD PCP, in an economical and timely way?

- e. **Impact.** What difference does participation in the SEAC-FMD programme make? To what extent has SEACFMD generated, or is expected to generate, significant positive or negative, intended or unintended, higher-level socioeconomic and reputational effects in each country?
- f. **Sustainability.** Will the benefits of SEACFMD programme last? To what extent have the net benefits of SEAC-FMD continued, or are likely to continue, and what are the resource implications and solutions for addressing future deficits?
- g. **Equity.** Has the SEACFMD programme contributed to progressing gender equality, empowerment of women, human rights, One Health, animal welfare and climate change responsiveness?
- g. Please describe your understanding of the changes in FMD prevalence since your country's participation in SEACFMD. Please comment on the influence of critical interventions that may have contributed to this trend. For example:
- Development of a National FMD Control Plan
 - Identification and implementation of disease control zones
 - Improved FMD vaccination coverage
 - Improved disease surveillance capacity
 - Improved delivery of biosecurity, including movement controls & quarantine
 - Strengthening of laboratory diagnostic capacity
 - Improving epidemiology capacity
 - Improved National level disease control policy
 - Formation of an FMD task force
 - Other interventions

3.3. Recommendations

- a. Which recommendations from each participating country can improve progress towards delivery of the SEACFMD programme goals, both within the country and regionally?
- b. What is your national PCP-FMD stage level now, and what key issues and constraints have led to that designation? What is the progress on each of these issues, and will constraints ensure progress towards the next stage of the PCP for your country?
- c. How have veterinary services changed throughout the SEACFMD programme, specifically:
- Veterinary governance
 - Veterinary legislation
 - Funding and support
 - Research and development
 - Capacity building
- d. Please describe your understanding of how the SEACFMD programme has enhanced cooperation and collaborative approaches for TAD control among ASEAN countries.
- e. Please describe your understanding of how the SEACFMD programme has strengthened cooperation amongst the region's countries on the trade of food, agriculture, and forestry products.
- f. Please describe your understanding of how the SEACFMD programme has improved networking between relevant institutions within ASEAN that are involved in animal and animal product trade, including increasing safer market access for animals and animal-sourced foods.

3.4. Methodology for stakeholder consultations

By conducting an extensive review of the relevant literature on the evolving SEAFMD and then SEACFMD control strategies, including the sequential regional plans, documents, reports and programme outputs (2001-2004; 2006-2010; 2011-2015; 2016-2020; 2021-2025), the FMD PCP Pathway, PVS, available campaign review and evaluation reports, and the published scientific literature, the most relevant issues were identified to inform the stakeholder consultations. These also considered recent developments, including other TAD incursions (e.g., ASF, LSD), the COVID-19 pandemic, and the significant outbreak of FMD in Indonesia occurring during much of the review process.

A comprehensive survey was developed and tested by Zoom interviews with selected 'experts' (n=12) who have been actively involved in the SEAFMD and SEACFMD Campaigns throughout its history. These interviews helped refine the survey questions. Following the modifications made to the survey tool according to recommendations from the initial consultations with the 'expert' group, a final survey questionnaire incorporating these recommendations was then sent by email to most stakeholders on the extensive list developed in consultation with the WOAHSRRSEA. However, as the response to the comprehensive qualitative survey was lower than anticipated (n=35), an abbreviated survey was developed focusing on quantitative responses. This approach led to a more satisfactory response rate (n=58).

It was then decided to hold most of the planned focus group discussions during the 25th SEACFMD Coordinators Meeting in Bali (n=34) on October 3-5, 2022 (Figure 3.1).

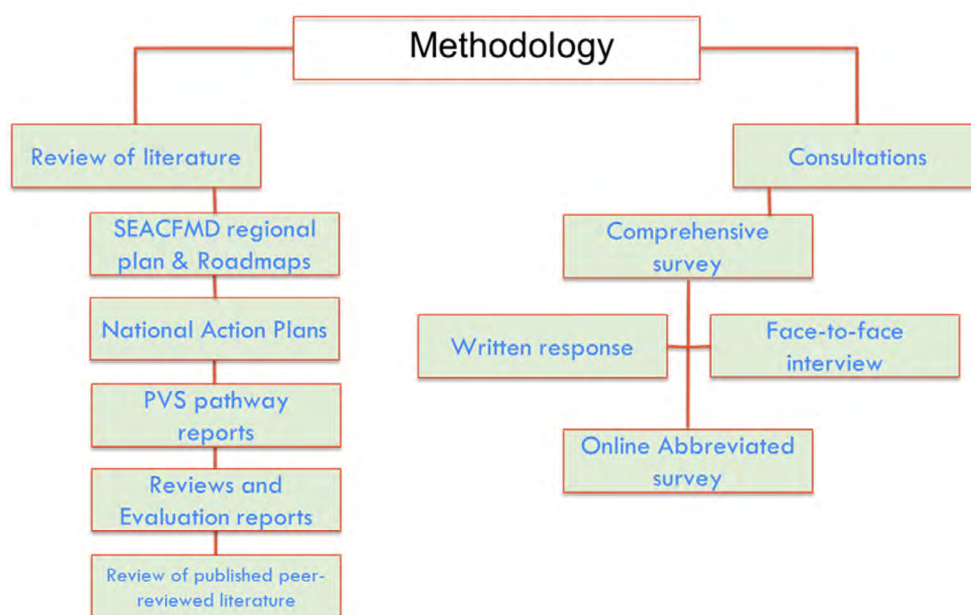


Figure 3.1. Flow chart of the methodology followed during the present review of the SEACFMD Campaign 1997-2020

3.4.1. Comprehensive survey

The comprehensive questionnaire was designed to collect qualitative data from stakeholders in the participating countries of the SEACFMD Campaign, as well as those representing international partners and donors. The questionnaire was broadly divided into four sections and contained 25 open-ended questions. The first section queried descriptive details of the respondents, defining their roles, duration, achievements, and challenges faced during their association with the SEACFMD programme. The second section included questions related to the performance of the campaigns in the priority domains of (a) technical services capacity, (b) governance and policy, and (c) coordination and advocacy. The third section followed with questions framed by the OECD M&E indicators for the Campaign, specifically: (a) relevance; (b) coherence; (c) effectiveness; (d) efficiency; (e) impact; and (f) sustainability. Finally, a short section addressed equity issues, providing respondents with an opportunity to offer recommendations.

The list of stakeholders was prepared in consultation with the WOAHSRR-SEA, including current and former WOAHSRR RCU leadership and employees, WOAHSRR national delegates, and relevant staff involved in national FMD control programmes, such as SEACFMD National Coordinators, laboratory and epidemiology focal persons, and appropriate representatives from national veterinary services (both current and former). Additionally, relevant international stakeholders were approached, including vaccine manufacturers, livestock industry leaders/traders, and

academics from the research and teaching community who had conducted work on FMD in the GMS.

A comprehensive pilot survey was conducted to test the questionnaire and amendments made prior to sharing the final version with the broader stakeholder network (Appendix A).

The list of stakeholders who responded to the comprehensive survey is presented. As the number of respondents was lower than anticipated ($n = 35$), an abbreviated online survey was developed to focus on obtaining more quantitative data (Appendix B).

3.4.2. Abbreviated survey

In addition to the comprehensive survey, the abbreviated survey contained close-ended questions that enabled quantitative analysis of responses from a wider audience. It contained twelve questions, with the first three gathering descriptive details of the respondents' association with the SEACFMD programme, such as their area of contribution, work domain, and years of involvement. The remaining nine questions addressed aspects of the Campaign's performance, measured on a five-point Likert scale. The Qualtrics survey platform was used to disseminate the survey to stakeholders. The target group for the abbreviated survey comprised field veterinarians, national decision-makers, participants from international organisations, cattle traders and exporters, and laboratory personnel. The number of participants who responded to the abbreviated survey ($n = 58$) exceeded that of the comprehensive survey.

3.4.3. Focus group discussions

A focus group discussion was organised among participants attending the 25th SEACFMD National Coordinators meeting held in Bali, Indonesia, October 3-5, 2022. The discussion primarily focused on recommendations for the future of the SEACFMD Campaign, as this was a section of the formal surveys where few responses had been received. The participants were divided into the three 'status' groups of: (i) FMD-free countries; (ii) FMD-infected countries; and (iii) international organisations. Flip charts were used to record the discussion points from each group, and the discussions were moderated by Professor Peter Windsor and Dr Harish Tiwari, with support from WOAHSRR-SEA staff when required.

The participants (n = 34) enthusiastically participated in the FGD's that comprised five 'affiliate' groups: two groups of endemically FMD-infected countries and one group each for Indonesia, FMD-free countries, and from international agencies. The discussion lasted 80 minutes.

The responses to the comprehensive survey were compiled and analysed using an inductive thematic process aligned with the priority themes listed for the review process. Face-to-face discussions were also held with stakeholders who accepted Zoom invites (n=10) to enable further detailed discussion of the comprehensive survey responses. The data from the abbreviated survey were extracted from the Qualtrics platform and analysed in the 'R programming environment'.

Chapter 4

SEACFMD Campaign (1997- 2020)

Technical services capability



4.1. Introduction

The survey offered general commentary consistent across many respondents, indicating there has been considerable improvement in the level of awareness and collective support for the SEACFMD programme in the region since its inception. Several individual projects/programmes coordinated within the SEACFMD programme or through collaborative efforts with other agencies (e.g., FAO) were recognised as having achieved substantial progress. Advocacy for controlling the transborder movement of animals and animal products, controlling outbreaks through vaccination strategies, and building international funding and monetary support for the programme were widely recognised. There was also significant appreciation that the FMD PCP has formalised initiatives within countries (e.g., FMD control plans) and appears to have induced a sense of competition among member countries. The FMD PCP has also improved its understanding of the constraints in delivering initiatives (e.g., biosecurity and vaccine delivery) and increased the capacity of most nations to control the disease in the region.

The survey respondents generally acknowledged that there had been gradual improvements in veterinary services in the region, although it was uncertain how much could be attributable to the SEACFMD Campaign. However, the majority accepted that SEACFMD's contributions have been significant. Of note was that other TADs, especially ASF and LSD, and the threat of PPR, highlighted the persistence of biosecurity weaknesses and increasing TAD transmission risks in the region. These incursions, and presumably the COVID pandemic, have enabled the alignment of FMD with the increasing recognition of the importance of emergency disease preparedness and response capability to the heightened risk of occurrence of all TADs and EIDS. General commentary emphasised the importance of supporting an integrated approach to improve animal health and food security, with a One Health approach increasingly acknowledged as relevant to the region, despite the difficulties in advancing it.

Many respondents discussed the broader context that, since the inception of the SEAFMD Campaign in 1997, the world has witnessed the formulation of free trade agreements and a consistently rising demand for quality livestock protein, particularly red meat and dairy products. The commentary noted that continuing informal (illegal and unregulated) transboundary and internal movements of animals and animal products between and within GMS countries have contributed to the ongoing persistence of FMD outbreaks, with the transmission of new serotypes across countries in the region, notably from South Asia. The increased occurrence of FMD outbreaks may also

reflect improvements in disease surveillance and reporting mechanisms. With improved access to veterinary services in remote areas, it is widely accepted that policy compliance and adequate quarantine arrangements along international borders have largely failed to keep pace with the expansion of the international livestock trade. Increasing regional demand for meat, driven by urban wealth growth and changing consumer preferences, is generally recognised by respondents as a key driver of TAD risk. Socio-economic, trade and political developments in the GMS were rarely accompanied by modernisation of meat processing and marketing systems. The persistence of 'wet markets' and inadequate biosecurity infrastructure and services (e.g., urgent requirement for quarantine centres, international and internal disease risk zoning, and movement compliance systems) have substantially increased the challenges of achieving and maintaining FMD control throughout much of the SEACFMD Campaign's history. There was a general agreement that the recurrence of FMD in Indonesia in 2022 exemplifies this increasing regional biosecurity challenge.

While the movement of animals and animal products across international borders among member countries, especially within the GMS, has remained a significant impediment to efficiently controlling FMDv transmission, the control of its spread within member countries also remains a significant concern for respondents. Efficient veterinary services are required to effectively implement livestock disease control measures, especially emergency disease response activities. However, substantial non-compliance with, or even the absence of policies and regulations that safely manage in-country movement and supply of animals and their products remains a concern for many respondents. Delayed investment in national quarantine facilities and inconsistent implementation of legislation and compliance systems continue to facilitate the spread of TADs. Promoting vaccination strategies also remains a priority for respondents with concern that efforts are compromised by inadequate supplies and dependence on donor funding. The affordability of appropriate vaccines in countries with limited resources to address FMD vaccine insecurity also persists.

Recommendations from the survey respondents emphasised that future SEACFMD Roadmap approaches should increasingly encourage member countries to invest more and take ownership of initiatives that began with defined periods of external donor funding support. Addressing the lack of long-term political will and sustainable delivery of FMD control efforts requiring stronger national commitments, was regularly acknowledged. This is a significant recommendation regularly promulgated in the SEACFMD Roadmaps. The inequalities in the capacities

of member countries to address TADs continues were accentuated by the COVID pandemic, which limited field visits. As countries recover from COVID and other health security challenges, including multiple animal health emergencies (e.g., ASF, LSD, and the incursion of FMD into Indonesia), there is a recognised need for expanded intergovernmental cooperation. Improving animal health capacities to reduce future One Health risks, with recent events highlighting the need for upgrades in all aspects of emergency disease response capabilities, was considered a priority. These capacities include robust laboratory capability and epidemiological-based regional disease surveillance mechanisms to efficiently detect newly emerging FMDv strains and other pathogen threats, enabling prompt tracing and effective containment responses. Many respondents also commented the need for rapid procurement and delivery of sufficient and appropriate vaccines, along with improved compliance with biosecurity interventions to reduce TAD transmission risk.

The issue of staff turnover and the loss of skilled human resources in various stakeholder agencies was also emphasised by numerous survey respondents. Capacity building for disease emergency response skills should be mandatory for national animal disease control systems and embedded in international veterinary governance structures. Rational control of cross-border movement of animal products and animals needs to be substantially improved in member countries, alongside upgraded regulatory compliance mechanisms to enforce legislation. Most respondents recognised the SEACFMD Campaign as a valuable mechanism for maintaining international dialogue on the delivery of future FMD and One Health initiatives. Increased donor support for several countries to enhance FMD response capacity was widely acknowledged.

The various priorities discussed by the respondent stakeholders is listed and discussed below. To better understand the context of responses, they were categorised into two broad classifications, to enable evaluation of the SEACFMD Campaign's performance from different stakeholder perspectives:

- a. The role of the respondent in the SEACFMD Campaign, categorised as: on-ground implementation (involved in vaccination, segregation, and creating and maintaining disease control zones, among other interventions); capacity building (human resources training); policy and governance delivery; research provision; or as part of international assistance to the Campaign.
- b. The respondent's affiliation, categorized as one of: FMD-free nation, FMD-endemic nation, or international

agency (e.g., WOA, FAO staff and consultants) involved with the SEACFMD Campaign.

4.2. Technical Services Capability

Respondents expressed widely varying opinions on progress in various aspects of technical services capacity, reflecting the socio-economic differences in among member countries. The PVS tool was recognised as the most comprehensive process to identify weaknesses and capture improvements. However, not all member countries have undergone evaluations or re-assessments, resulting in uncertainties regarding the availability of core competencies essential for a comprehensive assessment of the SEACFMD Campaign's impact. While assessments were aligned with successive SEACFMD Roadmaps and provided insights into progression through stages of the FMD PCP stages in most countries, it was recommended that PVS assessments be conducted in reference to individual countries' baseline levels within the formal monitoring and evaluation framework.

4.2.1. Biosecurity

Biosecurity practices are crucial in limiting the spread of FMDv across animal populations in the GMS and beyond. The SEACFMD Campaign has encouraged improved biosecurity practices between and within member countries to suppress FMDv transmission and mitigate the impacts of emerging disease outbreaks. The review identified various perspectives on improvements in biosecurity practices. While a few respondents expressed satisfaction with progress, many others noted that there needs to be much better implementation of biosecurity, despite numerous efforts to increase awareness of the need for new initiatives amongst stakeholders. The Campaign has supported the development of various documents at both regional and national levels (e.g., FMD National Plans) to guide better biosecurity practices. However, these need to be more widely considered, shared, and tested to initiate the substantial practice changes required.

It was acknowledged that technical aspects of biosecurity improvement have been shared through regular training activities, even at the 'grass root' levels. However, these initiatives typically occur as part of broader project activities and usually cease upon project completion. More assertive advocacy of good biosecurity practices is often witnessed during FMD outbreak investigations or vaccination campaigns but rarely as a routine practice. Ideally, biosecurity should be embedded in a widely adopted GAHP (good animal husbandry practice) system. Another challenge is the scale of farming (i.e., smallholder versus commercial enterprises), with considerable variation

within and between countries. For example, biosecurity practices in pig farming are generally more advanced than in large and small ruminant husbandry, primarily due to more organised systems in pig farming where productivity occurs at scale. In contrast, ruminant rearing in the GMS remains predominantly smallholder-based, with limited livestock holdings (e.g., as livestock 'keepers') and generally low literacy among villagers. This results in a delayed understanding of disease risk management and few incentives for implementing stricter biosecurity practices.

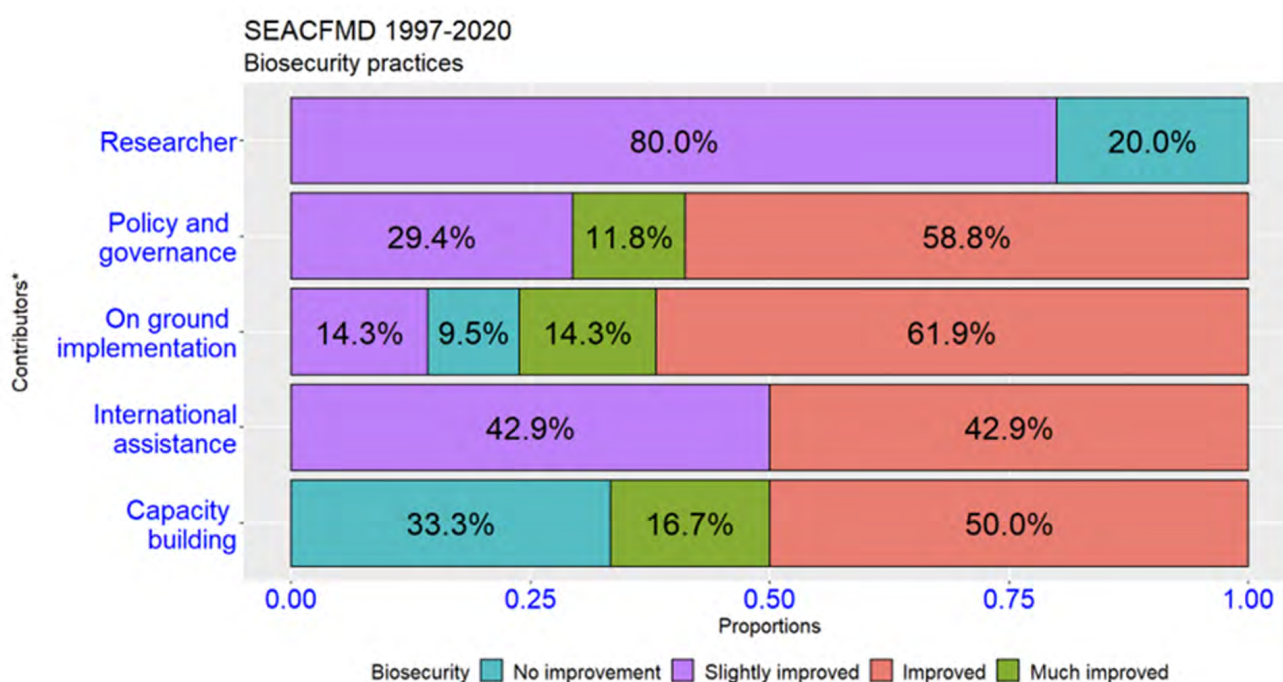
Interestingly, it was noted that awareness of biosecurity and its implementation was often better achieved through campaigns for other animal diseases (e.g., ASF, a high mortality disease) and from the COVID pandemic. In general, incorporating biosecurity training into vaccination campaigns has increased awareness among stakeholders, although the need to provide adequate resources for training to ensure effective delivery was mentioned. Implementing biosecurity training on a broad scale requires greater understanding of, and adherence to, practical change management principles to facilitate sustainable behavioural change in farmers.

The results of the abbreviated survey indicate that stakeholders involved in policy and governance (58.8%) and providing international assistance (42.9%) felt the Campaign helped improve biosecurity practices. Notably, almost a third of respondents contributed to capacity

building, while a few were responsible for on-ground implementation (9.5%), and a slightly higher proportion of researchers (20%) felt that there had been no improvement in biosecurity practices in the region attributable to the SEACFMD Campaign (Figure 4.1.). From an FMD status perspective, few respondents from FMD-infected nations (3.3%), a comparatively more significant number from FMD-free countries (16.7%), and those belonging to international organisations (14.3%), considered there was no improvement in biosecurity practices due to the SEACFMD Campaign (Figure 4.2.).

4.2.2. Disease Control Zones

The success of FMD control in the Philippines and previously in Indonesia (until the recent outbreaks) was primarily attributable to effective zoning and biosecurity interventions in the two countries. The most recent FMD incursion in the Philippines (1994-2005) involved porcophilic serotype O (Cathay topotype) that mainly affected pig populations, with vaccination employed but considered less effective in this species. The National FMD Control and Eradication Plan adopted a progressive zoning approach. The regions were classified depending on the status of FMD and a disease surveillance buffer zone was established in the Bicol region of Luzon, preventing spread to the two more southern regions (i.e., Visayas and Mindanao). The biosecurity messaging through a sophisticated public awareness campaign assisted in eradication (Blacksell et al., 2019; Windsor et al., 2011).



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.1. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on biosecurity practices.

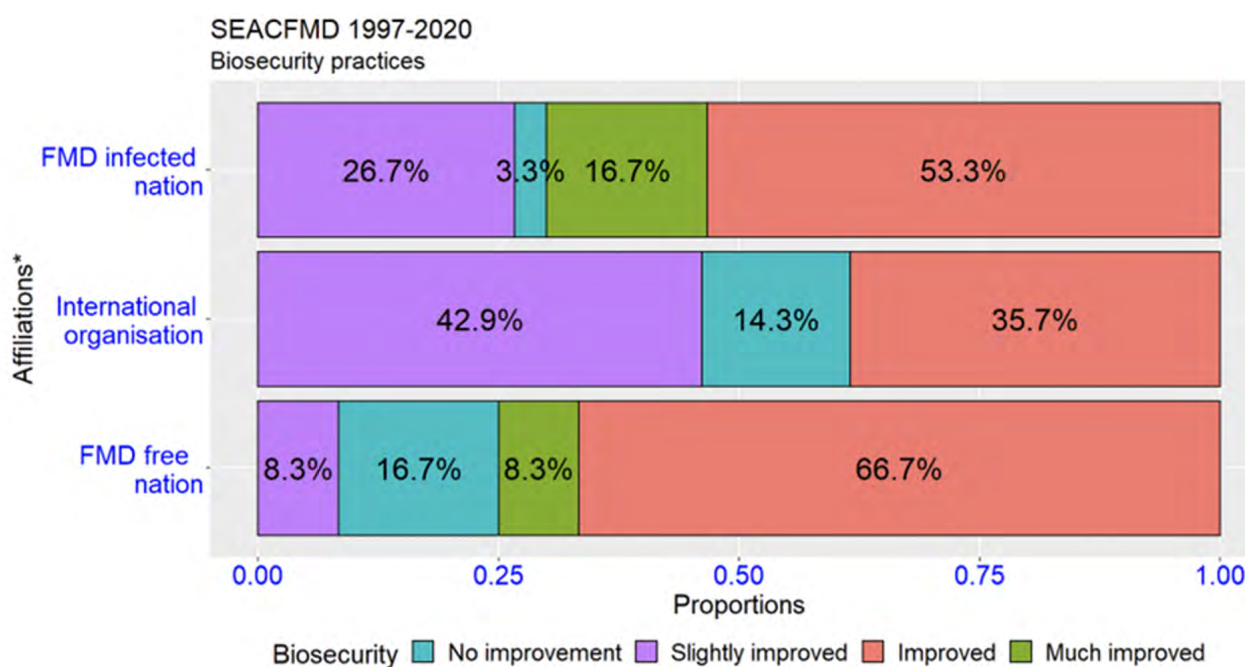
In addition to these examples of successful zoning activities in the Philippines and Indonesia, the SEACFMD Campaign has assisted the establishment of zoning involving two or more countries in the upper and lower Mekong regions (e.g., Laos and Myanmar with the PRC). Bilateral activities involving bordering countries occurred, although it was highlighted in this review that SOPs for such bilateral agreements needed greater clarity. Most respondent stakeholders expressed that the progress of zoning activities under the SEACFMD Campaign is 'limited' to 'unsatisfactory' for the region, with minimal impact from SEACFMD initiatives and in many member countries, internal zoning efforts have failed to yield positive results. The exceptions, as above, have been Indonesia (until the recent outbreak), the Philippines, and, to a considerable extent, the PRC, where Jilian province, Hainan province, and the Jiaodong Peninsula, were recognised as maintaining FMD-free zones. In some instances, trading partners have mutually negotiated the establishment of DCZs that cater to the interests of both parties. The two examples cited were DCZs established between the PRC-Myanmar and the PRC-Laos, which have assisted in the control of FMD, enabling safer transboundary trade. However, it was suggested that these provisions need to be further relaxed and that more work needs to be done to sustain them.

International zoning activity is achievable in areas where significant trade volumes occur, and the contribution of nations with large-scale imports in driving the need for improved border quarantine facilities and regulations was recognised (e.g., the PRC). Similar bilateral agreements

between other member countries (e.g., Thailand-Malaysia, Vietnam-Cambodia) would be a positive step in establishing and maintaining DCZs. However, for most member countries, such zones are yet to be successfully established, with countries lacking technical expertise, adequate diagnostic information and movement compliance systems. The respondents agreed that while the Campaign provided advice on improving zoning activities, progress was only considered achievable with additional investments in capacity building and enhanced technical capabilities.

The analysis of the abbreviated survey responses indicated that most of the researcher cohort (80%) and a relatively smaller proportion of those in policy and governance (5.9%), on-ground implementation (14.3%), and capacity building (16.7%), considered there had been no improvement in developing DCZs in the region. However, a comparatively higher proportion (28.6%) of respondents involved in international assistance indicated that the creation and maintenance of DCZs has improved under the SEACFMD Campaign (Figure 4.3).

Mixed responses were recorded from respondents from all three disease status categories on the impact of the SEACFMD Campaign on the developing DCZs. An equal proportion of FMD-free and FMD-infected nations (16.7%), with a slightly higher proportion of the respondents affiliated with international organisations (21.4%), considered that the SEACFMD Campaign had not contributed to improved DCZ's in the region (Figure 4.4).



