



EMPHNET
The Eastern Mediterranean
Public Health Network

ADVANCING ONE HEALTH IMPLEMENTATION IN THE EASTERN MEDITERRANEAN REGION:

**CHALLENGES, GAPS, AND
STRATEGIC PRIORITIES**



2026

EXECUTIVE SUMMARY

The Eastern Mediterranean Region (EMR) is increasingly vulnerable to health threats arising at the human–animal–environment interface, including zoonotic diseases, antimicrobial resistance, climate-related risks, food safety hazards, and the impacts of conflict and displacement. These interconnected challenges underscore the need for a coordinated One Health approach that strengthens collaboration across sectors to improve prevention, preparedness, detection, and response.

This report examines the current status of One Health implementation across the EMR and finds that, while important progress has been made through regional frameworks, national coordination mechanisms, workforce development initiatives, and collaborative surveillance, implementation remains uneven. Weak governance arrangements, fragmented surveillance systems, limited institutional and workforce capacity, inadequate sustainable financing, and inconsistent multisectoral coordination continue to constrain the translation of policy commitments into effective operational action.

To accelerate implementation, the report highlights the need to strengthen governance and accountability, build a multidisciplinary workforce, integrate surveillance systems, invest in research and innovation, secure sustainable financing, and foster partnerships across government, academia, the private sector, and communities. These priorities provide a strategic framework for institutionalizing One Health within national health systems and regional health security efforts.

Sustained political commitment and long-term investment will be essential to embed One Health into routine planning and decision-making across the EMR. Strengthening these foundations will enhance the Region’s capacity to prevent and respond to emerging health threats while contributing to more resilient health systems, healthier ecosystems, and sustainable development.

METHODOLOGY

This report is based on a narrative review of published literature, policy documents, and technical guidance related to One Health implementation in the Eastern Mediterranean Region (EMR). The review synthesized evidence from peer-reviewed journal articles, reports and guidance issued by the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (WOAH), the United Nations Environment Programme (UNEP), and other relevant regional and international organizations.

The literature search focused on publications addressing One Health governance, multisectoral coordination, workforce development, integrated surveillance, antimicrobial resistance, zoonotic diseases, climate change, food safety, health security, and sustainable financing within the EMR. Priority was given to recent publications, regional frameworks, and country examples that illustrate current implementation efforts and operational challenges.

The review was also informed by information, expert perspectives, and practical insights shared during the Eastern Mediterranean Public Health Network (EMPHNET) webinar, “WEBi #55: One Health Implementation in the EMR: The Missing Piece of the Puzzle.” These insights were used to complement the published literature and provide additional regional context regarding implementation experiences, operational barriers, lessons learned, and emerging priorities.

Evidence was critically analyzed and synthesized using a thematic approach to identify common challenges, implementation gaps, emerging good practices, and strategic priorities across the Region. Findings were interpreted in the context of regional health security, with emphasis on factors influencing the operationalization of One Health in diverse national settings.

This report is intended as a policy and technical review rather than a systematic review or primary research study. No new data were collected or analyzed. The findings and recommendations are based on the synthesis and interpretation of existing evidence and are intended to inform policymakers, public health professionals, development partners, and other stakeholders working to strengthen One Health implementation in the Eastern Mediterranean Region.



1. INTRODUCTION: WHY ONE HEALTH MATTERS IN THE EASTERN MEDITERRANEAN REGION

The Eastern Mediterranean Region (EMR) faces a growing convergence of health threats driven by the complex interactions among human, animal, and environmental systems. The Region has experienced repeated outbreaks of emerging and re-emerging infectious diseases, including Middle East Respiratory Syndrome (MERS), avian influenza, Crimean-Congo hemorrhagic fever (CCHF), cholera, dengue fever, and other zoonotic and vector-borne diseases.¹ Factors such as international travel and trade, rapid urbanization, mass gatherings of people, mass movements of live animals, climate change, political and economic instability, armed conflict, population displacement and natural disasters, and close proximity of animal rearing to human settlements exacerbate the EMR's vulnerability, fostering an environment conducive to zoonotic illnesses and frequent outbreaks of emerging infectious diseases.^{2 3 4}

The EMR comprises 22 countries and territories with a population of nearly 700 million people. Despite sharing geographical proximity, these countries differ markedly in their economic resources, political environments, public health infrastructure, and capacity to prepare for and respond to disease outbreaks. While several Gulf countries possess well-developed healthcare systems, many others continue to experience prolonged conflicts and humanitarian emergencies that have weakened health services, disrupted surveillance systems, and limited laboratory and diagnostic capacities.⁵

More than 100 million people across the EMR currently require humanitarian assistance, accounting for over one-third of the global humanitarian burden. In addition, millions of people have been displaced by conflict and instability, creating conditions that facilitate disease transmission while placing extraordinary pressure on already fragile healthcare systems. Population displacement, overcrowded living conditions, interrupted vaccination programs, and reduced access to healthcare collectively increase the likelihood of disease outbreaks and hinder timely response efforts.⁶

Many of these infectious diseases originate at the interface between humans, animals, and the environment. Zoonotic diseases account for approximately 60% of known human infectious diseases and nearly 75% of newly emerging infectious diseases worldwide. The widespread interaction between people, livestock, wildlife, and shared ecosystems throughout the EMR creates opportunities for pathogens to cross species barriers, reinforcing the importance of integrated surveillance and coordinated action across the human, animal, and environmental sectors.⁷

Another growing concern is antimicrobial resistance (AMR), which has become one of the leading global public health threats. In 2021 alone, AMR was directly responsible for an estimated 1.14 million deaths worldwide.⁸ Within the EMR, inappropriate antimicrobial use in both human and veterinary medicine, together with inadequate infection prevention practices and limited access to safe water, sanitation, and hygiene, accelerates the emergence and spread of resistant microorganisms.⁹ Because resistant pathogens circulate among humans, animals, food systems, and the environment, addressing AMR requires a comprehensive One Health approach.

Climate change has further increased the complexity of public health challenges facing the Region. Rising temperatures, prolonged droughts, flooding, desertification, and changing rainfall patterns are altering ecosystems and expanding the geographic distribution of disease vectors. These environmental changes also affect food and water security, promote the emergence of zoonotic diseases, and contribute to the spread of antimicrobial resistance.¹⁰ Globally, more than half of all known human infectious diseases have already been aggravated by climate-related hazards, and climate change is expected to substantially increase future mortality, healthcare costs, and economic losses.¹¹

Food safety represents another important component of One Health within the EMR. Every year, foodborne illnesses affect more than