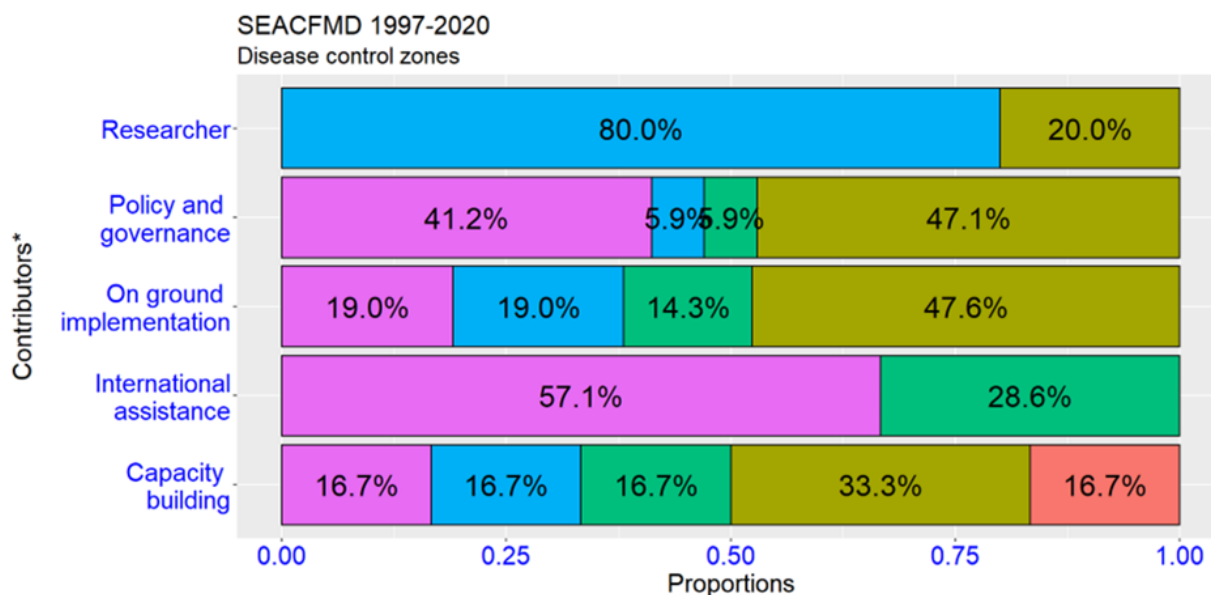
*Some categories have missing values; hence the totals may not add to 100%

Figure 4.2. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on biosecurity practices.

4.2.3. Border quarantine facilities and regulations

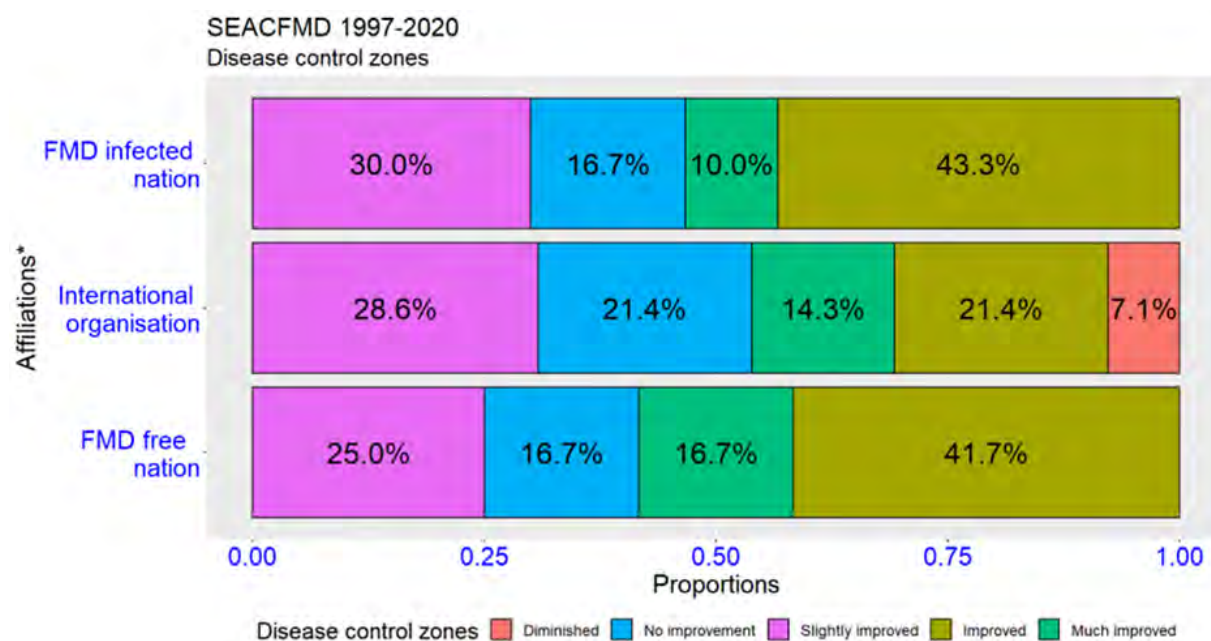
It was broadly agreed by most of the participants that the SEACFMD Campaign has influenced and enhanced the formulation of border quarantine regulations in member countries, although implementation could have been better. The FMD-free countries confirmed maintaining the procedures implemented during the control and eradication stages. However, they expressed that their regulations needed to be revisited and improved to incorporate new information from the SEACFMD annu-

al meetings. In Singapore, the national legal framework for preventing animal diseases, surveillance and control activities has reportedly strengthened. The country has ensured that the requirements of the Terrestrial Animal Health Code to prevent the entry of FMDv into the country are met through stringent import controls for susceptible animals, meat, and meat products. A key role in providing and maintaining FMD freedom status was attributed to the presence of quarantine facilities that enabled effective isolation and restriction of animal movement.



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.3. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on disease control zones.



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.4. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on biosecurity practices.

The SEACFMD Campaign supported equipping border quarantine facilities in Thailand and enhancing laboratory diagnostic capacities, reducing the load on the RRLFMD. The cross-border trade-related sample submission process was strengthened, the cost of diagnostic submissions was reduced, and overall biosecurity was enhanced. The Campaign also improved transboundary animal movement checks through investments on the Chinese border. The legal framework formulated for animal and plant quarantine during exit and entry in the PRC and its practical implementation by the Chinese Customs authority was also attributed partly to the SEACFMD Campaign. However, in most member countries, especially those with smaller trade volumes, it was admitted that the enforcement of these regulations needed improvement, even when present.

Overall, it was confirmed that the SEACFMD Campaign has been instrumental in bringing attention to border quarantine and helping initiate border control measures, despite some countries lacking the capacity to deliver sustainability or scale-up the facilities, regulations, and compliance systems. Positive examples were provided from Lao PDR and Malaysia, where respondents recognised the importance of border quarantine regulations and the need for improved infrastructure. Contributions from the PRC to the efforts were appreciated. The ongoing dialogue between Malaysia-Thailand and Cambodia-Vietnam to strengthen border quarantine and establish border quarantine isolation or inspection centre facilities was also mentioned. Despite efforts generated by participating in the SEACFMD Campaign, the effectiveness of quarantine facilities in countries with contiguous borders remains exceptionally challenging, reflecting the frustrating continuation of porous borders and the lack of effective border compliance systems. The researcher cohort (40%) and those involved in international assistance (28.6%) were critical of the contributions of the SEACFMD Campaign to improving border quarantine measures in member countries (Figure 4.5.), with both the cohorts of researchers (20%) and respondents contributing to capacity building (16.7%), considering that border quarantine measures had diminished. However, some participants working on technical capacity building (16.7%) and on-ground implementation of FMD control (9.5%) considered that the Campaign has successfully improved the border quarantine measures in member countries.

When analysed according to FMD status affiliations, the highest proportion of respondents from the FMD-free nations (58.3%), followed by FMD-infected countries (36.7%) and then the international organisations (28.6%), considered that quarantine measures had improved in the region. However, it was noted that some respondents from

international organisations (14.3%) thought that the level of border quarantine measures had diminished, whereas a smaller proportion of the respondents from FMD-infected nations (10%) considered that the border quarantine measure had much improved (Figure 4.6.).

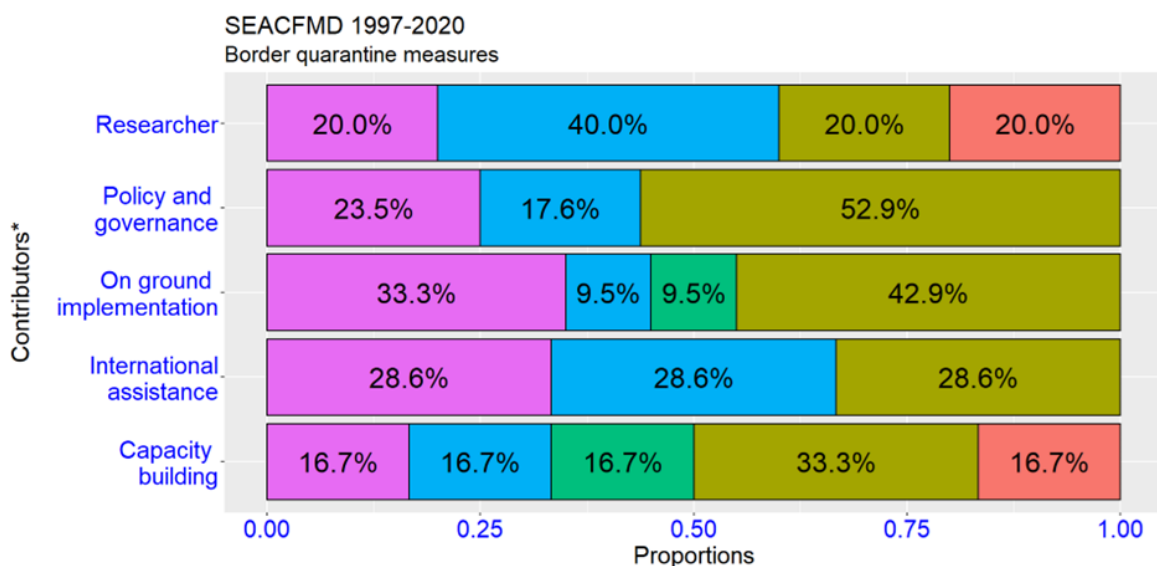
4.2.4. Control of animal movement

It was generally acknowledged by survey respondents that one of the significant challenges of the SEACFMD Campaign- and the most potent impediments to success- is the varying levels of control on the movement of animals across international borders and even within countries. Excluding island areas and archipelago countries, the porous borders across contiguous member countries in the GMS and beyond have hindered efforts to impose stricter movement controls, particularly following the considerable increase in regional demand for livestock and animal-sourced products. The thriving illegal trade in animal and livestock products significantly compromises regional biosecurity and undermines FMD control efforts.

Survey respondents recognised that efforts exerted through the SEACFMD Campaign have initiated an ongoing bilateral dialogue between countries, aimed at achieving control of the animal movement routes. Establishing quarantine and inspection facilities adjacent to these designated routes has been proposed as a plausible and necessary method for achieving restrictions on animal movement, despite being largely ineffective to date. In some member countries, including Thailand-Malaysia, the PRC-Myanmar, and the PRC-Vietnam, efforts have been made to regulate the cross-border movement of animals, although much more still needs to be achieved.

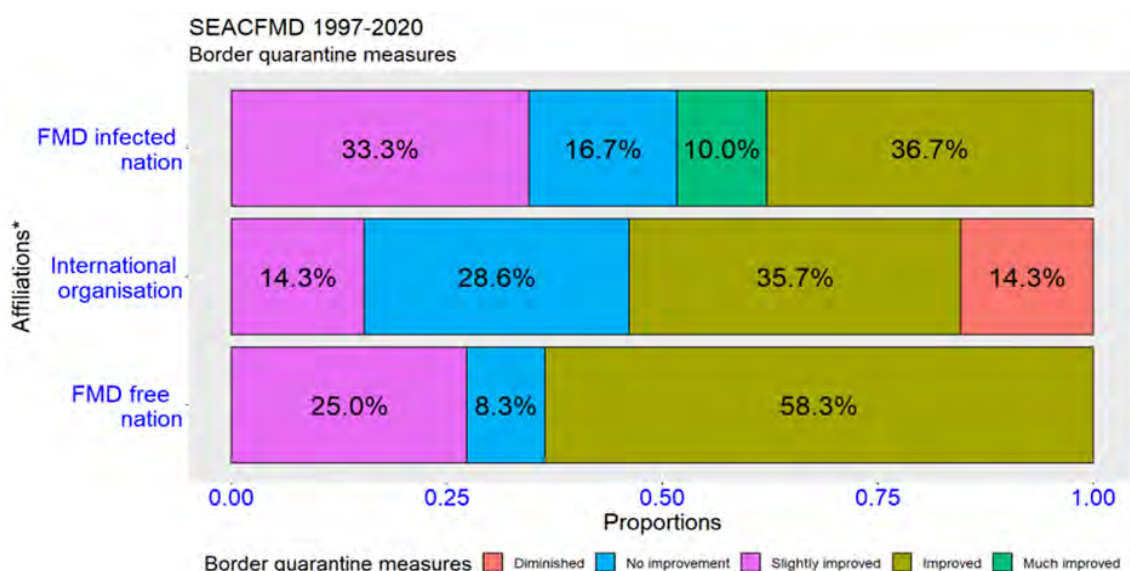
The sentiments expressed in the comprehensive surveys and interviews were also apparent in the abbreviated survey, with most of the researcher cohort (80%) and a considerable proportion of contributors to capacity building (33.3%) and international assistance (28.6%) indicating that there had been no improvement in animal movement control during the Campaign. It was also noted that a smaller proportion of participants in policy and governance (5.9%), on-ground implementation (19%) and capacity building (16.7%) considered that there had been much improvement in animal movement control (Figure 4.7.).

The analysis of the responses based on the affiliations reflected that a higher proportion of participants from international organisations (42.9%) than from FMD-free nations (16.7%) or FMD-infected nations (10%),



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.5. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on border quarantine measures.



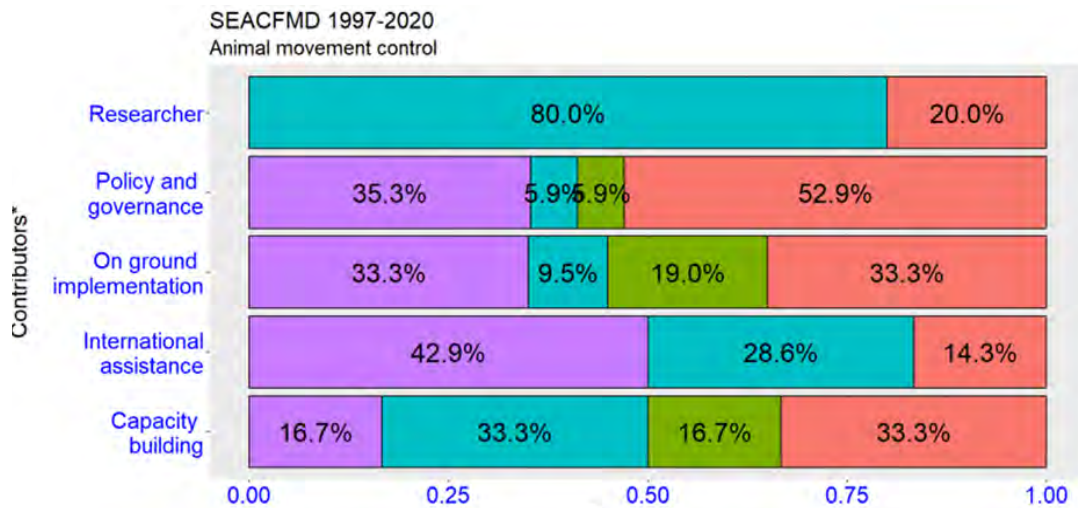
*Some categories have missing values; hence the totals may not add to 100%

Figure 4.6. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on border quarantine measures.

considered that there was no improvement in the control of animal movements during the SEACFMD programme. Some respondents from FMD-free nations (8.3%) and FMD-infected countries (16.7%) considered such controls to have been much improved due to the Campaign. A significant proportion of the respondents from FMD-infected nations (43.3%), FMD-free countries (41.7%), and a smaller proportion of international organisations (14.3%) considered that the control of animal movements improved, while a similar proportion (30%, 28.6%, 33.3% respectively) considered the impact was only slightly improved (Figure 4.8).

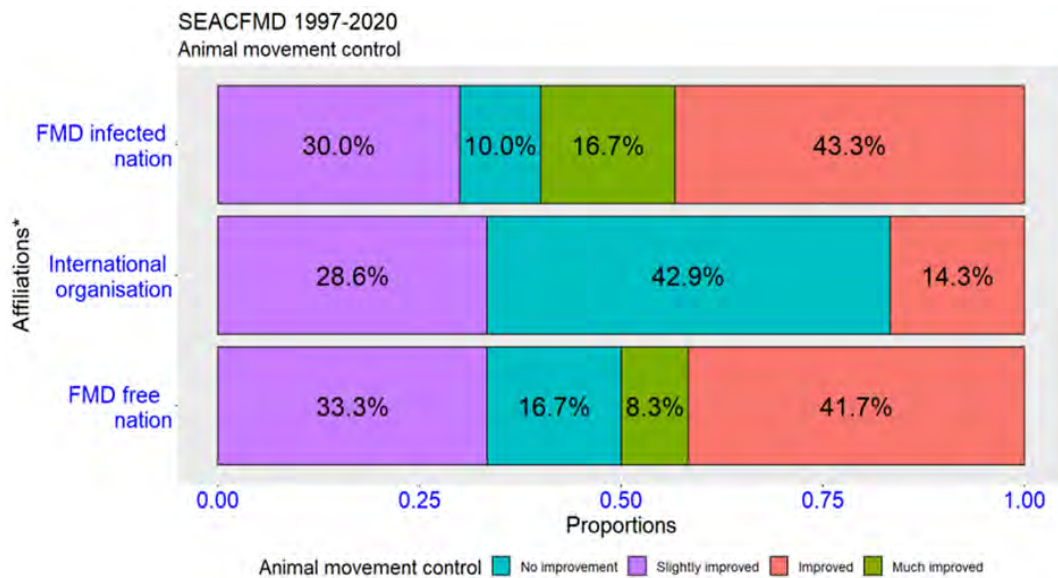
4.2.5. FMD vaccination programmes

A significant achievement of the SEACFMD programme has been the promotion among member countries of the importance of establishing FMD vaccination programmes. However, survey responses indicated that the sustainable implementation of FMD immunisation in these countries has been highly variable. In Vietnam, major FMD vaccination programmes were developed and implemented at both national and provincial levels recently. The PRC instituted a compulsory vaccination policy, and implementation reportedly has strictly fol-



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.7. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on animal movement control.



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.8. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on animal movement control.

lowed the national plans. In many other member countries, the implementation of vaccination was reported to lack sustainability, mainly due to an over-reliance on donor funding for vaccine procurement and delivery. In some instances, project-funded implementation of vaccination achieved satisfactory coverage, whereas, in other countries, it fell short for various reasons. FMD-free countries emphasised that due to the contribution of the EU to the WOA vaccine bank, it was possible to considerably reduce the viral load, although sustaining this activity is challenging. Some respondents also questioned the quality of the domestically produced vaccines. The RRLFMD claimed to have played a crucial role in vaccine management by conducting vaccine-matching, and this issue is receiving increased attention.

The planning of vaccination campaigns also varied among different member countries. One respondent stated that although vaccination was conducted to contain outbreaks, the vaccination strategy could have been more specific, noting that it needed to be ring vaccination, blanket vaccination, or barrier vaccination. Some countries only follow a risk-based strategy in deviation from countries with compulsory vaccination policies. Others restrict vaccination to areas where FMD has been diagnosed rather than vaccinating ahead of an outbreak. Many concerns were expressed on the sustainability of vaccination programmes, primarily due to the lack of engagement from the private sector and the need to augment government-led programmes to meet the challenge of self-reliance in producing and procuring appropriate vaccines in infected member countries.

The perception of vaccination coverage for FMD control achieved through the SEACFMD Campaign varied and depended upon the nature of the respondents' contributions to the abbreviated survey. More than half of the participants in the on-ground implementation cohort indicated that the SEACFMD Campaign had improved (52.4%), slightly improved (19%) or even much improved (19%). However, a small proportion (4.8%) also considered that it had diminished or that there had been no improvement. Some respondents involved in international assistance (14.3%) also indicated that vaccination coverage had diminished during the SEACFMD Campaign. A considerable proportion of the researcher cohort (20%) and a smaller proportion of contributors to capacity building (16.7%) and policy and governance (5.9%) considered that the campaign had not led to an improvement in vaccination coverage. In summary, a significant proportion of the respondents across the spectrum of stakeholders believed that the use of FMD vaccination has only slightly improved (Figure 4.9), as described:

'Planning went well, but vaccine procurement only happened by project funded deliveries'

When analysed based on status affiliations, a similar proportion of international agencies (7.1%) and FMD-free nations (8.3%) felt that the vaccination across the region had diminished or not improved during the SEACFMD Campaign. However, when the categories of slightly improved, improved and much improved are combined, most respondents considered that vaccinations had improved considerably, with only a smaller proportion (7.1%) affiliated with international agencies indicating that vaccination coverage had much improved (Figure 4.10).

4.2.6. Animal disease diagnostic facilities

An achievement of the SEACFMD Campaign valued by many survey respondents is the establishment of RRL, contributing to the identification of new strains, vaccine matching and sharing of diagnostic and serotyping information for broader dissemination during SEACFMD meetings. The RRL has also been essential for diagnostic quality assurance, arranging the conduct of diagnostic proficiency tests and ensuring that standards of the national laboratories are achieved. In most member countries, the National laboratories can rapidly detect FMD outbreaks by providing efficient FMD antigen and serological testing capacities.

The programme has also effectively established a laboratory network that supports the control of other livestock disease outbreaks. However, national-level diagnostic ca-

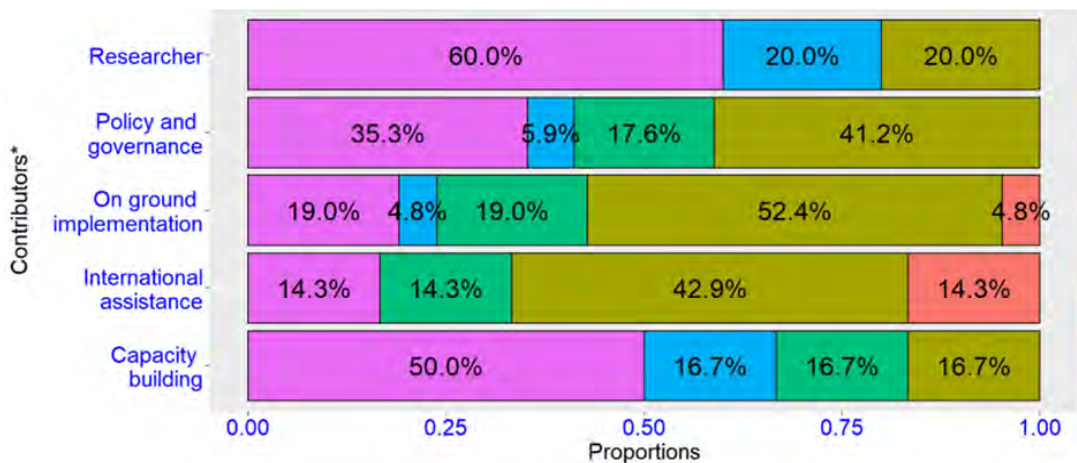
pabilities remain variable among member states, reflecting local and donor investment levels. For example, the PRC has established national reference laboratories in all provinces while equipping all county veterinary laboratories with the capability of FMD testing. FMD diagnostic capacity in Vietnam was reportedly good, with samples regularly referred to the RRL, the UK (Pirbright), and Argentina for virus characterisation and vaccine matching. Other countries of the region are faced with a range of challenges, including inadequate staff, equipment, training and challenges with sample collection and transportation logistics, as described:

'Staff turnover is of main concern. Non availability of reagents and equipment is another concern.'

The contribution of the SEACFMD programme is widely acknowledged and highly appreciated in the initiation of the now substantial progress in establishing and maintaining laboratory capabilities for rapid FMD detection in the region. The exchange of information for building laboratory capacity in countries of the region through LabNet meetings has specifically supported this development, with these meetings expanding knowledge and capacities for the provision of FMD diagnostics amongst member countries.

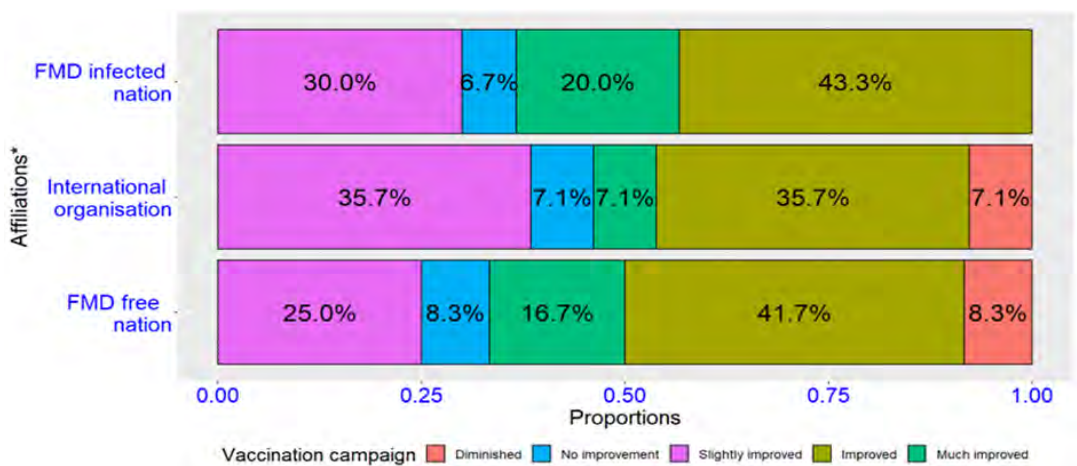
Contributors to international assistance considered the diagnostic facilities and associated support to diagnostics were much improved (14.3%) or improved (85.7%). Slight improvements or unqualified improvements in diagnostics were also supported by researchers (60%/20%), those involved in policy and governance (23.5%/47.1%), on-ground implementation (9.5%/66.7%) and capacity building (50%/33.3%). Only a small proportion of respondents (4.8%) contributing to the on-ground implementation cohort considered that the diagnostic facilities had diminished during the SEACFMD Campaign (Figure 4.11).

Analysis of the affiliation of respondents indicated that some participants from the FMD-free nations considered that diagnostic facilities/capacities had diminished (8.3%) or not improved (8.3%) during the Campaign. A considerable proportion of the participants affiliated with the three categories (i.e., FMD-infected nations, international agencies, and FMD-free nations) considered that the SEACFMD Campaign had led to slightly improved (16.7%, 28.6%, and 25%, respectively), improved (60%, 57.1%, 41.7%, respectively) or much improved (20%, 7.1%, 16.7%, respectively) diagnostic capacities (Figure 4.12.).



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.9. Bar chart survey responses of participant status 'contributors' on impact of SEACFMD on vaccination campaign.



*Some categories have missing values; hence the totals may not add to 100%

4. 10 Bar chart survey responses of participant status 'affiliations' on impact of SEACFMD on vaccination campaign.

4.2.7. Disease Surveillance System

The existing surveillance systems in the region at the time of the inception of the SEAFMD programme were weak and predominantly passive, with the commencement of the FMD Control and Eradication Programme in the Philippines at that time highlighting the low level of activity in most other endemically infected countries. Few member states had invested in designing and implementing active surveillance mechanisms for animal diseases, particularly FMD.

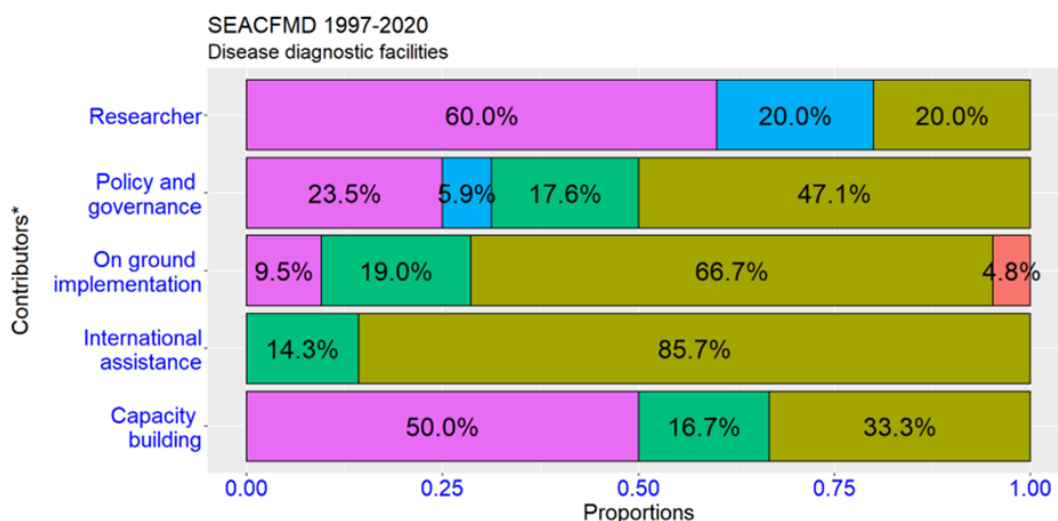
As one of the last entries to the programme, the PRC has reportedly established a multi-tiered surveillance system at the central, provincial, prefecture, county, and township levels. An FMD surveillance plan has been formulated in

the country by the Ministry of Agriculture and Rural Affairs that is followed by animal disease prevention and control agencies. The surveillance system instituted in Vietnam reportedly works well and comprises both passive and active surveillance. Lao PDR has also displayed adequate periods of FMD surveillance when sufficient donor-funded programmes have been occurring. Undoubtedly, the surveillance systems have generally improved across the region since the inception of the SEACFMD Campaign, with increasing numbers of member countries now developing and adapting their surveillance systems to best suit local needs and international reporting obligations. However, while some member countries have invested in developing and implementing robust surveillance systems, human resources trained in data analysis and interpretation still need to be improved. There is a widespread opinion

that much more needs to be done with the data being generated.

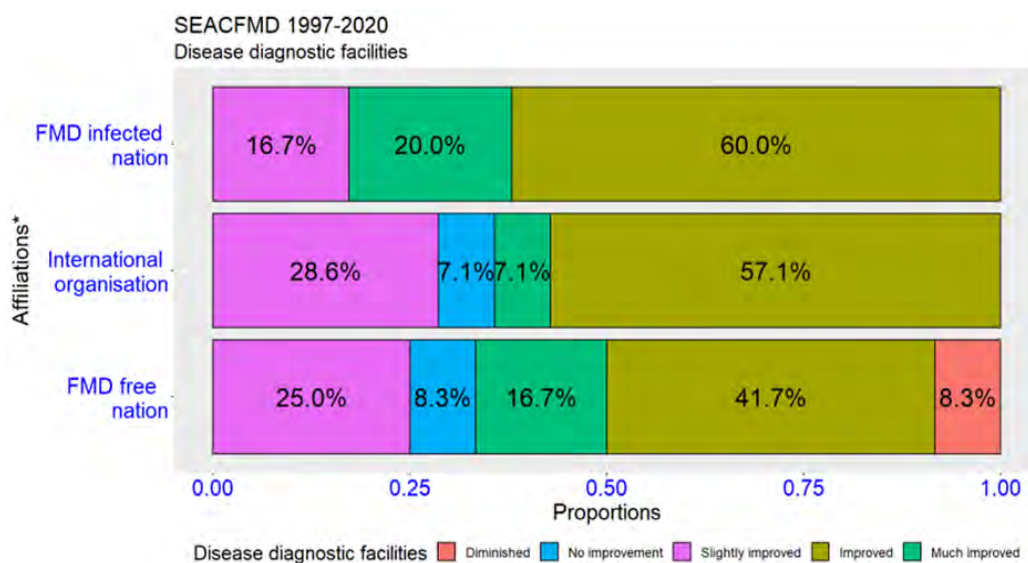
It is recognised that most member countries' surveillance systems rely heavily on passive surveillance, leading to a limited sensitivity of the reporting system. The SEACFMD Campaign has supported several training and workshop activities that have enhanced the local capability for epidemiological surveys. However, these initiatives were primarily project or donor-funding dependent, and the improved surveillance levels were rarely sustained after project completion. The need for enhanced database management and data analysis skills for stakeholders at national and local levels was recommended.

The responses from the abbreviated survey indicated that 16.7% of respondents contributing to a technical capacity building considered that disease surveillance systems have diminished or remained as they were before the Campaign. However, a similar proportion also said that the disease systems had much improved (Figure 4.13). A substantial proportion of the researchers' cohort (40%) and some respondents involved in policy and governance (11.8%), and capacity building (16.7%), considered that the SEACFMD Campaign had not brought any improvement in disease surveillance systems. An equal proportion of respondents (14.3%) contributing to on-ground implementation or as part of international assistance considered that much improvement in disease surveillance systems had



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.11. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on diagnostic facilities.



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.12. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on diagnostic facilities.

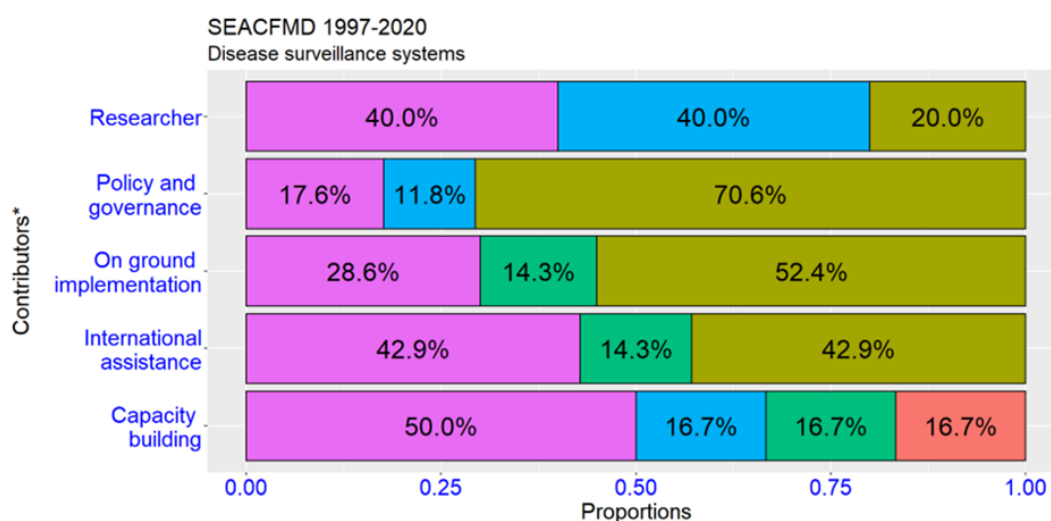
occurred during the Campaign. A substantial proportion (70.6%) of respondents associated with policy and governance and a considerable proportion of those associated with on-ground implementation (52.4%) and international assistance (42.9%) considered that the Campaign helped improve disease surveillance systems (Figure 4.13).

The opinion of a high proportion of respondents from all three categories of status affiliations was that the SEACFMD Campaign has contributed to improving disease surveillance systems in the region (with 58.3%, 42.9% and 46.7% of FMD-free countries, international agencies and FMD infected nations, respectively). A small proportion of respondents from international agencies considered that surveillance systems had diminished (7.1%) or not improved (14.3%) during the Campaign, with a similar

proportion indicating that the Campaign had only slightly improved the systems (Figure 4.14).

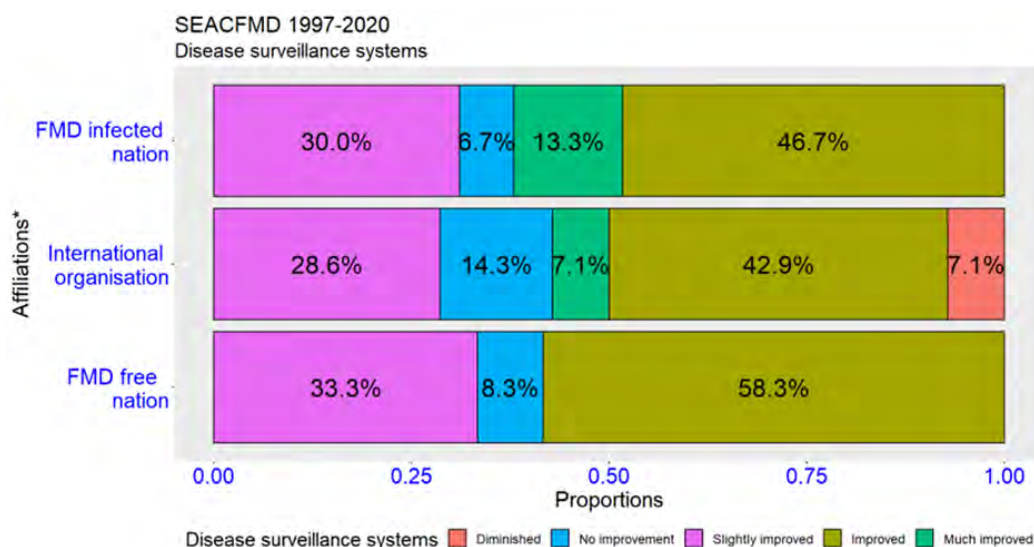
4.2.8. Epidemiological capacity: data collection, analysis, reporting, evidence-based decision making

The SEACFMD programme has enhanced the epidemiological capacities of the member countries in the region over the last 20 years. However, as with other technical services capacities, the magnitude of the improvements has varied among member countries, despite several countries making concerted efforts to build epidemiological capacities through Field Epidemiology Training Programmes (FETP) and workshops conducted under SEACFMD projects. For example, data generated during



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.13. Bar chart survey responses of participant status 'contributors' on impact of SEACFMD on disease surveillance.



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.14. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on disease surveillance.

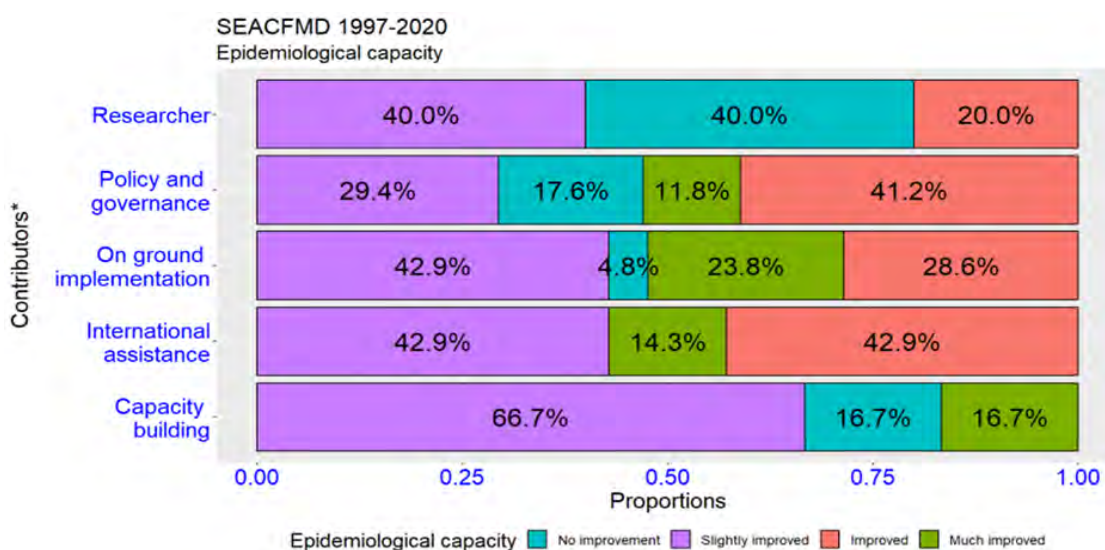
planned survey projects in Lao PDR, supported by the Australian Centre for International Agricultural Research (ACIAR) and New Zealand government-funded projects, has provided valuable experience and resources for training local staff, enabling them to take increased responsibility for FMD control with reasonable levels of proficiency.

Significant improvements in data collection were reportedly observed in many member countries following the institution of the ASEAN Regional Animal Health Information System (ARAHIS), which increased FMD outbreak reporting. Initiatives from the sub-regional WOAHP office, including the SEACFMD Bulletin, have promoted discussions on epidemiological analysis, enabling member countries to make more evidence-based decisions. A SEACFMD dashboard has also been initiated within the WOAHP sub-regional website to visualise and analyse data. It was noted that FAO RAP and WOAHP RCU for epidemiology capacity building have initiated many training activities. However, these were often indistinguishable from other concurrent regional projects aimed at improving epidemiology capacities. Unfortunately, only a few countries mentioned conducting simulation exercises for FMD and other TAD preparedness and response activities in their national-level epidemiology capacity-building initiatives.

Despite efforts under the SEACFMD programme, there remains insufficient expertise in efficient data collection and analysis for evidence-based TAD control solutions. Whilst it was acknowledged that the SEACFMD programme had promoted data collection, few activities or programmes focus on building the epidemiology capacity of field veterinarians in member countries. A regional ini-

tiative, the online field epidemiology training programme commenced by the Asia-Pacific Consortium of Veterinary Epidemiology (APCOVE) was mentioned, and the need for more such programmes aimed at capacity building of the field veterinary workforce in member countries was expressed. These workshops and other training initiatives still only partially address data analysis skills and hence need to be revised to significantly enhance the epidemiology capacity of many member countries. An issue is that opportunities for training at the regional level are usually utilised by staff at the central level, leaving veterinarians at the regional and local governance without such opportunities. This has resulted in low capacities in the local veterinary workforce. The absence of a veterinary epidemiology network in the region was cited as a constraint on sustained capacity enhancement. At the national level, the turnover of trained staff frequently exposes inadequately trained professionals to leadership roles in TAD control programmes, leading to vulnerabilities in national veterinary epidemiology workforce capacities. This highlights the need for ongoing or regularly recurring training in epidemiological skills at national and sub-national levels.

The abbreviated survey revealed that, except for respondents involved in international assistance or policy and governance, other contributors (researchers -80%, capacity building -83.4%, and on-ground implementation 47.7%) considered that the Campaign had not improved or only slightly improved the epidemiological capacity in the countries of the region (Figure 4.15.). The fact that an equal proportion of respondents contributing to capacity building (16.7%) were polarised between no improvement and much improvement likely reflects that in some nations, the epidemiology skill development workshops and



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.15. Bar chart survey responses of participant status 'contributors' on impact of SEACFMD on epidemiological capacity.

training were organised more frequently than in others. In many countries, this has still not had a significant impact (Figure 4.15).

That the SEACFMD Campaign has helped build epidemiology capacity in only some FMD- infected countries is reflected by the fact that only 26.7% of respondents affiliated with FMD-infected countries considered the capacity to have much improved. A quarter of the respondents from FMD-free countries, 10 % from FMD-infected nations and 7.1% from international organisations considered that the Campaign could have been more instrumental in improving the epidemiology capacity. However, identical proportions from the three affiliations felt that the capacity had improved/slightly improved (41.7%, 23.3%, and 35.7%, respectively) (Figure 4.16).

4.2.9. Transparency in reporting

The SEACFMD programme has significantly improved reporting at the regional level since 1997, with the annual meeting of member countries helping achieve this. It was acknowledged that, in some countries, national guidelines and local instructions had previously discouraged the reporting of outbreaks, leading to hesitancy. However, this has been increasingly overcome due to the programme's efforts. The information exchange facilitated at annual meetings along with the progress reporting by member countries, has indirectly supported this development. Some respondents noted that trade policies have influenced the quality of reporting. While the level and quality of reporting have initially improved during the programme, there has reportedly been an increase in opacity in some other countries. Although significant

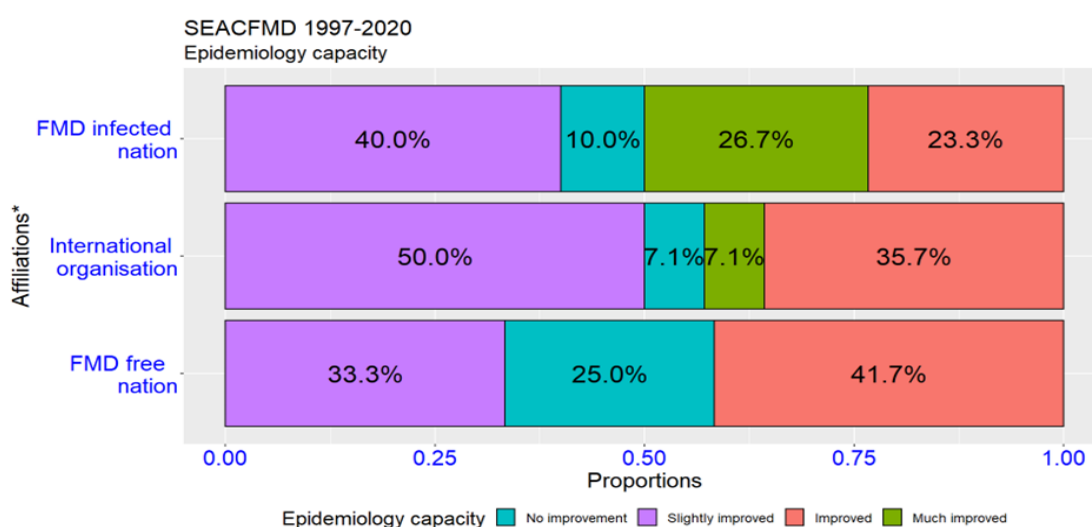
outbreaks are usually reported, smaller outbreaks- particularly in endemic areas- are often overlooked, and under-reporting remains a problem, as described:

'Disease reporting along the entirety of the reporting chain remains problematic'

Concerns were also raised by some respondents that, while the quality of reporting had remained stable during the past 5-6 years, there is a need to review reporting systems in member countries to ensure a more regular flow of accurate information. However, an alternative opinion suggested that the main challenge is not transparency, but delayed reporting, with an urgent need to upgrade the system to allow the sharing of real-time data. Currently, data reporting is delayed due to a multi-layered approval process in most countries, which slows down and, in some cases, diminishes, the flow of information and response activities.

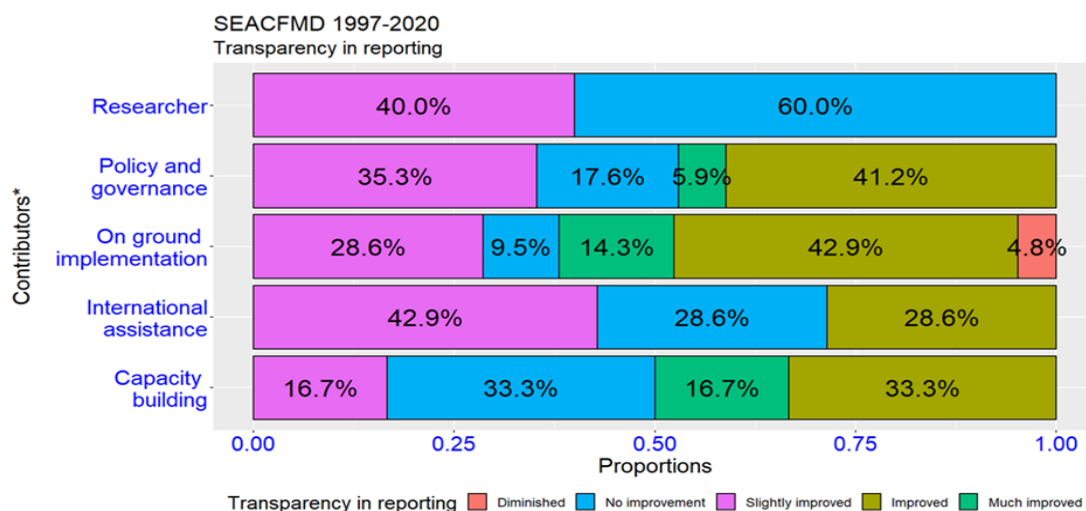
Researchers considered that transparency in reporting had either not improved (60%) or had only slightly improved (40%) due to the SEACFMD Campaign. Other contributors were more positive, with those involved in capacity building (50%), international assistance (57.2%), policy and governance (47.1%), and on-ground implementation (57.2%) indicating that transparency had improved or much improved. Only a small proportion (4.8%) of respondents involved in on-ground implementation felt that transparency in reporting had reduced (Figure 4.17).

The analysis of the responses based on status affiliations reflected that half of the respondents from international organisations did not observe any improvement in transparency of reporting. A relatively smaller percent-



**Some categories have missing values; hence the totals may not add to 100%*

Figure 4.16. Bar chart survey responses of participant status 'affiliations' on impact of SEACFMD on epidemiological capacity.



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.17. Bar chart survey responses of participant status 'contributors' on impact of SEACFMD on transparency in reporting.

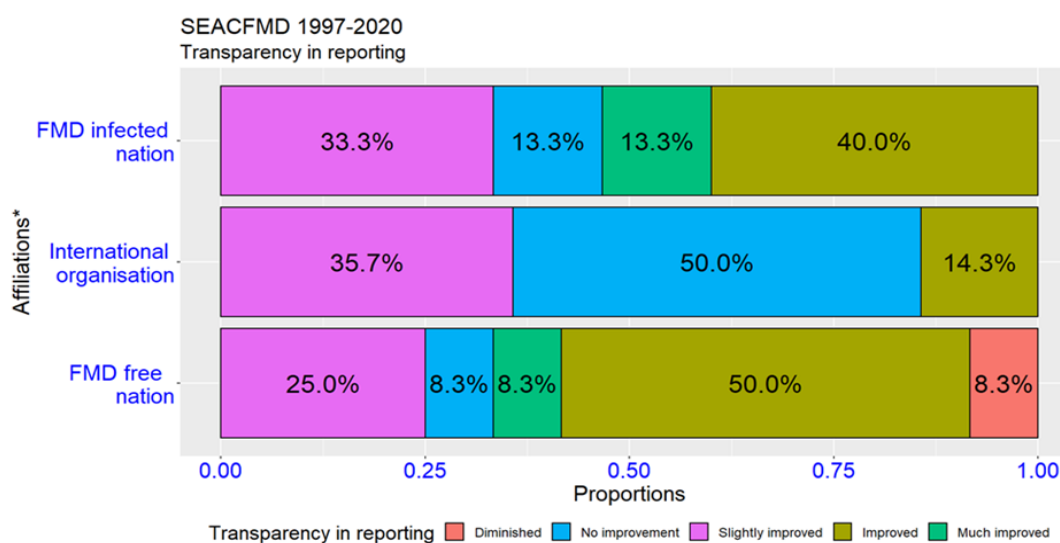
age of respondents from FMD-infected countries (13.3%) and FMD-free countries (8.3%) thought otherwise. A more significant percentage of respondents across all affiliations considered that transparency in reporting had improved or slightly improved (FMD-free countries, 40%/33.3%; International organisations, 14.3%/35.7%; FMD-free nations, 50%/25%) (Figure 4.18).

4.2.10. Public awareness of FMD

The emphasis on increasing public awareness has been a key pillar of the programme since its initiation, with the development of a communication network being a high priority. Member countries were guided and encouraged to develop and implement their communication strategies within the framework of the broader communica-

tion guidelines designed by the WOAHS SRR. This has resulted in the development and publication of awareness materials on various aspects of the disease, including publications, posters, and audio-visuallys, which have significantly improved awareness levels among farmers, veterinarians, and cattle traders. However, public awareness campaigns have been executed with varying frequency, generally increasing during outbreaks and diminishing at other times.

Strategies in each country also differ and are generally concentrated at the institutional level, with the effectiveness of reaching producers or farms remaining debatable. Some member countries have invested in developing Information, Education and Communication (IEC) materials and disseminating them at the farm level. In contrast,



*Some categories have missing values; hence the totals may not add to 100%

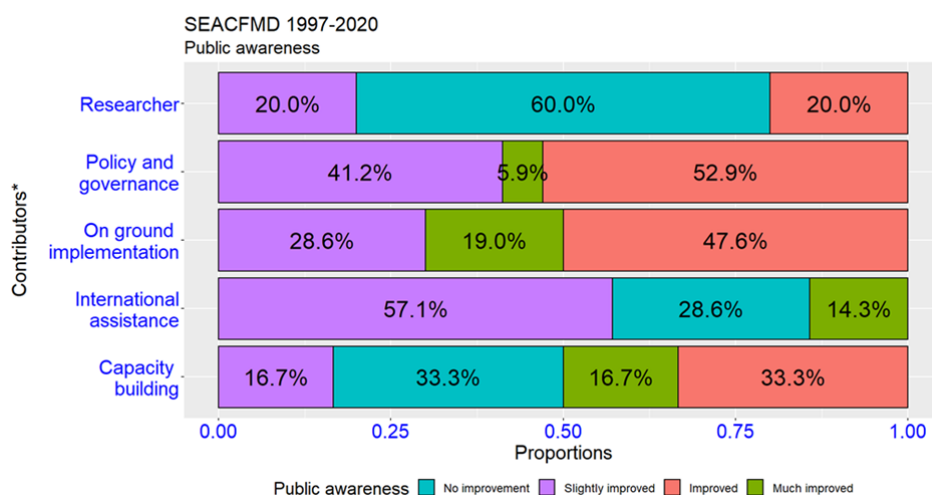
Figure 4.18. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on transparency in reporting.

other countries have entrusted field veterinarians with conducting public awareness on FMD, including the distribution of brochures. In higher-income countries, these campaigns involved regular public engagement with key stakeholders through private-public partnerships. While some respondents felt that public awareness was satisfactory, it was also felt that, given the seriousness of food-security concerns related to FMD, awareness needed to be on par with diseases like brucellosis, haemorrhagic septicaemia, or rabies. Campaigns on the biosecurity and biosafety aspects of animal diseases should prioritise FMD to ensure sustained awareness.

The responses to the impact of the SEACFMD Campaign on public awareness, as recorded in the abbreviated survey, were found favourably dispersed along available options except for the researchers (60%), international contributors (28.6%) and those associated with the capacity building (33.3%) who

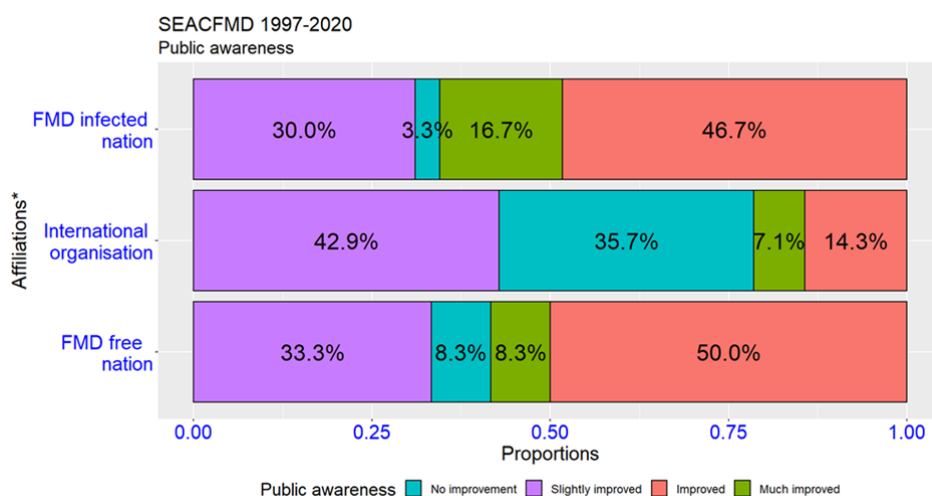
did not observe any improvement. A considerable proportion of the respondents providing international assistance (14.3%), engaged in capacity building (16.7%), involved in on-ground implementation (19%) and influencing policy and governance (5.9%) felt that the Campaign has much improved public awareness. In contrast, larger proportions considered that the latter had only slightly improved or improved (Figure 4.19).

When analysed according to the affiliations of the respondents, a greater percentage of respondents from international organisations (35.7%) did not observe any improvement in public awareness due to the SEACFMD programme compared to FMD-infected (3.3%) or FMD-free (8.3%) countries. Interestingly, a higher percentage of respondents from FMD-infected nations (16.7%) considered that the Campaign assisted in a much-improved public awareness of FMD com-



**Some categories have missing values; hence the totals may not add to 100%*

Figure 4.19. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on public awareness.



**Some categories have missing values; hence the totals may not add to 100%*

Figure 4.20. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on public awareness.

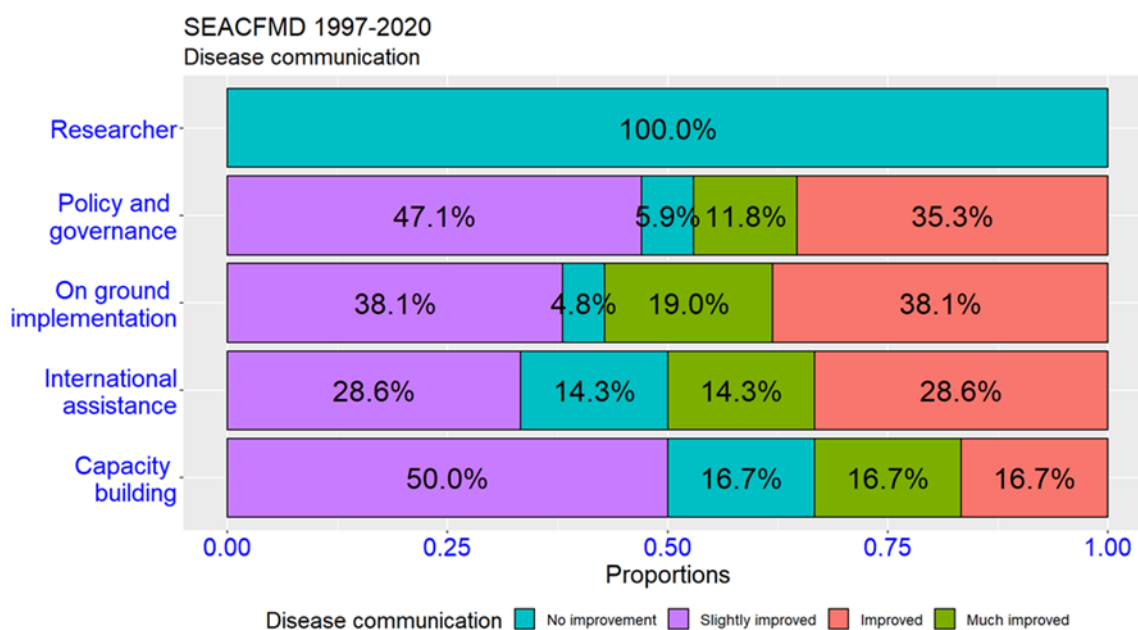
pared to responses from FMD-free countries (8.3%) or international organisations (7.1%). The remaining respondents consider that public awareness of FMD had either only slightly improved (FMD infected, 30%; International organisation, 42.9%; FMD-free countries, 33.3%) or just improved (FMD infected, 46.7%; International organisation, 14.3%; FMD-free countries, 50%) (Figure 4.20.).

4.2.11. Disease communication

Disease communication systems within state departments and among other stakeholders in FMD-endemic countries require significant improvements. It is essential to sustain the knowledge gained at the institutional level and ensure it is better communicated at the farm level. Some respondents felt that disease communication strategies remain problematic throughout the reporting chain, especially in endemic countries. An increased collaborative approach supported by workshops and training was recommended to improve disease communication for field veterinarians and decision-makers. The SEACFMD programme has improved leadership, management, and technical skills. However, a more collaborative approach is recommended in future SEACFMD Roadmaps. This should involve active coordination with other regulatory agencies, especially those responsible for food security and animal premises, and importantly, public health, surveillance, and zoonoses control.

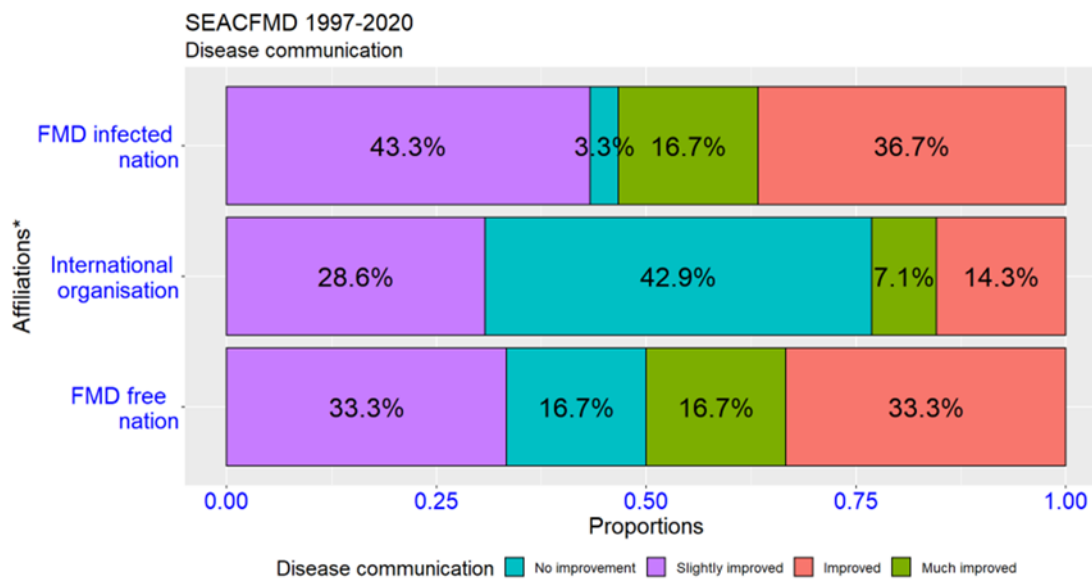
Researchers were the most critical group of contributors to the SEACFMD Campaign with no respondents in this category considering that there had been any improvement in disease communication. Comparatively smaller proportions of respondents from other contributor categories shared this view, including policy and governance (5.9%), on-ground implementation (4.8%), international assistance (14.3%) and capacity building (16.7%). On the contrary, a reasonable percentage of respondents considered that disease communication had either slightly improved, improved or was much improved, including policy and governance (47.1/35.3/11.8%); on-ground implementation (38.1/38.1/19.0%); international assistance (28.6/28.6/14.3%); and capacity building (50/16.7/16.7%) (Figure 4.21.).

Most respondents contributing through international assistance to the SEACFMD Campaign were researchers. It is not unexpected that many participants with international affiliation felt that the Campaign had not contributed to improved disease communication., Much lower percentages of respondents from FMD-infected (3.3%) and FMD-free countries (16.7%) shared this view. Respondents from FMD-infected countries, however, were the most likely to report that disease communication had improved through the SEACFMD Campaign, compared to those from FMD-free nations or international organisations (Figure 4.22.).



**Some categories have missing values; hence the totals may not add to 100%*

Figure 4.21. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on disease communication.



*Some categories have missing values; hence the totals may not add to 100%

Figure 4.22. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on disease communication.

4.3. Assessment of technical capacities according to stakeholder role and affiliation

The preceding sections discussed the variations in perceptions of improvements in critical components of FMD control during the SEACFMD Campaign, with noticeable differences recorded in opinions from different stakeholders. Eleven priority areas were assessed during the review process, and the perceptions of participants recorded in the abbreviated survey were analysed according to the two stakeholder categories, based on (a) the contribution or role of the stakeholder and (b) the 'status' affiliation of the stakeholder during their association of the SEACFMD Campaign.

Lack of quarantine facilities, animal movement controls, poor vaccination coverage, and inadequate diagnostic facilities were identified as significant gaps among the first set of priorities by stakeholders categorised according to their role in the Campaign. The two priorities where most stakeholders considered that the Campaign had made good progress were improving biosecurity practices and animal movement controls. However, this opinion was not shared by all (Figure 4.23). This was corroborated by a respondent who was part of international assistance with the Campaign and said:

'... biosecurity training has been included with targeted vaccination campaigns, but a broader reach using changed management principles is required if the campaign is to influence regional capabilities...'

With increasing evidence that progress is being made on animal movement controls through bilateral agreements between neighbouring member countries, research into the effectiveness of this may be required. Some vulnerable areas in the region, where the cross-border illegal movement of animals has been rampant, are being considered for zoning through ongoing discussions between concerned nations. One interviewee admitted that the Campaign had facilitated such progress, advising:

'...concept of zones involving two or more countries has gained traction and more within the country, with upper Mekong and lower Mekong ... bilateral agreements [for zoning] was a regular activity'

Another priority area is the establishment of DCZs, as identified by stakeholders involved in international assistance and governance and policy. Impediments to establishing DCZs include lack of funding, technical expertise, inadequate diagnostic information, and poor surveillance systems, all of which require attention. An interesting aspect of the comparative analysis was that stakeholders involved in capacity building were equally divided among the priority areas, suggesting they were unaware of the progress in other domains included in SEACFMD. This may reflect that the capacity-building processes needed to include sufficient information to manage staff turnover issues. Some stakeholders remained uninformed or still needed to gain a holistic understanding of the FMD situation in the country and the region. A reason for the researchers' critical viewpoint is likely the lack of progress or effectiveness in con-

trolling animal movements within countries. Developing animal traceability mechanisms has been regularly recommended. However, this is a challenging goal without substantial funding and sufficient political commitment, particularly in lower- and middle-income (LMIC) countries. As effective animal movement control cannot be achieved without relevant legislation and compliance mechanisms, one respondent considered that while the Campaign has promoted the importance of such control, this has yet to be delivered:

'A better understanding of the animal movement patterns is achieved, but an effective control has not yet been achieved'

A disparity of stakeholders' perceptions could also be due to biased assessment reflecting the region or country where the stakeholder participated during the Campaign. For example, the establishment of the regional reference laboratory with international assistance led those involved in diagnostic work to perceive it as having made good progress. However, others, noting less-than-expected submission rates or reporting issues, and those not included in laboratory training, may consider that progress still needs to improvement (e.g., stakeholders involved in capacity building). Respondents from endemic countries expressed confidence in the Campaign's ability to improve awareness of biosecurity practices effectively. However, a contributor from international assistance acknowledged the difficulties in achieving this:

'...awareness of biosecurity has been greatly improved, but there is still a big gap between purification (practice) and elimination of animal diseases'

While training and educational materials facilitated by the Campaign have contributed to improved biosecurity in FMD-infected countries, respondents affiliated with international agencies observed that the implementation was much more pronounced in pig production systems than in large and small ruminants. This likely reflects that pig farming is comparatively and increasingly more commercialised in many member countries than the smallholder cattle and buffalo farming systems, which remain mostly beef oriented and dependent on free-grazing systems. Particularly respondents affiliated with international agencies expressed serious concerns about the lack of national financial and political investments for adequate and timely vaccination coverage. Those from endemic countries also commented on this concern in their appreciation of the vaccination efforts conducted with international funding through the Campaign (e.g., STANDZ programme). The challenge of sustaining FMD vaccinations through the current ad

SEACFMD 1997-2020
Improvement of technical service capacity

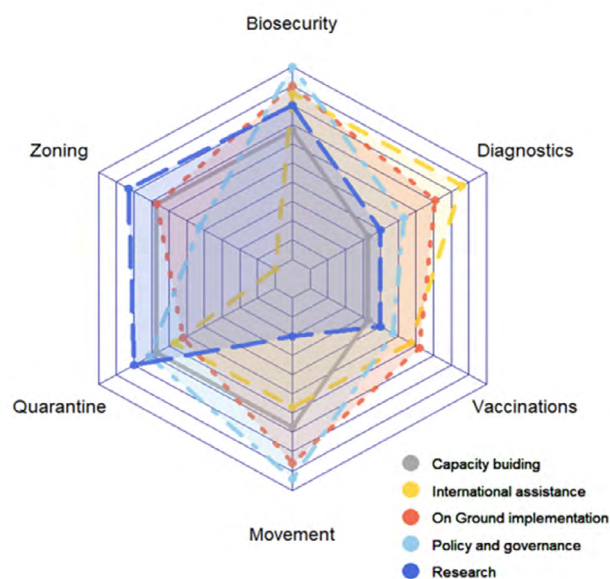


Figure 4.23. Radar chart showing comparative perception of the improvement of priority areas during SEACFMD campaign 1997-2020 based on the roles of the stakeholders.

SEACFMD 1997-2020
Improvement of technical service capacity

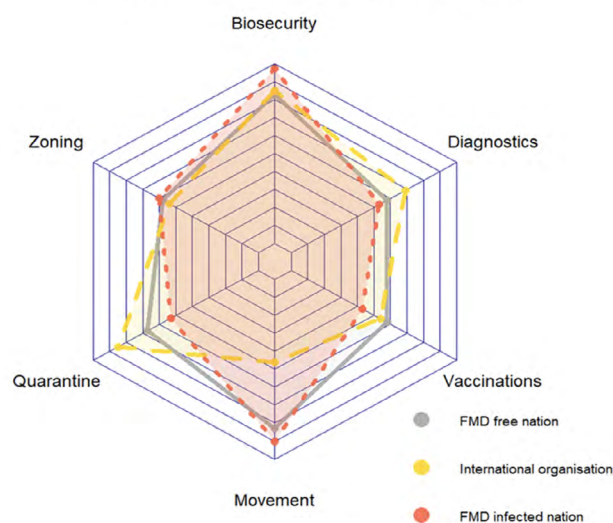


Figure 4.24. Radar chart showing comparative perception of the improvement of priority areas during SEACFMD campaign 1997-2020 based on the roles of the stakeholders

hoc arrangements was described by one respondent as follows:

'...when EU contributed funds to OIE for vaccine bank, the activity made an impact on decreasing the viral load...sustaining the activity [vaccination] is a challenge'

Some respondents from endemic countries mentioned international assistance to establish border quarantine facilities. However, it was generally agreed that regulations for managing such establishments were challenging, with large gaps in quarantine measures (reflected in Figure 4.23). The variations in the capacities of the member countries to utilise animal disease diagnostic facilities involved technical and logistical constraints, with issues of transportation and capabilities both mentioned in the following comments:

'... [laboratory (sic)] capacities varies [vary] among MCs [member countries]. Logistics for sample transportation is a challenge; in-person transportation doesn't work'

'...diagnostic labs were functional and run by qualified staff as far as serological testing. Molecular techniques were not available or started'

Gaps in disease surveillance and reporting systems were evident across both stakeholder categories, with unequivocal recognition of the need to improve surveillance systems for early detection and response to achieve control. Stakeholders involved in on-ground implementation, international assistance and the researcher cohort emphasised the importance of increasing the effectiveness of training workshops on disease surveillance, described by a respondent involved in international assistance in one of the endemic countries as follows:

'Activities were limited to training workshops. Surveillance remained at the same level as before the project start in 2016, i.e., outbreak reporting at some unknown level of intensity'

Transparency in reporting outbreaks has substantially improved following the regular participation of member countries in annual SEACFMD meetings where respective FMD update reports are presented. A participant from one of the international agencies commented:

'In Annual SEACFMD meetings, MCs report the FMD situation, which would indicate transparency in reporting, and one of the successes of this campaign'

The relationship between the lack of active surveillance and the quality of reports was discussed by a member from an FMD-free country; reflecting that most of the surveillance in endemic countries, except for published research project activities, involved passive surveillance. Concerns were noted that this reliance on passive surveillance likely compromised reporting during the COVID-19 lockdowns. While deficits in active surveillance are

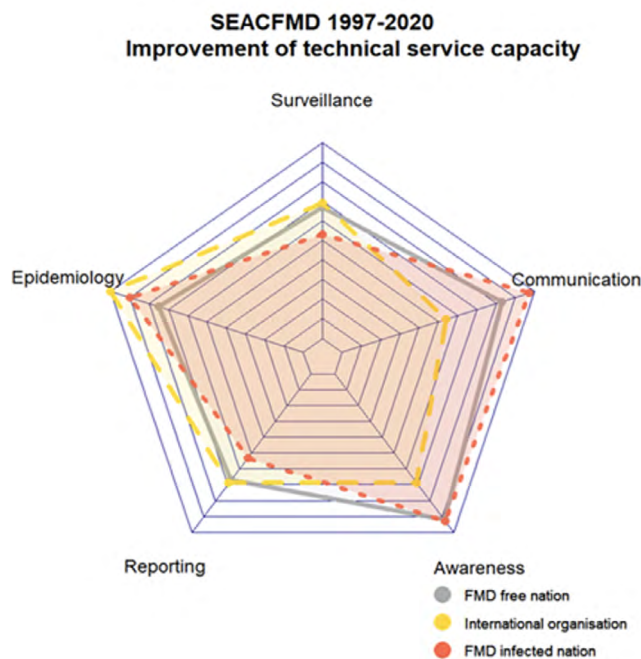


Figure 4.25. Radar chart showing comparative perception of the improvement of priority areas during SEACFMD Campaign 1997-2020 based on the roles of the stakeholders

most likely attributable to competitive funding issues, its importance was generally well understood by the participants during the surveys, described by one as:

'a reliance on passive surveillance has resulted in limited reporting sensitivity'

There was a general agreement on long-term progress in

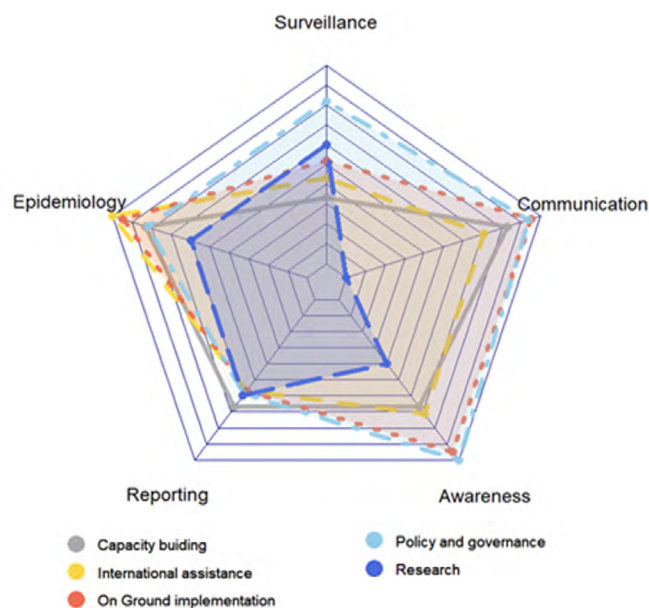


Figure 4.26. Radar chart showing comparative perception of the improvement of priority areas during SEACFMD campaign 1997-2020 based on the roles of the stakeholders

surveillance and disease reporting through ARAHIS (ASEAN Regional Animal Health Surveillance System). However, concerns were expressed that the system's reports are only a guide and cannot be relied upon to provide an accurate indication of current FMD burdens in the GMS. The importance of active surveillance during vulnerable periods, including festive and post-harvest seasons, was emphasised. However, it was again admitted that such activities were dependent upon funding, training, and the awareness levels of individuals in the field.

4.4. Summary of contribution of SEACFMD Campaign to technical services capacity

While there was general agreement on the long-term progress in enhancing many technical services capacities through the SEACFMD Campaign, identifiable gaps from the survey responses were observed and clearly de-

picted in the radar charts (Figures 4.23-4.26). The gaps included: insufficient quarantine and movement controls, inadequate vaccination programmes, a need for diagnostic upgrades, problematic reporting issues, and the need for more focus on the importance of communication programmes. As expected, there was considerable variation in responses according to the stakeholder cohort and status affiliations, as is readily identifiable in the radar charts (Figures 4.23.-4.26.). Of note is the contrast between the researcher cohort and all other cohorts regarding perceptions of improvement in communication, public awareness and epidemiology attributable to SEACFMD (Figure 4.26.). This likely reflects that the researcher cohort is mostly from nations with optimal veterinary services and, as they were involved in needs assessment studies focused on vulnerable areas and populations, they were acutely aware of the comparative deficits in veterinary and animal health services in member countries.

Chapter 5

SEACFMD Campaign (1997- 2020)

Governance and policy



5.1. Introduction

In addition to strengthening technical services capacity, the regional prevention and control strategies for FMD control require effective international coordination and a solid regulatory framework within countries to enable the capacities of the technical service to be effectively utilised. An uncertain and fragmented regulatory environment and compliance capacity in the region persists, compromising safe trade and risking TAD and EID incursions. The SEACFMD Campaign has endeavoured to resolve these impediments by influencing changes in the governance and policies at national levels to address disparities in the regulatory mechanisms in many of the member countries. The Campaign has promoted the use of the ASEAN agreements to improve existing regulatory environments and to assist the development of policies that favour implementing more sustainable FMD control interventions.

Improving governance at national levels for animal and veterinary public health services has remained a complex issue throughout the SEACFMD Campaign, with regional coordination of the national policies of the member countries being equally challenging. While there are achievements in some countries, challenges remain in others. This review attempted to gather information on the role of the SEACFMD Campaign in facilitating changes to the governance of services at the national level, particularly of animal and veterinary health services, and the building of veterinary public health capacities. The respondents were requested to advise if there had been changes to the legislation on regulating the trade of livestock and livestock products that have mitigated food safety risks and if it was considered whether the national policies aligned with regional goals.

5.2. Veterinary and animal health services

A small percentage of respondents (4.8%) involved with on-ground implementations of interventions considered that the performance of veterinary and animal health services had diminished over the years of the SEACFMD Campaign (Figure 5.1). However, these respondents represented FMD-free countries, and it was conveyed during face-to-face interviews that veterinary services in these countries needed to manage more effective training of the new generations of veterinarians on the emergency disease preparedness and response measures, particularly for prevention, early detection, and response to FMD incursions. Researchers mostly (80%) considered that the improvement was only slight or not at all, with a relatively smaller proportion of respondents associated with

capacity building (33.3%) and international assistance (28.6% and 14.3%) in agreement.

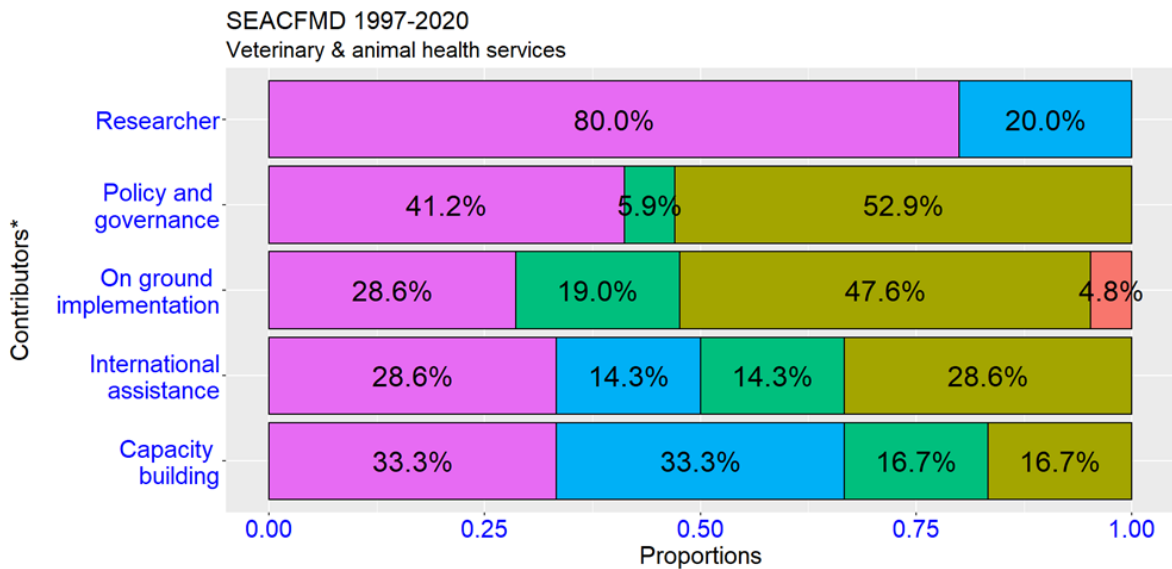
As discussed previously, the researcher cohort is mostly from nations where veterinary services have been well established for extended periods, and TAD control, especially for FMD, is a very high priority activity. Researchers were involved in studies examining vulnerabilities in TAD management and were acutely aware of the deficits in veterinary and animal health emergency disease preparedness and response capacities. Similarly, those in capacity building and international assistance were likely involved in conducting training of personnel involved in delivering veterinary and animal health services, recognising the challenges of achieving excellence in the under-resourced LMIC countries. The SEACFMD Campaign was acknowledged to have contributed to at least some improvement of veterinary services, as expressed by more than half of the respondents in governance and policy (52.9%) and those involved with on-ground implementation (47.6 %).

It was expected that participants from FMD-free nations would be more critical of the impact of the SEACFMD Campaign contributions on veterinary and animal health services, with 8.3 % saying that these services had not improved (Figure 5.2.). Respondents from international organisations also considered that services had not or only slightly improved (71.4%), although this reflects the opinion of the researcher cohort. A more significant percentage of respondents from FMD-free countries (83.5%) considered there was an improvement, although this comprised a proportion that indicated only a slight improvement (25%).

This gap survey data was supported by commentary in the interviews, confirming that governance of veterinary services has, necessarily, improved in FMD-endemic countries over the years. Discussions indicated that considerable work is still needed, with continuation of assistance and cooperation with both central government authorities that formulate the policies and with those at other levels, particularly those responsible for enforcement of regulatory compliance.

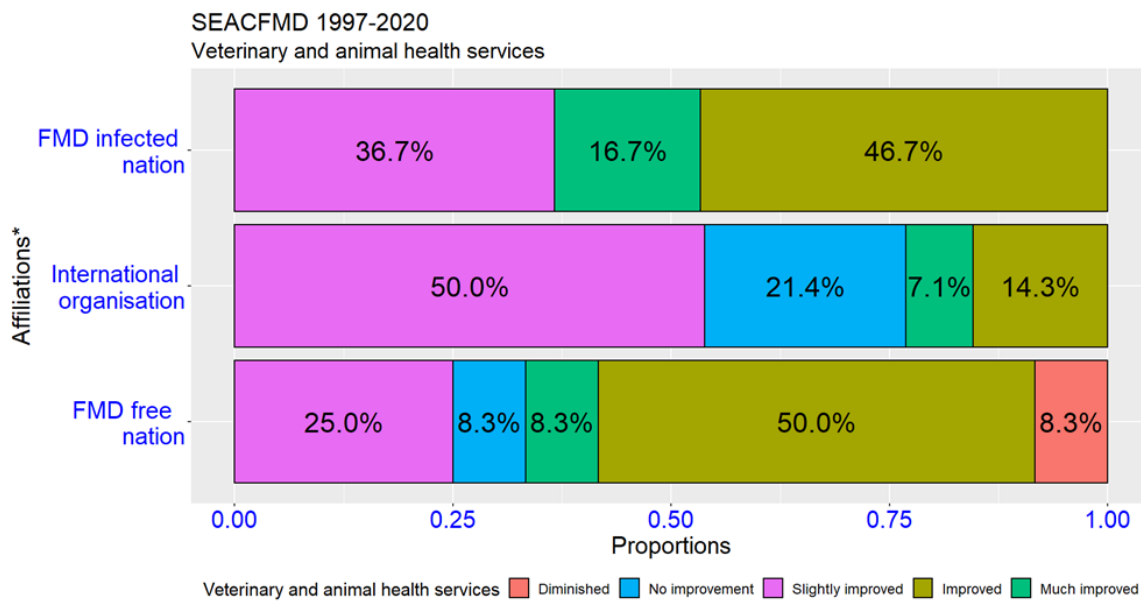
5.3. Veterinary public health services

The role of veterinary services in delivering effective veterinary public health (VPH) activities is critical. The expectations of day-one competencies in VPH for new veterinary graduates, with abilities to gain and utilise their knowledge, expertise and sharing of veterinary resources for societal benefits, have been increasingly promoted globally. In addition to FMD and other diseases with glob-



*Some categories have missing values; hence the totals may not add to 100%

Figure 5.1. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on veterinary and animal health services.

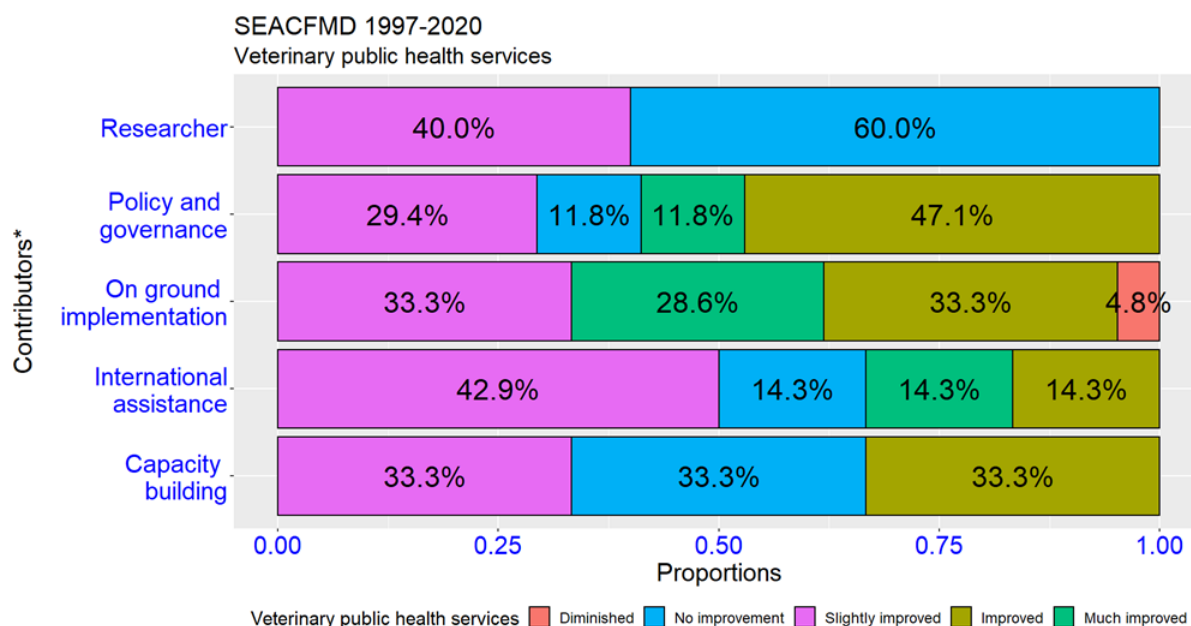


*Some categories have missing values; hence the totals may not add to 100%

Figure 5.2. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on disease communication.

al control and eradication programmes (i.e., rabies, ASF, PPR, TB), and the protection against food safety threats (e.g., AMR stewardship, risk-based food safety assurance procedures at slaughter), the demands of VPH are becoming increasingly important and challenging. The emergence of many new zoonotic disease threats globally and in the GMS (e.g., COVID-19, SARS, HPAI, Henipaviruses) has expanded the role of VPH globally and increased awareness of the need to deliver a One Health approach more effectively in managing disease risks.

The SEACFMD Campaign has provided a conceptual and delivery framework for regional and international cooperation on VPH. It enables ongoing dialogue that has supported the enhancement of infrastructure, systems and resources in countries sharing porous borders, where the continued outbreaks of TADs, EIDs and zoonotic diseases persist. However, recent epidemic and pandemic events indicate there is an increasingly urgent demand for the SEACFMD Campaign to support VPH upgrades in the region. A well-recognised need is the improved mobilisa-



*Some categories have missing values; hence the totals may not add to 100%

Figure 5.3. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on veterinary public health services.

tion of both established and emerging private sectors to contribute to more professional veterinary services and resources for public health, especially in rural communities of the member countries.

As with the delivery of veterinary and animal health services, few respondents (4.8%) felt that the VPH services had diminished. These respondents, likely representing FMD-free countries, saw these services as having an on-ground implementation role (Figure 5.3.). However, other respondents credited the SEACFMD Campaign with slightly improved, improved, or much improved (33.3%/33.3%/28.6%) VPH services. The researcher cohort considered that VPH services had not performed better than animal and veterinary health services (60% versus 20% for no improvement). Some respondents involved in capacity building (33.3%), international assistance (14.3%) and policy and governance (11.8%) also considered there was no improvement in VPH services. However, opinion among respondents involved in capacity building was equally divided (33.3%) on whether there had been no, slight, or general improvement.

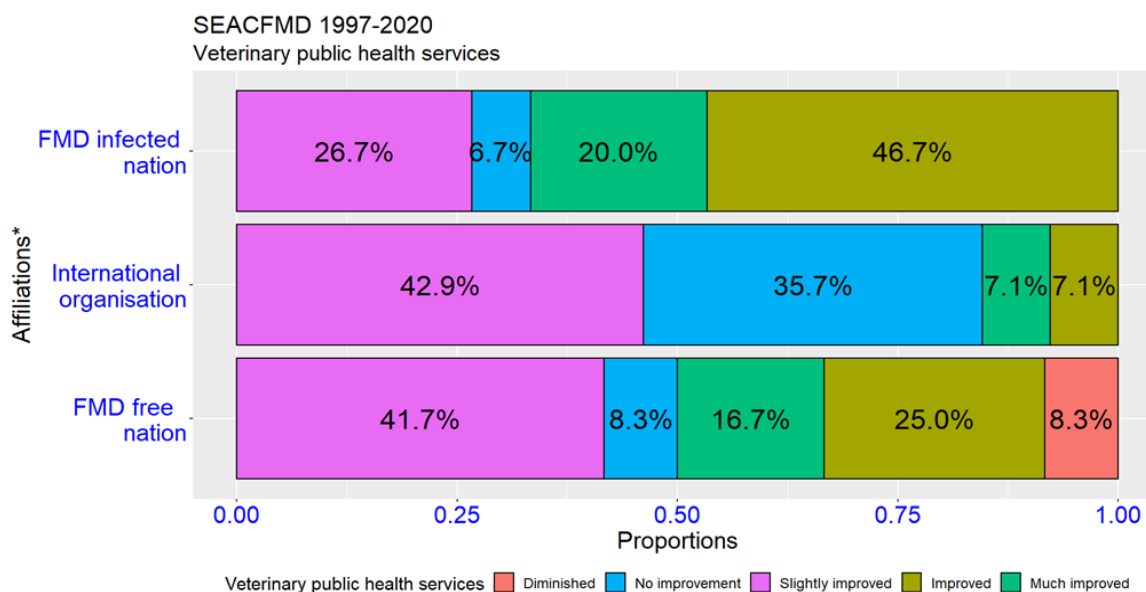
As expected, a small percentage of respondents from FMD-free countries considered the SEACFMD Campaign had not benefited VPH services (8.3%) (Figure 5.4.). However, a greater proportion considered it had enabled slight or general improvement (66.7%), or even much improvement (16.7%). The differences in responses among FMD-free countries could reflect the respective priorities of their national VPH programmes. A

small percentage of respondents from endemic countries (20%) and international organisations (7.1%) also considered that VPH services had much improved. However, a substantial proportion of stakeholders from international organisations (35.7%) likely from the researcher cohort, considered there had been no improvement. In contrast, almost half of the respondents (46.7%) from FMD-endemic countries attributed improved VPH services to the SEACFMD Campaign, which was not unexpected, as endemic countries have been the focus of most VPH activities in the Campaign.

5.4. Alignment of national policies with regional and other member countries

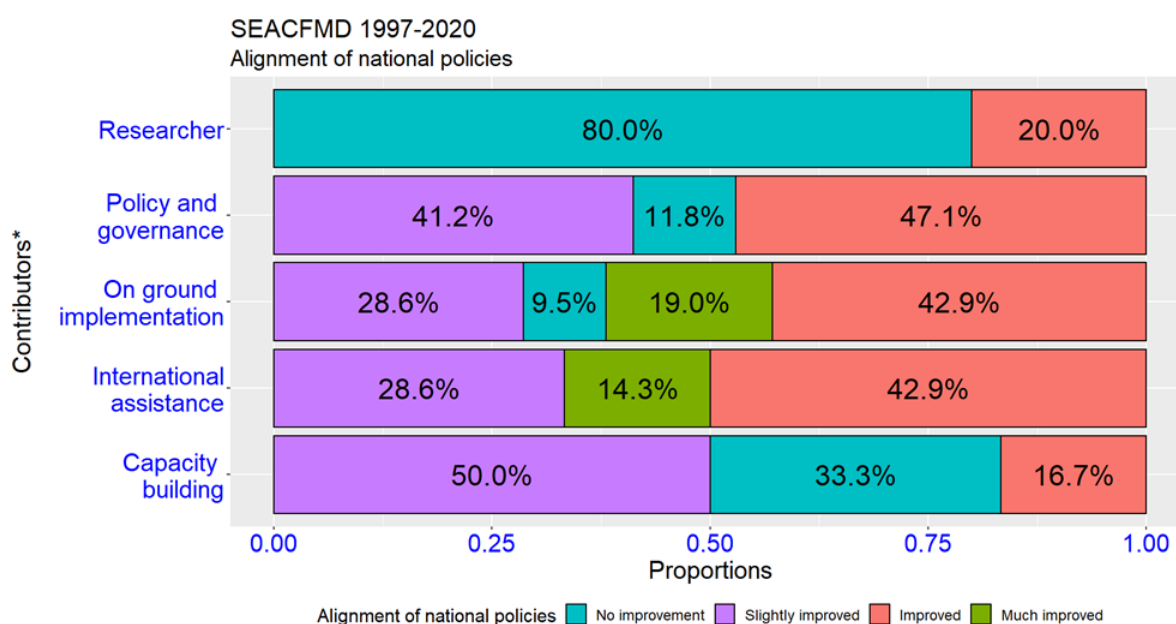
The SEACFMD platform has leveraged regional international forums to progress the FMD intervention agenda in member countries. It has facilitated several bilateral agreements, particularly in establishing border quarantine measures and DCZs. Respondents in key informant interviews considered that strengthening alignment through building trust between member countries should be a high priority for the Campaign's future. However, opinions in the abbreviated survey varied, possibly reflecting that these initiatives are yet to deliver effective interventions or have not been effectively communicated to stakeholders at national levels.

Except for the researcher cohort (80%) and a third of the participants involved in capacity building (33.3%), few respondents from policy and governance (11.8%) and on-



*Some categories have missing values; hence the totals may not add to 100%

Figure 5.4. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on veterinary public health services.

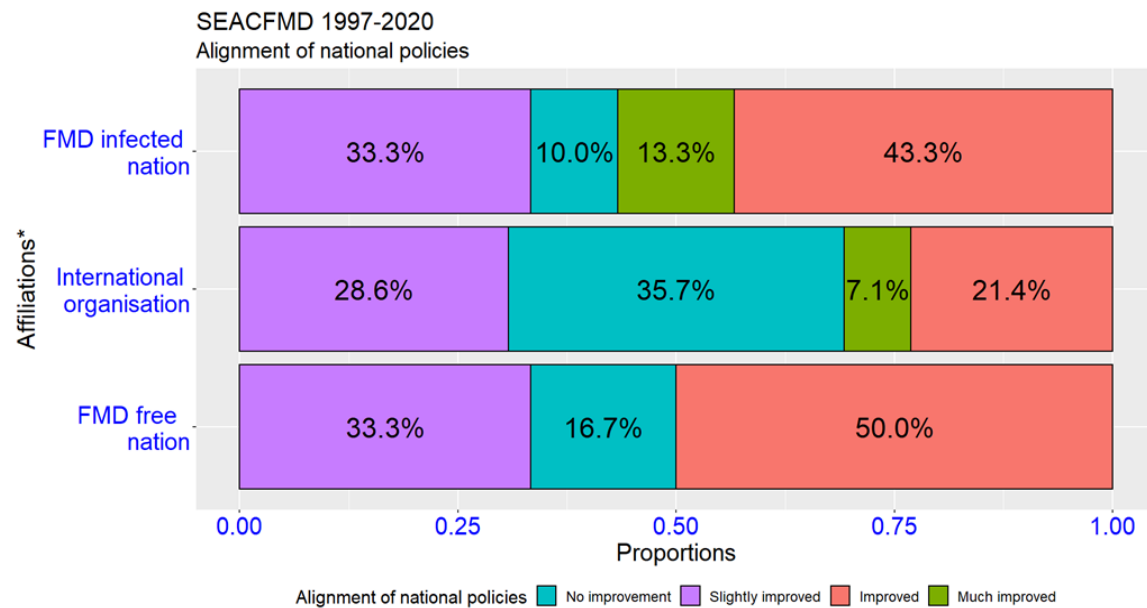


*Some categories have missing values; hence the totals may not add to 100%

Figure 5.5. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on alignment of national policies with regional aspirations.

ground implementation (9.5%) considered there was no improvement in the alignment of national and regional policies. In contrast, a substantial percentage of these groups felt alignment had improved. Interestingly, participants from international assistance (14.3%/28.6%/42.9%) and on-ground implementation (19%/28.6%/42.9%) considered that the SEACFMD Campaign had effectively aligned the policies at the national level with regional objectives (Figure 5.5).

Just over a third of respondents from international agencies did not support the view that the Campaign has helped align regional and national policies, with a majority (57.1%) considering that the Campaign's efforts had either slightly improved, improved, or much improved this (28.6%/21.4%/7.1% respectively). A substantial percentage of respondents from FMD-infected nations (43.3%) and FMD-free countries (50%) considered that there had been improved alignment of national policies at the regional level (Figure 5.6).



**Some categories have missing values; hence the totals may not add to 100%*

Figure 5.6. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on alignment of national policies with regional aspirations.

5.5. Legislation on the trade of animals and animal products

The movement of FMD viruses across Southeast Asian member countries is predominantly trade-driven, reflecting increasing demand for animals and animal products in the region's rapidly growing economies. The demand for higher protein diets, resulting in the large-scale trade and movement of live animals and their products, has persisted for almost two decades, leading several Mekong countries to transition from net exporters to net importers of livestock (e.g., Cambodia, Lao PDR).

Improved trade regulations of livestock and their products have been a priority area for the SEACFMD Campaign. However, this has proven to be a very demanding goal, requiring political commitment to formulate and implement effective policies, legislation, and regulations, as well as, potentially, consideration of the consequences and adjustments for trader businesses. In many SEACFMD member countries, balancing the socioeconomic and political considerations of increasing regulation is challenging.

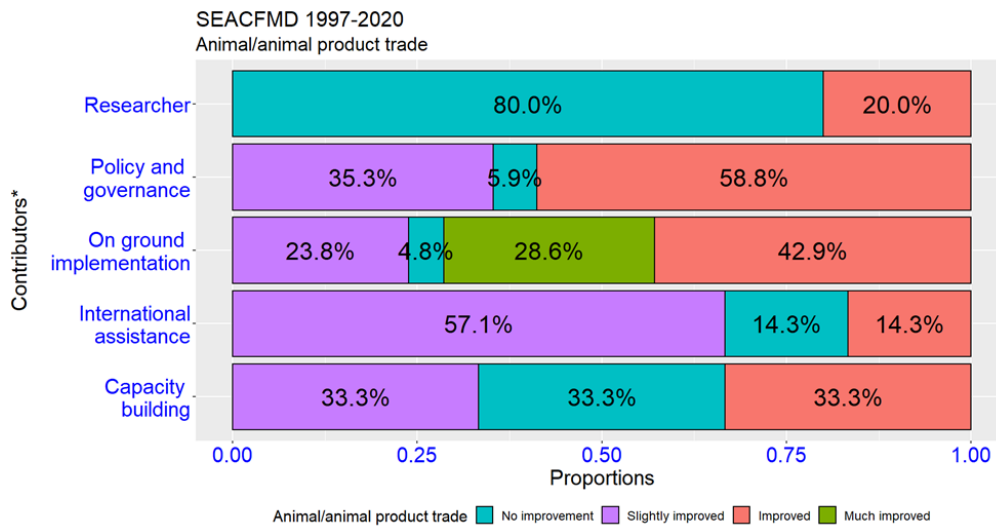
Participants involved in governance and policy were more likely to consider the SEACFMD Campaign as crucial in improving (58.8%) or slightly improving (35.3%) legislation on the trade of animals and their products (Figure 5.7.). However, a small percentage (5.9%) saw no improvement. One-third of respondents involved in capacity building (33.3%), a small percentage of those

in international assistance (14.3%), and on-ground implementation (4.8%) also felt no improvement had been achieved. Interestingly, stakeholders involved in policy and governance considered legislation had slightly improved (35.3%) or generally improved (58.8%). In contrast, those involved in on-ground implementation of interventions were the only cohort to consider that legislation had much improved (28.6%), with more considering it had generally improved (42.9%) or had only slightly improved (23.8%). Participants considering that legislation had much improved were likely from FMD-free countries or FMD-endemic countries progressing along the FMD PCP.

The disparity between cohorts was also evident when analysing stakeholders based on their status affiliations. Those from FMD-free (58.3%) and FMD-infected (50%) nations felt legislation on the trade of animals and their products had improved, with an additional 20% of respondents from FMD-infected nations considering it had much improved under the SEACFMD Campaign, compared to relatively few from international organisations (7.1%). The largest cohort that considered there was no improvement in the legislation was affiliated with international organisations (35.7%), followed by FMD-endemic countries (10%), and then FMD-free countries (8.3%) (Figure 5.8.).

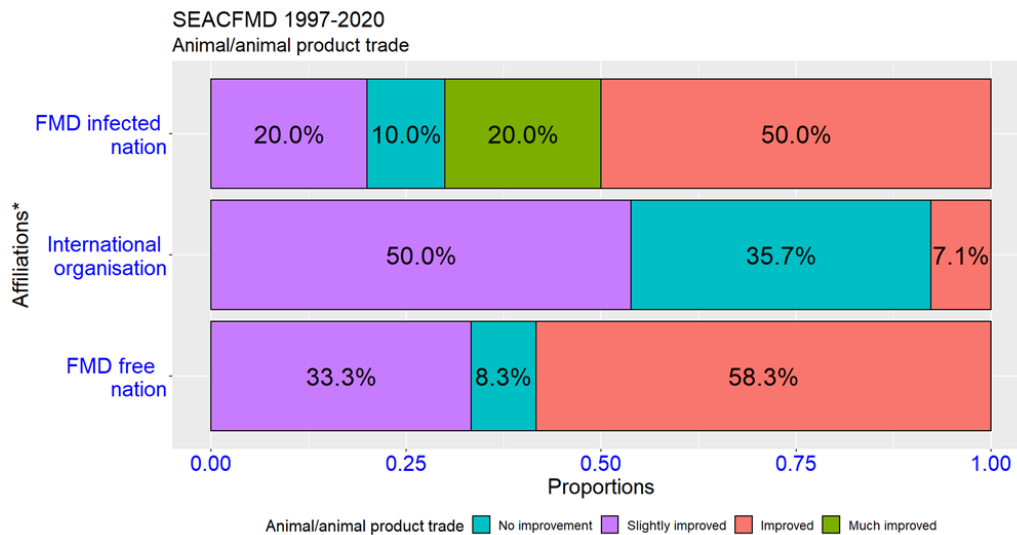
5.6 Legislation on food safety risks

FMD and other TADs that cause morbidity and subsequent production losses pose severe risks to economies,



**Some categories have missing values; hence the totals may not add to 100%*

Figure 5.7. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on animal/animal products trade.



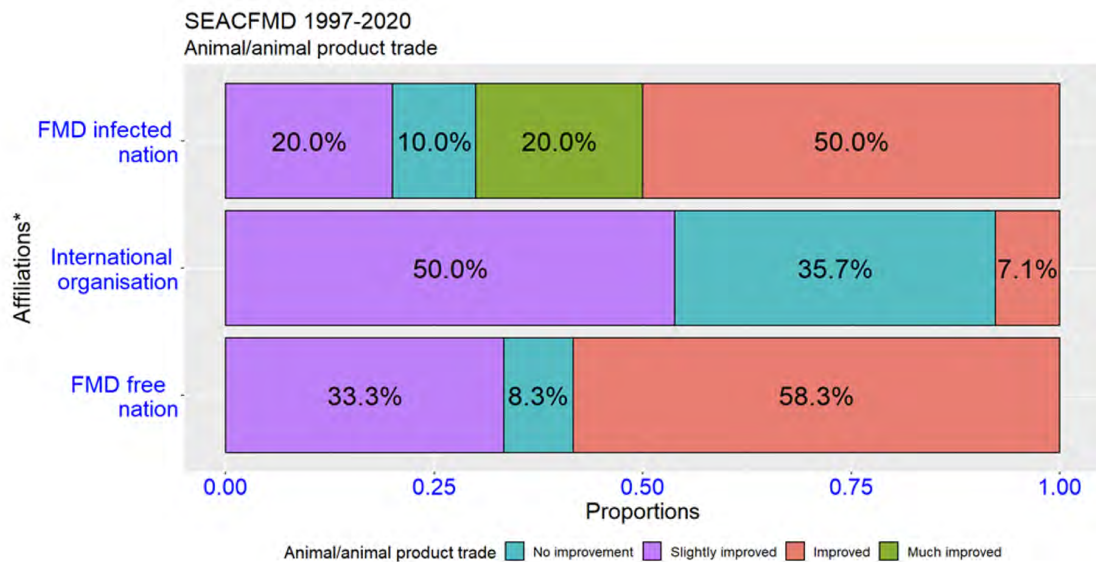
**Some categories have missing values; hence the totals may not add to 100%*

Figure 5.8. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD regarding legislations on animal/animal products trade.

livelihoods, and potentially, food safety. Huge economic impacts from FMD are feared in FMD-free countries with large livestock economies, with the socioeconomic impacts on smallholder farmers in FMD-infected nations increasingly recognised. The low availability of vaccination and inadequate coverage, where it has been used in FMD-endemic nations, contribute to the indiscriminate metaphylactic use of antimicrobial drugs in these vulnerable animal populations, exacerbating the socioeconomic impacts and creating a risk for AMR from the farm sector. Treatment of animals with FMD is a priority for such farmers, driven by welfare concerns and a belief that without treatment, animals may die. This reflects the current so-

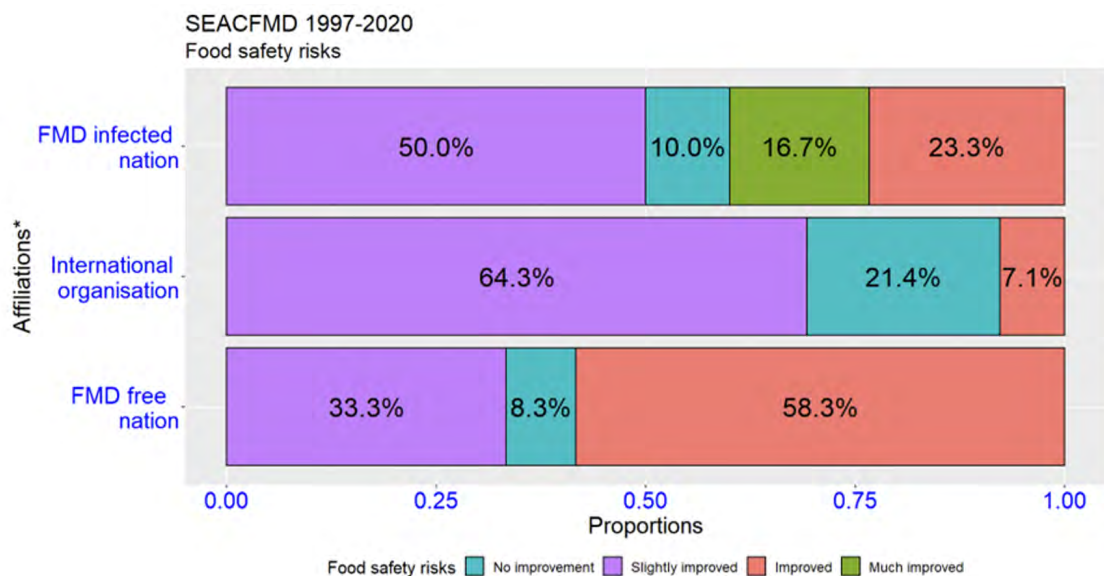
cioeconomic, political, and low-level knowledge-based realities in much of the SEACFMD region, with increasing expectations that changes in existing policies by national governments, are required to reduce AMR and other food safety risks.

The stakeholder consultations revealed that respondents involved in on-ground implementation considered that the SEACFMD Campaign had assisted a much-improved legislation on food safety (23.8%), with those in international assistance considering there was slight or general improvement (71.4% and 14.3% respectively) (Figure 5.9.). However, many other contributors observed



**Some categories have missing values; hence the totals may not add to 100%*

Figure 5.9. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD regarding legislations on food safety risks, animal products trade.



**Some categories have missing values; hence the totals may not add to 100%*

Figure 5.10. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD regarding legislations on food safety risks.

no improvement, including the research (40%), capacity building (33.3%), on-ground implementation (9.5%), and policy and governance (5.9%) cohorts. A high proportion of the stakeholders supported the role of the SEACFMD Campaign having either slightly or generally improved regulations on food safety, including those in policy and governance (41.2%/52.9%), on-ground implementation (47.6%/19%), and capacity building (50%/ 16.7%). Strong advocacy against antimicrobial therapy for TADs may have been prompted by an increasing international focus on AMR in the region rather than any actual changes in national policies.

A very high proportion of respondents affiliated with FMD-free countries considered that regulations on food safety had improved (58.3%) or slightly improved (33.3%) (Figure 5.10.). However, this may reflect the awareness of the increasing importance of managing food safety risks in internal livestock trading. A moderate proportion of respondents from international organisations (21.4%) and relatively small percentages from FMD-endemic (10%) and FMD-free (8.3%) countries considered there had been no improvement. The high percentage of favourable responses (90%) from FMD-endemic countries (much improved, improved or slightly improved at 16.7%,

23.3%, and 50%, respectively) is also likely attributable to increased awareness of the importance of food safety, delivered through both the SEACFMD Campaign and other programmes involved in promoting control of TADs, EIDs, the One Health approach and AMR.

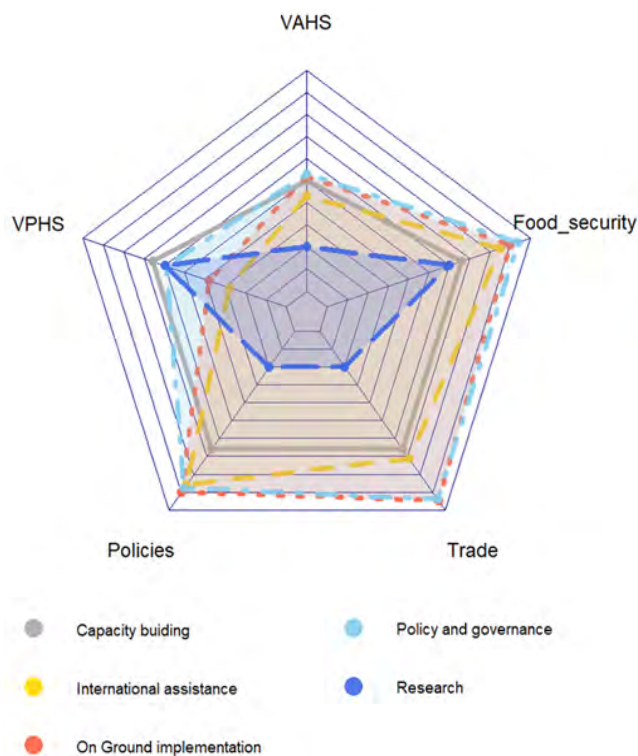
5.7. Assessment of governance and policy according to stakeholder role and affiliation

The existing governance and policy structures for control of FMD in member countries is influenced by a range of factors that challenge the goals and outputs of the SEACFMD Campaign. These factors include: the magnitude of disease incidence; the state of existing governance of veterinary services; the range and relative importance of affected species; the contributions of animal husbandry to farmer incomes and the socioeconomic ‘wellness’ of the country; and the dependency on donor funding. At the regional level, major gaps were identified by all stakeholders in veterinary animal health and public health services. The most optimistic category of stakeholders belonged to those involved in ‘governance and policy’, although it was noted that their appreciation of these services was much lower than other aspects, including ‘alignment of policies at the regional level’, ‘policies on animal/animal products trade’ or ‘policies on food security’. To summarise, the SEACFMD Campaign support to improve the governance of animal health and public health services in member states was often attributed to the impact of the PVS and PCP initiatives, with one stakeholder involved in international assistance commenting:

‘[the improvement is low]...based on results of the 10/12 member countries that have undertaken PVS assessments with critical competencies paired with PCP-FMD stage’

Many countries have now implemented the recommendations of PVS or consider that their efforts to implement changes in governance have gained momentum due to the SEACFMD Campaign. Some respondents with experience of Campaign efforts in FMD infected member countries, confirmed there has been improvement in animal health services, although also attributed that to HPAI and ASF incursions. The impact of Global Health Security Agenda (GHSA) and One Health activities may also have helped improve animal health and public health services, as stated by another respondent:

‘...seems in some countries VAHS have improved, but view could be biased due to impact of HPAI inputs to VAHS... [not sure regarding FMD] - but have seen a lot of inputs in some countries due to Global Health Security Agenda and One Health activity’



VAHS- Veterinary Animal Health Services

VPHS- Veterinary Public Health Services

Figure 5.11. Radar chart showing performance of the SEACFMD campaign on aspects of governance and policy according to stakeholders’ contribution.

The gaps in governance and policy were similar when data was analysed according to stakeholder affiliations. Those from FMD infected countries highlighted the difference in priorities between provinces of the same country, likely reflecting that some provinces prioritise crop agricultural production rather than livestock, as one of respondent succinctly described as:

‘Not all provinces have the same level of services due to priorities of each province and the autonomy of provinces. Some provinces are more agri [agriculture produce] dependent’

Except for the researcher and the capacity building cohort, and other stakeholders supported the SEACFMD Campaign had been successful in assisting member countries align their policies at the regional level. Inclusion of FMD control plans as a part of the PCP was considered instrumental in many member countries that had adopted plans aligned with regional concerns. A participant with a dual experience of FMD control from both international assistance as well as a national perspective, appreciated this initiative by stating:

'SEACFMD now has included the approval of control plans in its PCP so countries would really be obliged to align policies to regional priorities'

However, harmonization of regulations at the regional level remains challenging, with several important interventions, including animal movement control, mostly managed at local level and largely driven by local trade needs rather than by national policy. This was a concern expressed by a participant who cited the difficulties to govern the animal movement in GMS:

'Animal movements are more managed at the local levels than national, so harmonization of SOPs is a challenge.'

Many respondents expressed their frustration that despite existing legislation, ineffective implementation continued to hinder any progress towards FMD control. It is important that the compliance with biosecurity legislation in the field continues to be enforced among stakeholders, to ensure that the legislation can be effective. A respondent advised that both guidelines and detailed instructions are required to enforce legislation effectively:

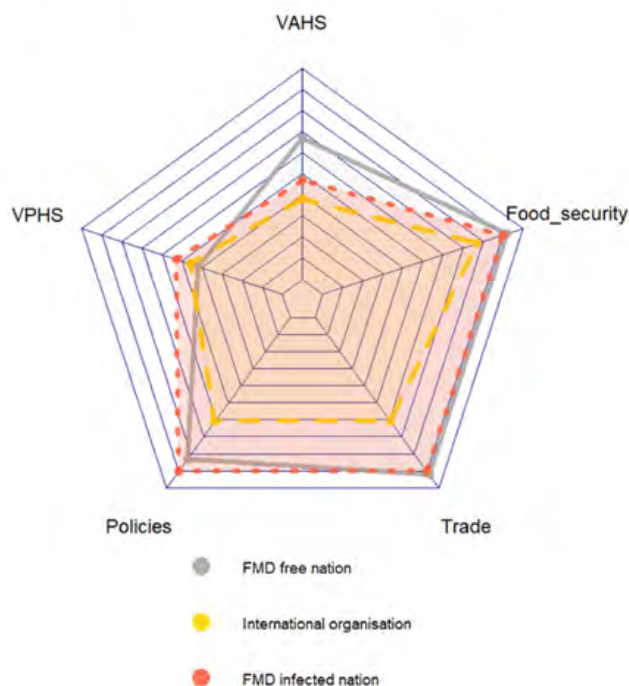
'Legislation is available but needs clear implementing guidelines...guidelines be issued – detail orders should be issued... [that must] define about how to control – for better implementation'

According to stakeholders from the FMD free countries, legislation on food safety and security has seemingly not received sufficient impetus from the SEACFMD Campaign as food safety was not addressed as one of its key outputs. A respondent from an FMD free country discussed this approach as a major contributor to achieving freedom from FMD:

'FMD as a food safety issue is not so pronounced. In the Philippines however, FMD was treated as a food safety issue.'

5.8. Summary of SEACFMD campaign contribution to governance and policy

The SEAFMD (now SEACFMD) programme was the first initiative to adopt a regional approach to TADs control by attempting to influence governance and policies through regulating animal health and trade in member states. The continuous effort involved and, more recently, the 'benchmarking' of the PCP-FMD and management of the recent outbreaks of other TADs, including HPAI, ASF and LSD, is recognised as assisting member countries to participate in SEACFMD co-learning. Despite differences in applica-



VAHS- Veterinary Animal Health Services

VPHS- Veterinary Public Health Services

Figure 5.12. Radar chart showing performance of the SEACFMD campaign on aspects of governance and policy according to stakeholder affiliations.

tion and implementation of FMD programmes in various member countries, the SEACFMD programme collaboration is considered to have been generally effective in enhancing the capacity of the regional veterinary workforce. The efforts in promoting the formulation of national control programmes, conducting assessments of existing legislation, and developing critical competencies aligned with the PCP strategy for FMD control have all contributed to building the capacity of member countries to better manage TAD outbreaks.

However, there is still much work required, particularly as TAD risks have increased and the incursions of other TADs and EIDs have diluted the focus and resource availability for FMD. It is acknowledged that the SEACFMD initiatives in FMD control assisted countries to formulate HPAI plans based on the programme's FMD control model, with the Campaign resulting in committed national coordinators in each of the member countries who have the capability to encourage more informed decisions aligned with the programme. Some respondents conveyed that although SEACFMD programme was among the first to influence governance of TADs, inputs from other programmes (e.g., Global Health Security Agenda and One Health activities) have also been substantial, at least in some of member countries. The impact of HPAI and ASF in triggering the

need for better governance and policies was considered an important contributor to recent progress in TAD response capabilities.

Some countries have now revised their legislation guiding animal movement and trade of animal products, with others in the process of doing so. The challenges to capacity building within countries reflect the significant differences in existing levels of expertise in disease detection and response capacity in the GMS. There are also major differences in provincial autonomy within countries, which impact priorities and response capacities, despite most participant countries remaining economically dependent on agriculture and animal husbandry. Another impediment cited was the lack of succession planning in most countries, with senior staff rarely facilitating the training of new entrants, which damages the sustainability of progressive capacity building. Political instability and a lack of donor funding have also affected SEACFMD's efforts in building veterinary services capacity in the region (e.g., Myanmar).

One of the greatest achievements of the SEACFMD programme is considered to be that all member countries achieved a National Action Plan (Xaydalasouk *et al.*) for FMD control. Although there are varying degrees of implementation of the NAPs across member countries,

most have been upgraded and increasingly aligned with the objectives of the SEACFMD Campaign. The annual meeting of the national coordinators, organised by the WOAHSRRSEA, has been an important driver for member countries to draft and implement their NAP. However, challenges remain in implementation of these NAPs, reflecting various changes in national policies regarding animal health. The lack of synchrony on policy issues between member countries is to be expected, partly owing to economic differences between countries, but also reflecting variations in sovereignty decisions and priorities for funding of animal health services in national budgets. It is noted that even before the PVS assessments of respective national veterinary services, as instituted by, WOAHSRRSEA, the SEACFMD programme had partnered with the respective member countries to help assess their veterinary services, albeit with a focus on FMD control.

Chapter 6

SEACFMD Campaign (1997- 2020)

Coordination and advocacy



6.1. Introduction

Coordination, harmonisation and advocacy for prioritising FMD control strategies for adoption by member countries is a critical role of the SEACFMD Campaign. Participation in the PCP-FMD programme strengthens veterinary services, improves disease control, and alerts member nations to the role of various organisational and supporting national, regional, and international networks. The SEACFMD Campaign established lab-net, epi-net, other communications networks, and regular meetings to facilitate interactions and the exchange of information and updated knowledge on periodic progress achieved.

This section of the review explores the role of the SEACFMD Campaign in achieving improved coordination and advocacy of national strategies aimed at the common goal of eradicating FMD from the SEA region. Whilst national strategies are necessarily adapted to prevailing contexts and limited by resource allocation issues, because of the TAD risks of cross-border trading, they do need to be increasingly and strategically integrated at the regional level. The SEACFMD Campaign has clearly endeavoured to secure strong political commitment and financial arrangements that support FMD control and eradication activities, advocating that the prevention and control of FMD is beneficial to rural national economies, which are currently primarily comprised of smallholder livestock farmers.

6.2. Coordination of activities of the national task force on FMD control

The SEACFMD annual national coordinators' meetings have proven to provide a robust platform for co-learning, enabling discussion of national FMD control strategies and the exchange of information on lessons learned. These meetings are widely accepted to have contributed to achieving widespread awareness of the targets for effective vaccination planning and delivery, the importance of public awareness programmes, and the need for leadership by a national FMD Task Force for effective control of FMD. However, a small proportion of stakeholders contributing to policy and governance (5.9%) and capacity building (16.7%), consider that coordination between national task forces has not been improved under the SEACFMD Campaign. In contrast, small proportions from policy and governance (5.9%), capacity building and international assistance (both 14.3%) consider that coordination between national task forces has significantly improved (Figure 6.1). Larger proportions of respondents from all other contributors consider that coordination between national task forces has been slightly or generally improved, including those in research (80%, 20%), policy

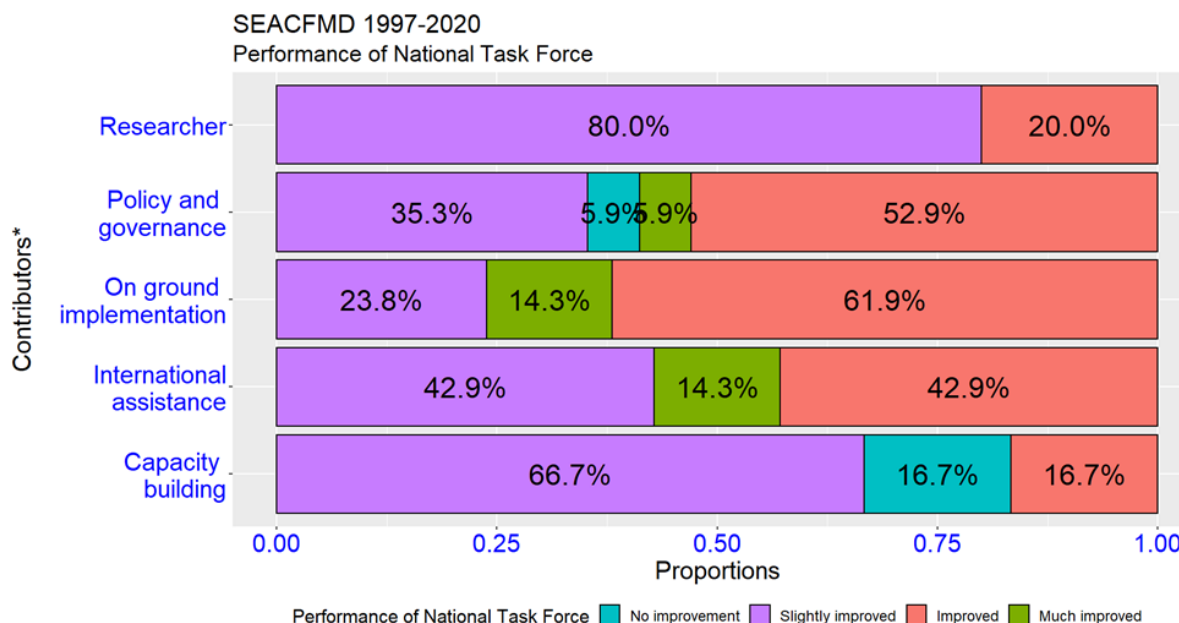
and governance (35.3%, 52.9%), on-ground implementation (23.8%, 61.9%), international assistance (42.9%, 42.9%), and capacity building (66.7%, 16.7%) cohorts. It appears that these mostly positive responses are attributable to the regular gathering of the national personal most directly engaged in FMD control through the several regional platforms provided by SEACFMD for the exchange of knowledge and experiences.

Similar sentiments were expressed by respondents based on their affiliation, with over half from FMD-endemic and FMD-free nations (63.3% and 66.6% respectively) and a third from international organisations (35.7%) believing the Campaign had improved or much improved the coordination between national task forces. Only a small proportion of respondents from endemic nations (3.3%) and international organisation (7.1%) considered there had been no improvement in coordination (Figure 6.2.).

6.3. Coordination on emergency disease response (including other TADs; HPAI, ASF)

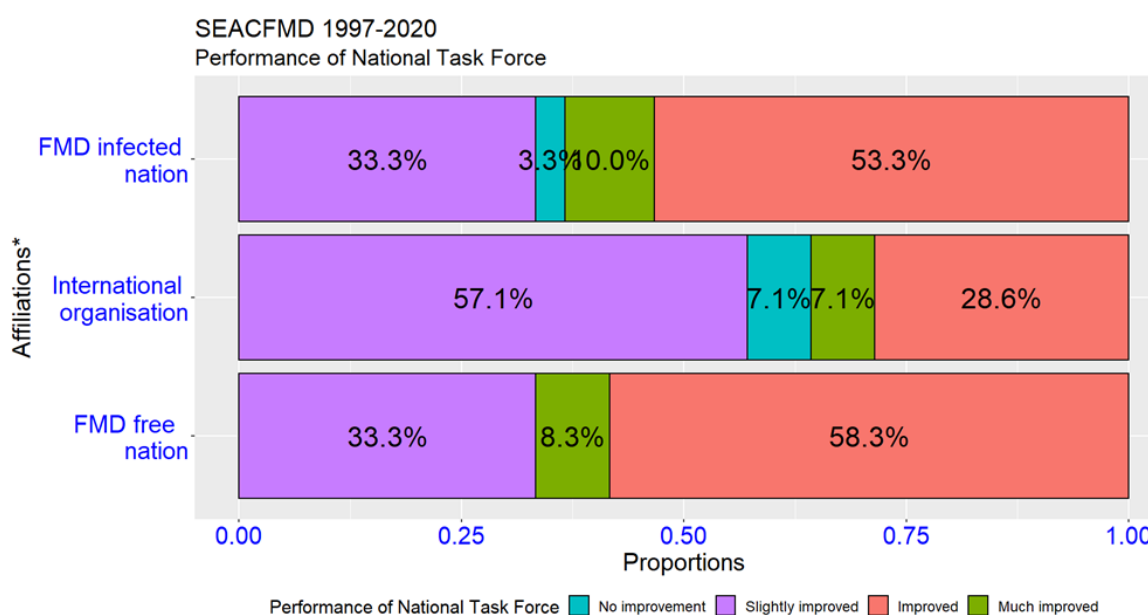
The SEACFMD Campaign initiated a regional approach to developing mechanisms for prevention and control of TADs, EIDs and other diseases of public health importance in animals, using FMD as a model to enhance the response capacities of member countries. However, stakeholders' perceptions varied when queried on the role SEACFMD Campaign in enhancing preparedness to tackle other TADs and EIDs. The increasing incursions of TADs, along with various epidemiology capacity-building training programmes conducted by the international agencies, have likely enhanced the capacity of member countries to manage TAD outbreaks. This may explain why most respondents from international agencies considered that the region's emergency disease response capacity has slightly improved (71.4%) or improved (28.6%). Conversely, most researchers (60%), and smaller proportions of other groups, including those in capacity building (16.7%), on-ground implementation (9.5%), and policy and governance (5.9%) cohorts, disagreed.

Improvement in emergency response capacity was also supported by respondents from capacity building (50%), on-ground implementation (42.9%), and policy and governance (47.1%) cohorts (Figure 6.3.). When analysed by affiliation, a small proportion (10% to 16.7%) of respondents from all three categories said there was no improvement, while a larger proportion from FMD-endemic countries (50%), FMD-free nations (68.3%) and international assistance (50%), considered it improved or significantly improved, and were supportive of the SEACFMD Campaign in enhancing emerging disease responses (Figure 6.4.).



*Some categories have missing values; hence the totals may not add to 100%

Figure 6.1. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on performance of National Task Force.



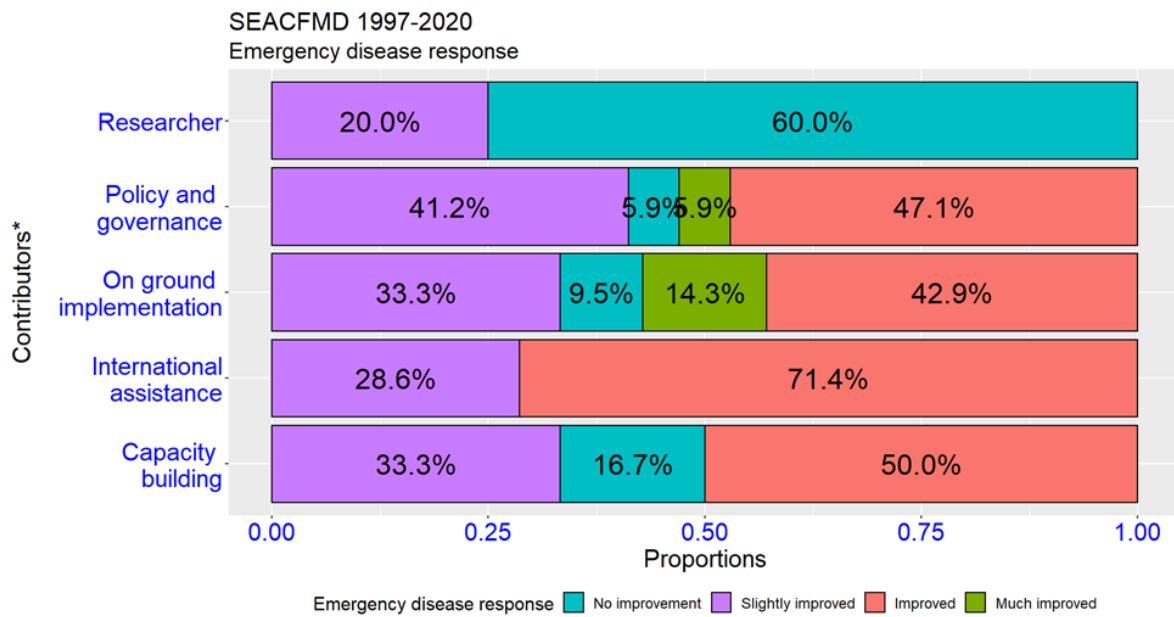
*Some categories have missing values; hence the totals may not add to 100%

Figure 6.2. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on performance of National Task Force.

6.4. Coordination with other stakeholders towards a One Health approach

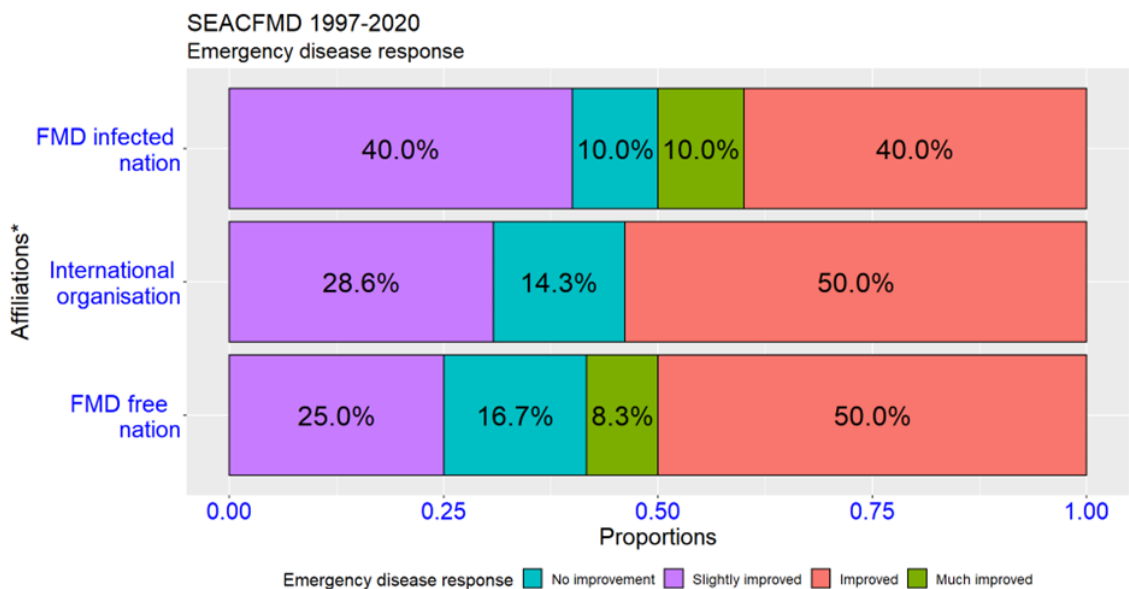
Most livestock farmers in the GMS are smallholders engaged in subsistence livestock rearing, often as a backyard enterprise, with little or no concern for biosecurity. There is an ongoing risk of major endemic diseases, including HPAI, FMD, HS, CSF and a range of zoonoses (eg. Leptospirosis), with recent TAD incursions and risks, including ASF, LSD,

PRRS and PPR, which also have a potential to impact public health and food security. The One Health approach is an integrated strategy that advocates for shared cross-sectoral technical expertise and resources to strengthen disease surveillance mechanisms, identify biological threats, and manage pandemic, epidemic, and endemic risks. Although the SEACFMD Campaign primarily focuses on FMD control, the networking mechanisms it has developed offer potential for the propagation of the One Health approach for future pandemic preparedness.



**Some categories have missing values; hence the totals may not add to 100%*

Figure 6.3. Bar chart survey responses of participant status 'contributors' on the impact of SEACFMD on emergency disease response.



**Some categories have missing values; hence the totals may not add to 100%*

Figure 6.4. Bar chart survey responses of participant status 'affiliations' on the impact of SEACFMD on emergency disease response.

Respondents from three contributor cohort, including researchers (40%), policy and governance (11.8%) and on-ground implementation (14.3%), did not recognise SEACFMD's contribution to enhancing the One Health approach in the region. However, stakeholders who considered that the Campaign has helped slightly improve One Health, included researchers (60%), policy and governance (41.2%), on-ground implementation (38.1%), international assistance (57.1%), and capacity building (50%) cohorts. Similarly, stakeholders who felt the Campaign had improved One Health included policy and governance

(41.2%), on-ground implementation (33.3%), international assistance (42.9%), and capacity building (33.3%) cohorts, with a smaller proportion in policy and governance (5.9%), on-ground implementation (14.3%), and capacity building (16.7%) cohorts considering it much improved.

Compared to FMD-endemic countries (16.7%), a smaller proportion of respondents from FMD-free countries (8.3%) and international organisations (7.1%) were negative about the SEACFMD Campaign's support for the One Health approach. All other respondents considered the

Campaign to have positively contributed to the promotion of One Health, with different levels of improvement (slightly improved, improved or much improved) noted by those from FMD-endemic countries (40%/33.3%, 10%, respectively) and FMD-free countries (33.3%, 41.7%, 16.7%, respectively), with international organisations indicating it has slightly improved (64.3%) or improved (28.6%).

6.5. Attracting financial commitments from national, international, and local donors

The FMD control programmes in several countries in the region are partially or fully dependent on financial support from international donor agencies. There is a now long history of highly effective FMD control interventions (e.g., vaccination programmes) failing to be sustained after project completion due to a lack of funds in the recipient country. The SEACFMD Campaign has contributed to advocacy for increasing funding from local, national, and international agencies, supporting efforts to sustain FMD control measures more effectively in the region. The review sought stakeholder opinions on whether they considered the SEACFMD Campaign successful in attracting financial commitments from various donor agencies.

A substantial proportion of stakeholders in the researcher (80%), policy and governance (17.6%), on-ground implementation (9.5%), and capacity building (16.7%) cohorts considered that financial commitment towards the SEACFMD Campaign has not improved over the years, with some in international assistance (14.3%) suggesting it had even reduced. This could be partially due to financial investment shifting to other disease concerns, especially other TADs. A significant proportion of participants, irrespective of their roles in the Campaign, felt there was no improvement, including those in researcher (80%), policy and governance (29.4%), on-ground implementation, international assistance (9.5%), and capacity building (16.7%) cohorts. However, 9.5% of respondents involved in on-ground implementation of SEACFMD interventions indicated that funding had significantly improved. Other stakeholders believed that the SEACFMD Campaign has helped slightly improve or generally improve financial commitments.

The findings based on stakeholder affiliations aligned with those based on stakeholders' roles and contributions. A portion of the respondents from FMD-free countries (8.3%) and international agencies (21.4%) considered there was no improvement, although some (6.7%) from FMD-endemic countries felt financial commitments had significantly improved through the efforts of the SEACFMD Campaign.

Other respondents who felt the campaign had not contributed to attracting financial commitments came from FMD-endemic countries (20%) and FMD-free countries (8.3%). However, over a third (35.7%) of respondents from international organisations, a third (33.3%) from FMD-free countries and just under a third (30%) from endemic countries suggested that financial commitment to FMD control in the region had improved.

6.6. Attracting political commitment to FMD control

The interventions advocated under the various phases of the SEACFMD Campaign require strong political commitment in member countries. The Campaign has leveraged regional multinational platforms to advance its objectives by highlighting the socio-economic benefits countries can gain by eradicating FMD in the region. While the Campaign has witnessed appreciable increases in commitment from some member countries, convincing the political leadership in many others remains a challenge. Advocacy is planned and executed at the highest levels of governance, and this review explored stakeholders' perceptions of the Campaign's contribution to securing and improving political commitment in this sphere.

A small proportion of stakeholders in the researcher (20%), international assistance (14.3%), and capacity building (16.7%) cohorts felt that political commitment towards the SEACFMD Campaign has declined over the years. This could be due to attention shifting towards other pandemics directly affecting human health, such as COVID 19. A significant proportion of participants irrespective of their roles in the Campaign, felt there was no improvement (researcher 60%, policy and governance 23.5%, on-ground implementation and international assistance 14.3%, and capacity building 16.7%). However, 14.3% of respondents involved in on-ground implementation of SEACFMD interventions felt that political involvement towards FMD control had significantly improved. Other stakeholders believed that the SEACFMD Campaign had helped slightly improve or improve political commitment.

It was expected that the Campaign would secure political commitment in endemic countries, and this was evident from the responses, with 26.7%/40% of respondents believing that political commitment had slightly improved/improved, and 10% even felt it had significantly improved. A third of respondents from FMD-free countries (33.3%) and smaller proportion from international organisations (21.4%) felt that political attention towards the Campaign had improved, although some from these affiliations felt that commitment to the programme had declined (8.3% and 14.3%, respectively).

6.7. Assessment of coordination and advocacy by stakeholder roles and affiliations

Stakeholders identified gaps in funding security, political commitment, and control efforts on TADs, requiring these to be reinforced in future programmes. However, stakeholders across roles and affiliations unequivocally agreed that the Campaign has been extremely successful in fostering strong relationships between technical staff of member countries, facilitating fruitful coordination and communication. One stakeholder expressed appreciation of this achievement, declaring:

‘SEACFMD platform is one tool to advocate FMD controls in member countries. Regular NC, Epi, and Lab network meetings gather all technical people, share experiences, learn from each other, and promote networking in the region’

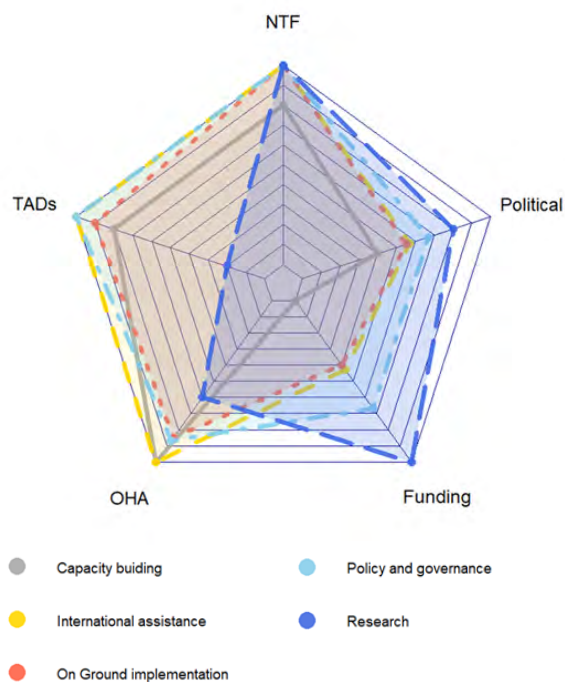
Many respondents considered the Campaign’s role in nurturing political and financial commitments for sustaining interventions was insufficient, with suggestions that SEACFMD needs to prioritise dialogue with political leadership and decision-makers. While some issues have been successfully implemented when presented at the appropriate level, advocacy often loses momentum when delivered to decision-makers. The addition of Mongolia and China to the Campaign was cited as an example of successful political engagement:

‘The addition of China and Mongolia to the Campaign demonstrates strong (high level) political commitment towards FMD control in the region.’

Compared to its few successes to attract political commitments, the response to financial commitment was seen as more impressive, though perceptions varied among respondents. The researcher cohort considered the Campaign successful in attracting international donors, with one stating:

‘The Campaign has attracted support from a variety of international donors.’

There was general agreement on leveraging the Campaign’s infrastructure for designing and implementing interventions against other TADs. This was widely supported by a statement made by one of the respondents from the international organisation cohort:



TADs – transboundary animal diseases

OHA- One Health Approach

NTF – National Task Force

6.5 Radar chart showing performance of the SEACFMD campaign in the aspects of coordination and advocacy according to stakeholders' affiliations

‘In some member countries, FMD capacity is utilised for other disease control and synergises, with the resources, particularly emerging bovine, and porcine diseases. E.g., [in] some countries: vaccination for FMD is done with Brucellosis/HS combination; FMD team is used for OI [outbreak investigation] for ASF; mutual utilisation of the capacity; also using diagnostic labs mutually’

However, there were opposite views by others, as exemplified by the following statement:

‘Coordination is done by the OIE Bangkok Office and the RR Asia as separate from the SEACFMD Campaign. The SEACFMD platform is not tapped in time of disease emergencies.’

Some respondents considered that FMD work continues to be executed in silos and integration appears to have happened because of the WOAHP Bangkok office. Since WOAHP’s regional office is responsible for coordination and resource mobilisation in the region, not only for FMD, but for other EIDs too, their efforts may have become di-

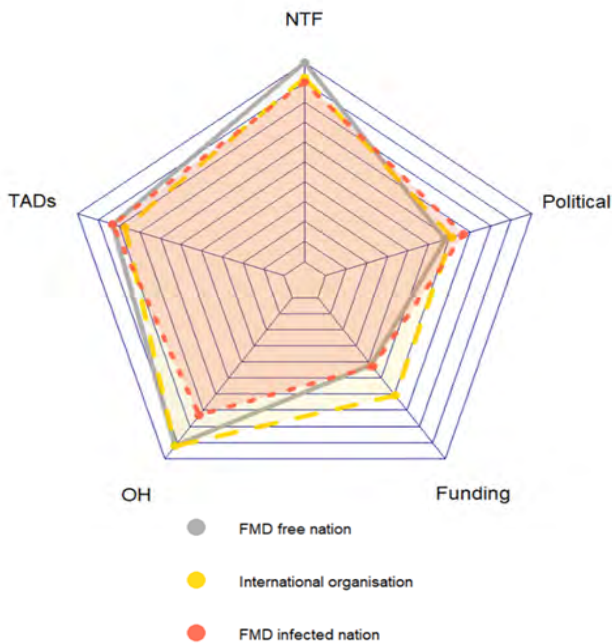


Figure 6.6. Radar chart showing performance of the SEACFMD campaign in the aspects of coordination and advocacy according to stakeholders' affiliations.

luted by attention to other diseases and shifting priorities of donors. This was elaborated by one respondent from international assistance, with the following statement:

'[the intentions of SEACFMD are] well and good but dilutes the efforts towards the SEACFMD Campaign since donors have priorities too. [the efforts are] adequate but [member] countries need to be reminded of the global campaign against FMD. The emergence of other TADs results in shifting focus to control of these TADs.'

The respondents across categories were generally unsure of the contribution of the Campaign to One Health promotion. One of the respondents from an endemic country made a comment on the existing One Health engagement with reference to rabies, but unrelated to the Campaign, saying:

'Some improvement noted but still challenging to work with human health sectors. Rabies vaccination & eradication has been done until this year with the coordination with Ministry of Health'

The Campaign has presumably not communicated effectively the importance of FMD, partly because of the generally low demand and availability of milk and milk products. The almost complete absence of dairying as an important economic activity for smallholder livestock farmers (except for Indonesia), limits perceptions of FMD

as a disease severely compromising human health and smallholder livelihoods. Other TADs (e.g., HPAI, ASF) have likely had more influence on stakeholders' perceptions towards One Health, particularly as pig and poultry husbandry are recognised as providing critical and immediate food security, compared to large ruminants' stores of family wealth for the majority of those involved in the smallholder livestock sector of the GMS.

6.8. Summary of SEACFMD Campaign contribution to coordination and advocacy

An international disease control programme as broad in scope as SEACFMD in the ASEAN region requires enormous coordination, not only between participating countries but also among the numerous stakeholders within and beyond the region. Since SEACFMD's inception, the region has experienced increasing incursions of livestock TADs beyond FMD, such as HPAI, ASF, and LSD, which were often mentioned by survey respondents. The widespread recognition of the importance of endemic diseases, including HS and CSF, and the recognition of the region as a hotspot for rampant AMR and other EIDs was often mentioned, and the SEACFMD framework was acknowledged for supporting coordinated strategies for disease control at the national and regional level. An example cited was that the SEACFMD programme had successfully leveraged the ASEAN platform to endorse regional expansion of the programme, with the inclusion of China and Mongolia to SEACFMD considered as evidence of increasing regional political commitment to the programme.

The survey responses from most member countries indicated their appreciation of the regular coordination and exchanging of information through the SEACFMD programme and, particularly, enabling the development of relationships among technical staff. The regular meetings of National Coordinators (biannually), and of stakeholders engaged with laboratory and epidemiology networks, was discussed by some respondents as an important way of sharing experiences through co-learning, which had contributed to construct regional communication and coordination. These meetings have also been instrumental for multilateral engagements, which have enabled regional collaborations, encouraged intergovernmental coordination, and promoted the networking required for attracting international donors.

Despite mentioning these positives, some of respondents' noted impediments in extending sustained benefits of the programme in some member states. This could be due either to political crises, economic constraints, or shifting national preferences in response to the emergence of other

livestock diseases. Further, it was also mentioned that, as the bulk of regional coordination is organised by the WOAHSRR in Bangkok, there are instances when the SEACFMD programme platform is either not fully utilised or insufficiently recognised by relevant stakeholders in disease emergencies. For example, livestock industry stakeholders in some countries appeared to have minimal knowledge of SEACFMD at the onset of the recent FMD outbreak in Indonesia. It was suggested that in these situations, the programme appears to be functioning in 'silos' and seems oblivious to some concurrent challenges. It was mentioned that while the involvement of the Tripartite and GF-TADS is a positive aspect, such initiatives need to utilise the existing relationship structures developed by the SEACFMD programme in the member countries for improved coordination and resource utilisation.

At the national level, SEACFMD coordinators are entrusted, or at least encouraged, to advocate for realignment of the policy outcomes developed at the regional level through phased implementation in-country. This is often very challenging, particularly in countries where there are frequent staff changes within the SEACFMD programme, or where staff are too junior to exert sufficient influence with senior policymakers. The progress and barriers to implementing the regional recommendations are discussed during the national coordinators' meetings, along with recommendations for updated legislation, guided by the global standards promulgated by WOAHS. Although the SEACFMD programme has been successful in advocating for the inclusion of these recommendations in national action plans,

the impact appears to have been variable. Some member countries recognise that improvements in FMD diagnostic and field surveillance capacities have been utilised for control of other the livestock diseases (e.g., synergy in resource allocation that combined FMD vaccination with brucellosis and/or HS control activities, and on other occasions, the FMD team has conducted outbreak investigations for ASF). Improvements in laboratory capacities from mutual collaboration are well recognised by respondents as reflecting SEACFMD programme initiatives that have engaged member countries in the adoption of regional recommendations and global international standards.

Survey respondents generally agreed that the SEACFMD programme has been effective in harnessing political and financial commitments. However, some respondents expressed apprehensions that the Campaign has not sufficiently positioned itself as a critical advocate for addressing food insecurity issues in the region, which could explain the sluggish responses from some governments. Resource mobilisation for FMD is considered to have been diluted, as incursions of other infectious TADs that have significant economic importance (e.g., ASF) have taken precedence over FMD. It was mentioned that in many countries in the region, as dairying is not a primary occupation for livestock owners, the role of the SEACFMD Campaign becomes diluted; donors are more likely to prioritise FMD when the importance of arresting the precipitous losses to milk production caused by FMD is part of the advocacy discussion (e.g., recent FMD incursion in Indonesia).

Chapter 7

SEACFMD Campaign (1997- 2020)

OECD M&E framework



7.1. Introduction

The performance of the member countries within the SEACFMD programme framework is highly variable and influenced by a myriad of factors, ranging from the relative stage of socioeconomic development influencing the availability of financial and material resources, geographical location and length of contiguous international borders, capacity of veterinary services and prioritisation of livestock diseases, and relative development and magnitude of livestock industries and farm animal trade. The application to and achievements from participating in SEACFMD reflect the relative capacities of countries to follow the national action plans, utilise diagnostic facilities, and provide increasing emphasis on enhancing veterinary capacities.

The SEAFMD programme commenced with a mandate to bring the national governments in the region together to facilitate the control and elimination of FMD from the region in a phased manner. However, despite FMD having unambiguous economic consequences through trade restrictions that constrain development, this is not universally appreciated in countries where formal livestock trading remains undeveloped. This situation has continued as an ongoing challenge for the entirety of the SEACFMD programme.

This review evaluated the performance of SEACFMD since its commencement in 1997, using the OECD M&E framework to gather information from all survey respondents. The responses to these criteria are as follows:

7.1.1. Relevance

The significance of the SEACFMD programme after 25 years of its initiation remains undiminished. All countries in the region are keen to access international markets for the safe trading of animals and their products, which is increasingly essential as demand for animal protein has surged with regional economic development. FMD is notorious for causing huge losses to global dairy and meat production and compromising food security, leading to national economic losses and diminished smallholder livelihoods. In most member countries, the programme has been reasonably successful in influencing political leadership to ensure their continued active participation in the Campaign. The rapid economic growth, expanding populations with rising purchasing power, and burgeoning need for improved dietary protein have resulted in unprecedented demand for meat and, more recently, dairy products in the region. As governments in the region realign their priorities to target animal and animal products trading, the appropriateness of the SEACFMD pro-

gramme in assisting them to achieve these targets has become increasingly accepted.

Although it is recognised that FMD is a disease of immense economic importance, control of the disease has not been addressed with equitable intensity by all nations in the region. Concerns were expressed by respondents that, as the preferences of the member countries has quickly shifted to other EIDs and other TADs, perhaps the continued applicability of the SEACFMD focus and strategies need to be revisited. Major emphasis is required to align FMD risk with food insecurity, ensuring that SEACFMD remains highly relevant for an increasingly complex future, even in countries where the disease remains endemic.

The relevance of the programme for FMD-free nations was a consideration for many survey respondents, who advised that their concerns have not been addressed proportionately whilst the most active member countries remain endemically infected. The current FMD outbreak in Indonesia- a country that was FMD-free when this review commenced but is currently facing a severe series of outbreaks- was often cited as an example where there was an apparent failure of the SEACFMD programme to adequately address the needs of FMD-free nations. The implication is that there needs to be increased attention on developing emergency disease preparedness and response consciousness, particularly as biosecurity measures and disease surveillance were cited as declining in some FMD-free countries. It was noted by some respondents that Indonesian delegates presented a cost benefit analysis of maintaining FMD freedom at a SEACFMD meeting just prior to the recent incursion.

Survey respondents suggested that the relevance of the SEACFMD programme is likely to gain more traction from non-ASEAN major economies in the broader region in the near future, particularly Australia and New Zealand. Progressing the GMS to FMD freedom is acknowledged as one of the major animal health priorities in such countries, due to prediction of huge socioeconomic losses in the event of an incursion. Despite strict policies and compliance systems for biosecurity and ongoing efforts in FMD preparedness and response to prevent or enable an early arrest of outbreaks in the event of an incursion in these countries, the recent FMD epidemic in Indonesia indicates the importance of increasing their efforts to achieve FMD freedom in the GMS through support of the SEACFMD Campaign. It was cited that, as the SEACFMD Campaign aligns with the Global FMD control strategy, the objective is not limited to reducing economic impacts of the disease in developing countries but also to maintain the free status of neighbours outside the region.

Commentary received from survey respondents indicated that a stronger focus of the SEACFMD Campaign should be to impart sustainability to the FMD control interventions. Adoption of a change of management approach was highly recommended. This involves increased attention on the drivers and resistance to change, farming system dimensions, communication resources and leadership requirements, that will encourage more positive change in FMD biosecurity and response delivery in the region. This management approach informs the allocation of resources for implementing interventions, including campaigns to increase FMD biosecurity awareness at producer levels, and more comprehensive and regular monitoring (including public awareness, biosecurity, and post-vaccination monitoring).

7.1.2. Coherence

The SEACFMD Campaign was launched in 1997 to facilitate a more effective strategy for promoting safer livestock trading through reduced FMD risk. Survey respondents advised that within the 25 years since its launch, the Campaign has achieved many goals that align with the respective national government policies on improving animal health. The respondents also affirmed that there have been significant reductions in production losses, some control over animal movements, improvement of some biosecurity practices (albeit to uncertain levels), improved FMD immunisation coverage, initiation of zoning, and variable but increasing support to capacity building for disease responsiveness. The respondents broadly agreed that the policies promoted by the SEACFMD programme have been coherent and aligned with the individual national policies. Even in the member countries that indicated they were hesitant about some proposals in the FMD roadmaps, there has been a gradual adoption of and increased adherence to the suggestions made through the Campaign. Overall, the respondents agreed that the SEACFMD programme has led to improved transparency in the attitudes of the member nations to accept the problem areas, with most making genuine efforts to improve them.

The respondents also suggested that the wider acceptance of the Campaign's policies was because they were derived from scientific evidence, with updating of expertise and incorporation of latest innovations (e.g., DIVA diagnostics). Many interventions in disease control, biosecurity, and disease communication found high levels of acceptance in the responses from the member countries. Again, it was mentioned that the Campaign platform, infrastructure, and resources were useful as a model during outbreaks of other TADs (e.g., HPAI and ASF). The networks developed following the recommendations of the

SEACFMD Campaign were reportedly replicated within member countries, especially for laboratory networking, zoning initiatives, and improved stakeholder engagement.

The Campaign review process also identified coherence in the responses from those in international agencies. These respondents generally favoured the stepwise approach to controlling FMD, particularly aligned with national policies and providing a model for the control of other TADs. Whilst some initiatives, including studies on trade pathways, might not have directly influenced safer livestock trade in the region, there was general agreement that the understanding of the dynamics and various participants involved in the trade value chain, has become increasingly apparent. This learning has assisted the establishment of DCZs in some border areas and led to the licensing of traders in Myanmar and Lao PDR involved in exports.

Most respondents agreed that all interventions undertaken by the Campaign have generally aligned with objectives of national, regional, and global FMD control. Despite the existing coherence of the interventions and policies of the Campaign with national and regional efforts for improvement in animal health, some participants recommended greater synergies in the delivery of interventions, including combining FMD vaccination with HS; enhancing the workforce capacities in diagnostics, epidemiology, and disease surveillance; and increasing efforts in public awareness campaigns on FMD. The respondents from the FMD free countries advocated for the inclusion of surveillance and disease preparedness training in the future roadmaps to increasingly cater for the needs of the FMD-free countries.

7.1.3. Effectiveness

Survey respondents were often critical about the 'effectiveness' of the SEACFMD Campaign, although the role of the FMD PCP in progressively improving FMD capacities in the region was considered vital. The FMD PCP has facilitated a phased stepwise approach, with tangible achievable targets. Introduction of the FMD PCP has also motivated the participating countries to upscale their efforts towards FMD control and provided a more evidence-based framework for progress reporting during the SEACFMD forums. The respondents frequently admitted that the pathway initiated a sense of competition amongst the member countries, facilitating the implementation of interventions. The FMD PCP has also helped member countries understand the importance of information sharing and this has led to improved transparency of data reporting during annual meetings. This sharing of data and exchange of information on the successful initia-

tives has potentially assisted some countries in adopting new strategies. In assisting some endemic countries to progress to the next stage of the FMD PCP, the SEACFMD Campaign has helped some countries provide evidence of an increasing priority for the control of TADs and zoonotic diseases.

The survey respondents generally considered that the effectiveness of the Campaign has suffered due to lack of technical and human resources, few private sector engagements, and an inconsistent flow of funds to support the interventions. Participants from the Philippines, having achieved FMD freedom prior to introduction of the FMD PCP, expressed the opinion that the FMD PCP approach appeared to be synchronised with the strategy they adopted in achieving their FMD freedom status.

The FMD PCP provides guidance to endemic countries to establish NPs for FMD, although the pathway requirements were considered overwhelming at times, with some respondents citing several challenges. For example, countries are required to obtain the approval from the regional SEACFMD office before progression and at times this may delay implementation of successive steps. Further, some cited the importance of providing more accessibility to and affordability of FMD vaccines for endemic countries, particularly as progression from Step 2 to Step 3 requires a NP for FMD aimed at virus elimination; this is arguably not possible without increased availability of adequate vaccination. However, the stepwise approach of the FMD PCP is generally considered to provide useful guidance for progressing disease management capacities.

7.1.4. Efficiency

The survey respondents identified that the goals of the SEACFMD Campaign were often overambitious or aspirational, although efficiency in governance of FMD control measures was achieved at both regional and national levels, in addition to gains in networking among stakeholders. Other positives mentioned included the Campaign's contribution towards the economic empowerment of small-scale livestock holders in the member nations.

The survey participants often elaborated on the various challenges that the Campaign encountered, particularly the impact of globalisation, and unchecked cross-border animal movements. As the economies of the region grew accompanied by the rise of the middle-class population with greater purchasing power, the value of livestock increased, particularly the demand for meat, and especially beef. This affected the efficiency of the SEACFMD programme, with some respondents feeling that moving

targets led to shifting focus on the short-term goals of the Campaign, thereby affecting the efficient implementation of the programme. The revised Campaign goal to reduce prevalence by 2020 and, at one stage, achieve FMD elimination in endemic countries, while maintaining freedom in FMD-free countries, has largely remained unrealised because of insufficient technical and institutional capacity to meet the increasing demands of the largely unregulated food system in the region. Interruptions in funding for sustained implementation of the interventions (e.g., cessation of vaccination programmes) have also negatively impacted programme efficiency.

7.1.5. Impact

The SEACFMD Campaign has been able to contribute to socioeconomic benefits in some of the economically weaker member countries through reduced FMD prevalence in the livestock populations of mainly smallholder farmer communities. The availability of better training and knowledge about the disease is considered to have helped limit the productivity losses and, hence, contributed to improved farming practices in the region. It was especially mentioned that the programme has been beneficial through shared learning between countries, continuous support from WOA through reference laboratories for diagnostics, and training of staff to deliver important messages to farmers. However, a significant gap remains in consistently reaching producer levels across all member countries. The programme has also been regarded as somewhat successful in highlighting the importance of FMD control to higher echelons of governance, with the political leadership of most countries comparatively better sensitised as a result.

The activities initiated by the Campaign have promoted the fundamental principles applicable to controlling TADs, which have been utilised during outbreaks of other livestock diseases. As previously noted, the SEACFMD model was adopted for ASF and HPAI control, and the Campaign's contribution to promoting awareness of the importance of biosecurity in the farming sector is also recognised. However, the impact of this effort remains low and has been insufficiently sustained for a range of reasons, including lack of funding. The respondents were not convinced about the contribution of the Campaign to deliver a One Health approach, although they felt that the Campaign is well placed to increasingly promote One Health in the future control of diseases of livestock.

Respondents from FMD-endemic countries also felt that one of the shortcomings of the Campaign that has limited its impact, is the absence of, or weak connection to, food security. In most countries, FMD is projected as an

infectious disease of animals rather than a major productivity issue or economically damaging disease that can cause food insecurity issues by loss of income, reduced production efficiency, and massive declines in milk yields. As dairying remains a relatively minor occupation among most livestock farmers of the region, with large ruminants retained for wealth storage and occasionally beef production, the impact of the SEACFMD Campaign on preventing a relatively non-fatal infectious disease is problematic. This was demonstrated during outbreaks of ASF, where farmers more readily adopted the required biosecurity changes and practices due to high mortality risks and their significant dependence on pig farming for cash income. It was recommended that future programmes increasingly introduce or promote smallholder and commercial dairying as a sustainable source of income for livestock farmers in endemic countries to improve food security and better link FMD control with cash generating income from dairying activities.

7.1.6. Sustainability:

The systems and mechanisms created and developed by the SEACFMD Campaign, including bi-annual or annual meetings of the sub-commission, national coordinators, and laboratory and epidemiology network personnel, along with the renewal of SEACFMD Roadmaps and other documents (e.g., transboundary movements, vaccination activities), are recognised as having been able to sustain and promote a high level of advocacy and political investment towards control of FMD in the region. This has provided a strong structure for governance at both regional and national levels for countries that perceive the benefits of FMD control as a trade incentive. These countries have also provided support to the Campaign through a sustained dedication of resources. The survey respondents noted commendable coordination and up-scaling of various networks between member countries, experts, laboratory networks, and international agencies. Again, the FMD PCP was recognised for providing impetus to sustainability by encouraging members to increase their commitments and efforts to match those of their neighbours. It has also facilitated linkages between member countries and international agencies, including international researchers conducting studies that have assisted the development of evidence-based strategies for the sustainable control of FMD. The FMD PCP has also encouraged member countries to undertake PVS evaluation, utilise reference laboratories for sample submission, and participate in capacity building training programmes.

Survey respondents also expressed the need to impart further sustainability to the Campaign, both in countries

that do not fully acknowledge the benefits of FMD control, and in those that are FMD-free. It was recommended that vaccination campaigns need to be on a larger scale and more sustainable in the countries that are placed at the initial stages of the PCP, particularly as the main reason for the cessation of FMD vaccination efforts in these countries is the lack of sustained external funding support and the variability in political support from within the country due to competition from other priorities. Importantly, respondents noted that the risk of incursions affecting the FMD-free nations appears to be increasing, especially when faced with gradual fading of institutional memory from generational change and dwindling of government budgets for preparedness plans against incidental FMD virus incursion.

7.2. Equity

Historically, the promotion of equity issues by SEAFMD and SEACFMD Campaigns were very likely not considered as important as it appears to have become today. Therefore, it is to be expected that there has been a delay in the recognition of their relevance by SEACFMD Campaign participants. However, considerations of equity issues that arise during the delivery of international and foreign aid are now regarded as critical for donor funding agencies. It is important for all stakeholders to recognise that institutional reputations can be easily damaged by inequitable mistakes made in project design and delivery.

Increasingly, international animal health leadership will require awareness that all future initiatives to FMD must consider the impact of interventions on the progression of gender equality and the empowerment of women; human rights and the needs of ethnic minorities; One Health and animal welfare priorities; and perhaps most importantly, climate change responsiveness. While current awareness of the growing importance of these issues is likely to be low among the survey respondents, this evaluation provided an opportunity to gather baseline information on this potential gap.

The contribution of the SEACFMD Campaign to the empowerment of women was recognised by some respondents as occurring in multiple ways, particularly as in many countries, animal husbandry operations are increasingly fully or partially dependent on women, especially where men are providing off-farm income. The Campaign has facilitated the involvement of women in training programmes, with socioeconomic improvements also leading to an increase in the number of females conducting livestock farming activities. Although unintended, there has also been an increased participation of women in var-

ious networks and at regional SEACFMD meetings. Striving for higher gender equality is an important indicator to be added to the performance evaluation of future SEACFMD monitoring and evaluation activities.

Several survey respondents agreed that some improvement in animal welfare could probably be attributed to disease prevention efforts under the SEACFMD Campaign as a collateral gain. Veterinarians and para-veterinarians have received training, and there have been improvements in animal husbandry and handling for vaccination, sample collection, and health and productivity measurements. Despite the likelihood that both the WOAHA Global and Regional Animal Welfare Strategies (i.e., RAWs) have achieved minimal traction in the region, it was suggested that the SEACFMD programme should be more active in the future in including animal welfare as an overarching objective of the programme.

The survey respondents indicated that addressing climate change concerns and promoting improvements in human rights were beyond the scope of the SEACFMD

programme, although socioeconomic changes leading to poverty alleviation are desirable outcomes resulting from the successful implementation of interventions for FMD control. The fact that these important equity issues are not part of the current thinking of SEACFMD participants is a potential concern. In several countries, there are major issues with equitable resource allocation to ethnic minorities. Further, the SEACFMD Campaign in much of the region has a large ruminant livestock focus and throughout the world there is increasing pressure on the greenhouse gas emissions (GHGe) that occur from cattle and buffalo farming. This is a particular concern where low productivity systems exist and the GHGe footprint is both high and amenable to improvement through health, production, and welfare initiatives. This offers great advocacy potential for a more sustainable future for SEACFMD roadmaps.

Chapter 8

SEACFMD Campaign (1997-2020)

Recommendations & Conclusion



8.1. Introduction

This SEACFMD Campaign evaluation process initially examined the phased plans developed through the Campaign, described as the initial Strategic Plan and five subsequent Roadmap documents, accompanied by the PCP-FMD and PVS documents, other relevant documents, and an increasingly impressive body of published scientific literature. The completion of the phases of implementation of SEACFMD from 1997 to 2020 confirmed the progress in each phase as:

- Phase 1 (1997–2001): Establishing the collaborative ‘spirit’ of the Campaign and promoting the importance of transparency.
- Phase 2 (2001–2005): Refining the strategic direction of the Campaign, with lessons from successes in the Philippines shared with endemic countries.
- Phase 3 (2006–2010): Improved coordination and partnership efforts, recognising the need for increased monitoring and research.
- Phase 4 (2011–2015): Encouraging national FMD control plan, with targeted vaccination and enhanced technical coordination, including PVS evaluations.
- Phase 5 (2016–2020): Seeking a more sustainable approach to FMD control with the application of the PCP-FMD stages to enable regional competitiveness in FMD control.

Phase 6 (2021 to 2025) proposes a pragmatic approach for FMD control and prevention to guide countries in implementing national FMD plans based on scientific evidence. This sixth phase includes the current evaluation of the SEACFMD Campaign, aimed at providing guidance for its future. The successes and gaps identified in the documentation and literature, and in greater detail during the stakeholder consultation process- including surveys aligned with OECD M&E criteria and both online and face-to-face FGDs- have enabled a comprehensive assessment, incorporating both qualitative and quantitative analysis of the programme. The range of methodologies used yielded extensive lists of gaps in the SEACFMD Campaign that were assembled and articulated clearly.

The gaps considered as first-order areas for increased attention included:

- quarantine and movement controls,
- vaccination programmes,
- diagnostic upgrades,
- reporting issues,
- communication programmes,
- veterinary animal health services,
- a veterinary public health focus,
- FMD funding security,
- political commitments,
- campaign effectiveness, and
- socioeconomic impacts.

The gaps identified as second order issues for increased attention included:

- improved policies and trade,
- focus on TAD control,
- improved coherence,
- increasing sustainability and relevance,
- a One Health approach,
- a biosecurity focus, and
- equity considerations.

Suggestions for addressing these gaps have led to the following series of recommendations derived from both the review of documentation (8.2) and the stakeholder consultations (8.3). These were supplemented by recommendations derived from the face-to-face FGD workshop in Bali at the SEACFMD Coordinator’s Meeting, October 3-5 (8.4).

8.2. Recommendations from the review of documentation and literature

Analysis of the information provided from assessment of the documentations and literature suggests that future SEACFMD activities:

- a. recognise that the numerous constraints to TAD and FMD control in SEA are likely to increase from the increasingly dynamic livestock marketing that has emerged from long-distance animal and product movements and climate change impacts,
- b. continue to monitor and revise strategies and plans to address the increasing regional TAD and EID risks by promotion of improved regional biosecurity and vaccination programmes,
- c. address broader disease risk concerns emerging increasingly in the region (e.g., HPAI, ASF and LSD) including zoonoses (e.g., pandemic COVID-19) by assisting member countries develop One Health approaches through improved veterinary services with animal, hu-

man and environmental cross-sectoral collaborations,

- d. assist building of cross-sectoral technical capacities to improve utilisation of human and financial resource among all stakeholders, supported by legislation and compliance mechanisms governing market access and safer international trade in animals and their products.

8.3. Recommendations from the consultations with stakeholders

Analysis of the information provided from examination of the survey responses identified considerable variations in opinions on the contributions of SEACFMD to addressing the many gaps in FMD and TAD capacities in member countries, although there was a general agreement that the programme was valuable and future SEACFMD activities should be expanded to:

- a. recognise that the numerous constraints to TAD and FMD control in SEA are likely to continue due to the increasingly dynamic livestock and product marketing that has emerged from long-distance animal and product movements and the impacts of climate change,
- b. continue to promote improved regional biosecurity strategies to address these increasing regional TAD and EID risks (e.g., Indonesian FMD, LSD, ASF) through the elimination of 'informal movements of livestock and their products, alongside more effective border controls and quarantine centres,
- c. increasingly promote and facilitate the uptake of animal traceability systems and the establishment of a greater number and extent of DCZs for FMD, supported by improved biosecurity, ongoing strategic vaccination, enhanced diagnostic information, and upgraded surveillance systems in member countries,
- d. address broader TAD and EID risk concerns, including zoonoses (e.g., HPAI, pandemic COVID-19), by assisting member countries developing One Health approaches that improve veterinary services through cross-sectoral collaborations among animal, human and environmental health,
- e. improve the utilisation of human and financial resource by facilitating legislation and compliance mechanisms governing market access and safer international trade in animals and their products,
- f. increasingly promote research-based evidence information in developing strategic disease control initiatives and FMD national plans, with growing focus on improved regional biosecurity,
- g. promote extensive FMD vaccination programmes by assisting the delivery of more effective FMD vaccination strategies, with attention to vaccine serotypes and matching, vaccine efficacy, and addressing vaccine delivery logistics and capacities in member countries,
- h. advocate for increased sustainability of FMD control programmes by encouraging private sector engagement and augmenting government-led programmes to promote self-reliance in the procurement and delivery of efficacious vaccines to member countries through a vaccine bank,
- i. recognise that frequent staff turnover exposes inadequately trained professionals to leadership roles in TAD control programmes, ongoing training in diagnostic skills, epidemiological analysis capabilities, participation in TAD response scenarios, and emergency disease response leadership is required and should be regularly promoted at regional, national and sub-national levels,
- j. prioritise ongoing public awareness campaigns promoting FMD as a serious food-security concern, providing advice on biosecurity of animal diseases until a persistent state of awareness regarding the risks and impacts of FMD and other TADs is achieved in the GMS,
- k. increase governance efforts to ensure that policy-makers in FMD-infected member countries understand the necessity to prioritise and align FMD control NPs with the FMD PCP, use evidence-based data to inform disease control decisions, and seek increased financial commitments for TAD control from national budgets,
- l. enhance advocacy efforts to ensure that all stakeholders in FMD-infected member countries are more directly involved in the implementation of SEACFMD recommendations, with stakeholders from FMD-free countries - including livestock industry leaders- being included, enabling a broad range of stakeholders to be more informed and invested in the progress and success of future SEACFMD programme activities,
- m. improve cooperation between developed and developing countries during TAD crises, leveraging assistance from those countries with more advanced veterinary services,
- n. ensure the sustainability and reputational integrity of future activities by promoting regional progression in gender equality, empowerment of women, human

rights, ethnic minority needs, One Health and animal welfare priorities, and climate change responsiveness in future SEACFMD activities.

8.4. Recommendations from Focus Group Discussions

The participants were grouped by origin and affiliations, representing: (a) FMD free countries; (b) FMD endemic countries; and (c) those from international organisations. The recommendations from this FGD were:

8.4.1. Disease surveillance

The FMD-endemic countries recommended an improvement in real time reporting and frequent implementation of active surveillance activities. It was observed that surveillance activities suffer from lack of funding, with provision of adequate resourcing and support through international cooperation considered as essential for a robust surveillance system. The FMD-free countries recommended improving resources and capacities for disease surveillance, favouring advanced technologies and conducting of studies to determine drivers and constraints to reporting. Other recommendations for enhancing surveillance included increasing the collection, analysis and sharing of disease risk information, with regular revision of regional perspectives on surveillance capabilities.

8.4.2. Border quarantine facilities:

Improved facilities for border quarantine ranked high on the priority list for all stakeholders. The endemic countries recommended improvement in the capacity and capability of border checkpoints to prevent incursions. This could be achieved through greater resourcing of routine inspections and conducting risk analyses. The FMD-free countries suggested increasing the penalties for individuals and traders not complying with the provisions of border checks. International organisations suggested advocacy for increased governance of, and assistance to, bilateral and multilateral agreements between countries sharing borders to establish mutually agreed border protection procedures. Overall, it was considered very important to reinvigorate initiatives aimed at understanding the pathways for FMD and other TAD transmission, to assist in designing suitable biosecurity interventions, including border checks, quarantine, animal identification, and mandatory vaccination certification.

8.4.3. Public awareness

In addition to existing approaches to improve public awareness, using social media tools and information,

education and communication (IEC) were suggested as strategies that enable ready-to-use resources to be created for rapid deployment. The emphasis should be on developing systems that incentivise disease reporting, facilitate passive surveillance, and provide a trusted information sharing mechanism.

8.4.4. Animal disease diagnostic facilities

Improvement of the quality and capacity of diagnostic facilities was recommended by all stakeholders, including the introduction of novel tools, enhancement of laboratory and epidemiological networks, provision of equipment and reagents, improvement of diagnostic techniques, sharing of data, and upgrading information systems to support early detection and reporting.

8.4.5. Advocacy for political commitment

There is an urgent need to enhance communication approaches to the political leadership of member countries, promoting clearly defined goals and tangible outcomes in TAD preparedness and response (e.g., progression on the PCP). While national priorities and objectives are a matter of sovereignty, advocacy plans tailored to member country needs -including cross-sectoral impact and prioritising FMD control- should be developed. Additionally, creating training programmes and workshops for veterinary leadership to learn effective communication tools for conveying key points to political leadership may be beneficial.

8.4.6. Biosecurity

Despite substantial progress on improving biosecurity practices in animal husbandry, it is important to continue to sustain and promote the mechanisms to avoid institutional and operator memory loss. The use of regular public awareness campaigns on biosecurity, updating of existing standard operating procedures (SOP) on good biosecurity practices, and incentivising the supply chain participants to adopt improved biosecurity, is highly recommended.

8.4.7. FMD vaccination:

It is recommended that existing vaccination strategies be evaluated, particularly regarding prophylactic vaccinations in free areas that are vulnerable to FMD incursions, as well as the promotion of the importance of a second vaccination when vaccinating a naive population. There is a need for regular mapping of vaccine developments, including the identification of companies, target species, geographies covered, and costs incurred. Strategies for

appropriate vaccine selection and specifications, as well as post-vaccination monitoring and assessment of strategies, should be developed.

8.4.8. Regional alignment of national FMD policies

While alignment of national policies towards regional objectives is an essential goal, it requires regular revisiting of individual TAD national policies. It was also recommended that studies be instituted to improve understanding of cross-border marketing systems; barriers to implementation of national TAD policies; and promotion of increased application of existing WOAH tools (e.g., PVS/PCP). At the regional level, the communication mechanisms between regional and national bodies needs revision to promote improved bilateral and regional collaborations. It is suggested that a guideline or SOP be developed to achieve effective alignment of policies at the regional level.

8.4.9. Veterinary animal health services

Improvement of the animal health services across the region is a challenge that needs mitigation through improved training and resourcing of the frontline workforce and supporting services. It can be achieved through provision of continual programmes of online training and face-to-face workshops, while adhering to the recommendations from the PVS evaluations and regularly updating FMD national plans. The improvement of cross-sectoral communication within the veterinary services and increasing public-private-partnerships to facilitate increased engagement and coordination to improve animal health was recommended. Another important suggestion was to improve cooperation between developed and developing countries during TAD crises, leveraging the services from those countries in the region with more advanced veterinary services.

8.4.10. Advocacy for financial commitment

The suggestions to attract financial commitment for the Campaign varied between stakeholders from international organisations and those from endemic countries. Representatives from FMD-endemic countries recommended sustained funding through: the identification of potential

national and international donors interested in social license issues (animal welfare, One Health, food security); instituting cost-benefit analysis and ensuring sustainable funding; establishing realistic targets and demonstrating economic and social benefits; and wider publicity of success stories from countries that have achieved significant financial commitment from TAD control and eradication. Those from international organisations recommended reducing reliance on external funding and promoting feasible business options for livestock farmers to increase their professionalism.

8.4.11. Animal movement control

Animal movement control within and across affected countries could be improved through increased penalties, delivery of more effective policies and regulations; instituting value chain and risk mapping studies; and developing and delivering an integrated regional animal traceability system to improve regional TAD biosecurity.

8.5. Conclusion

This evaluation of the SEACFMD Campaign from 1997 to 2020 concludes that the structure and priorities have been mostly consistent with stakeholder needs and expectations. However, as TAD and EID challenges are increasing, enhanced resourcing of the future SEACFMD Campaign needs attention. A summary of future priorities indicates that the Campaign should aim to improve disease surveillance and biosecurity, with a focus on animal movement control compliance and border quarantine facilities. Additionally, it should deliver more extensive FMD vaccination programmes, increase public awareness campaigns and emergency disease response capacities, generate advocacy for greater political and financial commitments, and align regional and national FMD policies. Moreover, there should be an emphasis on improving veterinary services while paying increasing attention to the numerous emerging global social license issues.

References

15. Bastiaensen P, Barisic N., Alessio FD. 2012. PVS Gap Analysis Report: Lao PDR. Paris, France
16. Batho H, Heim D, Stemshorn B. 2010. OIE PVS Gap initial analysis strategic draft report: Indonesia. Paris, France. World Organisation for Animal Health
17. Blacksell SD, Siengsan-Lamont J, Kamolsiripichaiporn S, Gleeson LJ, Windsor PA. A history of FMD research and control programmes in Southeast Asia: lessons from the past informing the future. *Epidemiol Infect.* 2019 Jan;147:e171. doi: 10.1017/S0950268819000578. PMID: 31063108; PMCID: PMC6499730.
18. Buckle K, Bueno R, McFadden A, van Andel M, Spence R, Hamill C, Roe W, Vallee E, Castillo-Alcala F, Abila R, Verin B, Purevsuren B, Sutar A, Win HH, Thiha M, Lwin KO, Khounsy S, Phonthasy S, Souriya V, Keokhamphet C, Arzt J, Ludi A, Mioulet V. Detection of Foot-and-Mouth Disease Virus in the Absence of Clinical Disease in Cattle and Buffalo in South East Asia. *Front Vet Sci.* 2021 Jul 23;8:691308. doi: 10.3389/fvets.2021.691308. PMID: 34368278; PMCID: PMC8342991.
19. Gautier P, Ishibashi T, Poeder P, Quven TTX. 2010. PVS Gap Analysis Report: Myanmar Paris, France. Paris, France: World Organisation for Animal Health
20. Han JH, Subharat S, Wada M, Vink D, Phiri BJ, Sutar A, Abila R, Khounsy S, Heuer C. Impact of risk-based partial vaccination on clinical incidence and seroprevalence of foot and mouth disease in Lao PDR. *Transbound Emerg Dis.* 2022 Jul;69(4):e309-e321. doi: 10.1111/tbed.14299. Epub 2021 Sep 1. PMID: 34412164.
21. Hutter S, Bouzghaia H, Stratton J. 2012. Performance of Veterinary Services PVS Evaluation Report: Thailand. Paris, France: World Organisation for Animal Health
22. Kompas T, Nguyen HTM, and Ha, PV. 2015. "Food and biosecurity: livestock production and towards a world free of foot-and-mouth disease." *Food Security* 7 (2):291-302.
23. Milius J, Safarov R. 2007. OIE Evaluation of veterinary services according to the Performance, Vision and Strategy approach Report: Mongolia. Paris, France: World Organisation for Animal Health.
24. Miller CAJ, Young JR, Nampanya S, Khounsy S, Singanallur NB, Vosloo W, Abila R, Hamilton SA, Bush RD, Windsor PA. Risk factors for emergence of exotic foot-and-mouth disease O/ME-SA/Ind-2001d on smallholder farms in the Greater Mekong Subregion. *Prev Vet Med.* 2018 Nov 1;159:115-122. doi: 10.1016/j.prevetmed.2018.09.007. Epub 2018 Sep 6. PMID: 30314773..
25. Murray G, Abila R, Roger F, Yoshimura S, Zaixin L. 2003. OIE/ASEAN Mid Term Evaluation of the Southeast Asia Foot and Mouth Disease Campaign. Bangkok, Thailand Office World Organisation for Animal Health
26. Murray G, Mulder H, Reichard R. 1999. External Evaluation of the South East Asia Foot and Mouth Disease (SEAFMD) Campaign. World Organisation for Animal Health, 12, rue de Prony, F-75017 Paris, FRANCE.
27. Nampanya S, Khounsy S, Abila R, Windsor PA. Implementing large Foot and Mouth Disease vaccination programmes for smallholder farmers: lessons from Lao PDR. *Epidemiol Infect.* 2018 Dec;146(16):2086-2095. doi: 10.1017/S0950268818002443. Epub 2018 Aug 23. PMID: 30136645; PMCID: PMC6453019.
28. Nampanya S, Khounsy S, Abila R, Young JR, Bush RD, Windsor PA. Financial Impacts of Foot-and-Mouth Disease at Village and National Levels in Lao PDR. *Transbound Emerg Dis.* 2016 Oct;63(5): e403-11. doi: 10.1111/tbed.12319. Epub 2015 Jan 21. PMID: 25612062.
29. Poirier, A. 2014. Performance of Veterinary Services in South -East Asian Countries – Analysis of OIE PVS Evaluation and PVS Gap Analysis reports. World Organisation for Animal Health, 12, rue de Prony, F-75017 Paris, FRANCE.
30. Rast L, Windsor PA, Khounsy S. Limiting the Impacts of foot and mouth disease in large ruminants in northern Lao People's Democratic Republic by vaccination: a case study. *Transbound Emerg Dis.* 2010 Jun;57(3):147-53. doi: 10.1111/j.1865-1682.2010.01099.x. Epub 2010 Feb 17. PMID: 20180923.Schierhout G, Gleeson L, Craig A, Wettenhall I. 2017. "Evaluating a decade of Australia's efforts to combat pandemics and emerging infectious diseases in Asia and the Pacific 2006-2015: are health systems stronger?".
31. Schneider H, Barisic N, Zaari A. 2016. PVS Evaluation Report: Malaysia. World Organisation for Animal Health, 12, rue de Prony, F-75017 Paris, FRANCE.
32. Scoullar B, Perkins N. 2008. Independent Review: SEAFMD Aus AID Grant Funding to World Organisation for Animal Health (OIE) for the Southeast East Asia Foot and Mouth Disease (SEAFMD) Campaign.
33. Wada M, Subharat S, Sutar A, Abila R, Khounsy S, Heuer C. Socioeconomic impacts of clinical foot-and-mouth disease and a risk-based partial vaccination campaign for smallholders in Lao People's Democratic Republic. *Transbound Emerg Dis.* 2022 Sep;69(5): e1825-e1838. doi: 10.1111/tbed.14517
34. Weaver J, Abila R, Punderson J. 2018. OIE PVS Evaluation Follow-Up Mission Report: Cambodia. World Organisation for Animal Health, 12, rue de Prony, F-75017 Paris, FRANCE

35. Weaver J, Barisic N, Hunt T. 2013. PVS Gap Analysis report: Brunei Darussalam. World Organisation for Animal Health, 12, rue de Prony, F-75017 Paris, FRANCE.
36. Weaver J, Punderson J, Tshering P. 2018. OIE PVS Evaluation Follow-Up Report: Myanmar. World Organisation for Animal Health, 12, rue de Prony, F-75017 Paris, FRANCE.
37. Windsor PA, Freeman PG, Abila R, Benigno C, Verin B, Nim V, Cameron A. Foot-and-mouth disease control and eradication in the Bicol Surveillance Buffer Zone of the Philippines. *Transbound Emerg Dis.* 2011 Oct;58(5):421-33. doi: 10.1111/j.1865-1682.2011.01225.x. Epub 2011 May 5. PMID: 21545690.
38. World Organisation for Animal Health. 2021. Report on the implementation of FMD vaccination programmes in SEACFMD member countries. OIE, Bangkok.
39. Xaydaldasouk K, Innoula N, Putthana V, Chanthavongsa K, Snoeck CJ, Hübschen JM, Oudomphone P, Chan B, Muller CP, Black AP, Pommasichan S, Pauly M. High seroprevalence of Foot and Mouth Disease in Laos: Call for nationwide vaccination campaigns and disease surveillance. *Transbound Emerg Dis.* 2021 Jul;68(4):2345-2352. doi: 10.1111/tbed.13895. Epub 2020 Nov 17. PMID: 33113242..
40. Young JR, Suon S, Rast L, Nampanya S, Windsor PA, Bush RD. Benefit-Cost Analysis of Foot and Mouth Disease Control in Large Ruminants in Cambodia. *Transbound Emerg Dis.* 2016 Oct;63(5):508-22. doi: 10.1111/tbed.12292. Epub 2014 Nov 10. PMID: 25382391

Appendices



Appendix A

Online survey

Review of the SEACFMD campaign 1997-2020

Target respondents: OIE Delegates, SEACFMD country coordinators, relevant Lab & Epi staff, and representatives of national public institutions, Private Companies, Inter-governmental organizations (international) and other stakeholders

Dear Sir/Madam,

We are contacting you to request you to complete the online survey below, evaluating the SEACFMD program from 1997-2020. It is widely acknowledged that your insights into the operation of SEACFMD is valuable and your time for completing this task(s) much appreciated. If you would prefer this to be done by a Zoom/Moodle interview or are interested in a follow-up interview following completion of the questionnaire, to explore in more depth some of the critical areas that SEACFMD program is working on, please advise.

Please note that all data and information collected will be kept confidential and will be anonymized unless you specifically agree to be quoted. If an interview occurs, we would like to record it to allow full capture of important opinions and experiences of regional and in-country animal health (we will ask at the outset if you are happy that the interview is recorded).

With Thanks and Kind Regards,

Professor Emeritus Peter Windsor & Dr Harish Tiwari
Production Animal Welfare & Health Services
The University of Sydney, Australia
peter.windsor57@gmail.com

Questionnaire for stakeholder interviews for review of SEACFMD campaign (1997-2020)

Descriptive	
Q1. What are the roles and the duration that you have worked with SEACFMD campaign?	
Q2. What were your major contributions to the SEACFMD campaign?	
Q3. What was your best experience during your role with the SEACFMD programme?	
Q4. In your opinion what are the major challenges faced by SEACFMD?	
Technical Services Capacity	
Q5. How would you assess the improvements/development of the following technical capacity through SEACFMD campaign on a scale of 1-5: 1 diminished; 2 no change; 3 slight improvement; 4 improved; 5 much improved.	
(a) Biosecurity practices	
(b) Diseases control zones	
(c) Border quarantine facilities / regulations	
(d) Control of animal movement	
(e) FMD vaccinations programmes (planning, procurement, delivery, access)	
(f) Animal disease diagnostic facilities (improvement in sample collection/ submission, vaccine matching, identification of new strains and reporting)	
(g) Disease surveillance system	
(h) Epidemiological capacity (data collection, analysis, reporting and evidence-based decision making)	
(i) Transparency in reporting	
(j) Public awareness about FMD	
(k) Disease communication (within state departments and with stakeholders)	
Governance and Policy	
Q6. How would you assess the improvements in the governance and policy regarding following challenges of FMD control through SEACFMD campaign on a scale of 1-5: 1 diminished; 2 no change; 3 slight improvement; 4 improved; 5 much improved.	
(a) Veterinary and animal health services (at provincial, national and sub-national/ district level)	
(b) Veterinary public health services (animal movements, quarantines, availability/ affordability of PEP)	
(c) Alignment of national policies with regional/other member countries of the region	
(d) Legislation of trade of animals and animal products	
(e) Legislation on food safety risks (AMR policy; local/ international meat trade)	
Coordination and Advocacy	
Q7. How would you assess the measures undertaken for coordination and advocacy promoting FMD control through SEACFMD campaign, on a scale of 1-5: 1 diminished; 2 no change; 3 slight improvement; 4 improved; 5 much improved.	
(a) Coordination with other nations of the region (performance of National Task force)	

(b) Coordination on emergency disease response (including Transboundary diseases such HPAI, ASF)	
(c) Coordination with other stakeholders towards One Health approach	
(d) To attract financial commitment from national/international/local donors	
(e) Political commitment towards FMD control	
Evaluation Indicators	
Relevance	
Q8. Do the objectives of the SEACFMD campaign align with needs, policies, and priorities of animal disease control in your country/region of responsibility?	
(a) needs	
(b) policies	
(c) priorities	
Q9. What are your recommendations for the SEACFMD campaign in future in your country/region of responsibility?	
Coherence	
Q10. Are the objectives of the SEACFMD campaign compatible with other livestock disease interventions in your country/region of responsibility?	
(a) Interventions that align with SEACFMD programme	
(b) Interventions that undermine national disease control efforts	
(c) How has the SEACFMD control efforts influenced livestock trade in the country/region?	
(d) How has the SEACFMD control efforts influence health & sanitary policies in the country/region?	
Q11. In your opinion what interventions have aligned the objectives of SEACFMD campaign and national/regional animal disease control?	
Effectiveness	
Q12. What are the achievements of the FMD PCP towards FMD control in your country/ region of your responsibility?	
Q13. What are the constraints of the FMDPCP towards FMD control in your country/ region of your responsibility?	
Q14. Summarise the results of the FMDPCP towards control of FMD and Livestock diseases in your country/region of responsibility?	
Efficiency	
Q15. Would you agree that SEACFMD campaign has delivered according to planned timelines?	
Q16. Would you agree that SEACFMD campaign has effectively improved the economic benefits to the stakeholders in your country/region of responsibility as envisaged in the roadmaps?	
Q17. Has the SEACFMD campaign has been effective in provision and utilisation of resources in terms of funding or vaccines?	
Impact	
Q18. What socio-economic benefits has SEACFMD campaigns been able to deliver to the stakeholders?	
Q19. Has SEACFMD campaign been able to spread awareness about importance of livestock disease control?	

Q20. Has SEACFMD campaign been able to spread awareness about Transboundary Animal Diseases?	
Q21. Has SEACFMD campaign been able to spread awareness about One Health approach and improved biosecurity practices?	
Sustainability	
Q22. How has SEACFMD campaign helped develop systems that ensure continuity of the effort towards FMD control?	
Q23. What are the resource implications towards ensuring continuity of the FMDPCP in your country/region of responsibility?	
Q24. What solutions would you suggest overcoming future deficits towards strengthening FMDPCP in your country/region of your responsibility?	
Equity	
Q25. Has SEACFMD campaign been able to contribute to the following?	
Animal welfare	
Climate change responsiveness	
Gender equality/women empowerment	
Improved human rights	
General Comments	
Have you any other comments you would like to share about the SEACFMD campaign including the FMDPCP program?	

Thank you again for your valuable contributions.

Appendix B

Physical survey

The SEACFMD (South East Asia and China Foot and Mouth Disease) control program has completed more than 20 years since its inception in 1997. The program aims to strengthen veterinary services and coordinate animal health activities effectively within and between countries to control FMD in the region.

Member Countries of SEACFMD remain responsible for their own disease management systems, but Regional Coordination Unit (RCU), under the OIE Sub-Regional Representation for South-East Asia based in Bangkok, provides support and regional coordination that is integral to success.

We are conducting a survey to assess its performance in the Southeast Asia and your insights on this is invaluable. The survey is identity blinded, and all data is confidential. It will take 10 minutes of your time.

We appreciate your help for conduct of this assessment. Thank you.

1. How would you describe the area of your contribution to the SEACFMD campaign?

- On ground implementation
- Policy and governance
- International assistance
- Researcher
- Capacity building
- Others (please specify)

2. How would you describe your representation in the SEACFMD campaign?

- Member of a FMD free-country
- Member of country with FMD
- Member of International organisation
- Member of an Australian institute
- Member of a New Zealand institute
- Member of a research institute
- Others (please specify)

3. What were your active years of the SEACFMD or FMD control campaign (you may choose more than one option)?

- 1997-2000
- 2001-2005
- 2006-2010
- 2011-2015
- 2016-2020

4. How would you assess the improvements/development of the following technical capacity over the years of SEACFMD campaign?

	Diminished	No improvement	Slightly improved	Improved	Much improved
Biosecurity practices					
Establishment of Diseases control zones					
Border quarantine facilities / regulations					
Control of animal movement within the countries and across international borders					
FMD vaccinations program(planning, procurement, delivery, access)					
Animal disease diagnostic facilities (improvement in sample collection/submission, vaccine matching, identification of new strains and reporting)					
Disease surveillance system					
Epidemiological capacity (data collection, analysis, reporting and evidence-based decision making)					
Transparency in reporting					
Public awareness about FMD					
Disease communication (within state departments and with stakeholders)					

5. How would you assess the improvements in the governance and policy regarding following challenges of FMD control through SEACFMD campaign over the years?

	Diminished	No improvement	Slightly improved	Improved	Much improved
Veterinary and animal health services (at provincial, national and sub-national/district level)					
Veterinary public health services (animal movements, quarantines, availability/affordability of PEP)					
Alignment of national policies with regional/other member countries of the region					
Legislation of trade of animals and animal products					
Legislation on food safety risks (AMR policy; local/international meat trade)					

6. How would you assess the measures undertaken for coordination and advocacy promoting FMD control through SEACFMD campaign over the years?

	Diminished	No improvement	Slightly improved	Improved	Much improved
Coordination with other nations of the region (performance of National Task force)					
Coordination on emergency disease response (including Transboundary diseases such HPAI, ASF)					
Coordination with other stakeholders towards One Health approach					
To attract financial commitment from national/international/local donors					
Political commitment towards FMD control					

7. Has the SEACFMD campaign been aligned with the disease control needs and priorities of the region?

- Yes
- Maybe
- No

8. Has the SEACFMD campaign been compatible with other livestock disease interventions in the region?

- Yes
- Maybe
- No

9. Would you agree that SEACFMD Progressive Control Pathway strategy has been effective in controlling FMD in the region?

- Yes
- Maybe
- No

10. Has the SEACFMD program been able to bring positive/negative changes in the following?

	Not aware of changes	Somewhat negative	Neither positive nor negative	Somewhat positive	Extremely positive
Socio-economic benefits to stakeholders					
Awareness of importance of livestock diseases					
Awareness about transboundary animal diseases					
Awareness about biosecurity practices in livestock farming					
Awareness about One Health approach					

11. Has the SEACFMD campaign helped establish/develop systems to ensure continued efforts for FMD control in the region?

- Yes
- Maybe
- No

12. How has the SEACFMD program contributed to the following?

	Unaware of any contribution	No contribution	Doubtful contribution	Slight contribution	Substantial contribution
Animal welfare					
Climate change responsiveness					
Gender equality/women empowerment					
Improving human rights					

We thank you for your time spent taking this survey. Your response has been recorded.

Evaluation of the South-East Asia and China Foot and Mouth Disease (SEACFMD) Campaign from 1997-2020

WOAH Sub-Regional Representation for South-East Asia
c/o DLD, 69/1 Phaya Thai Road
Ratchathewi 10400
Bangkok, Thailand
T. +66 2653 4864
srr.seasia@woah.org



World Organisation
for Animal Health

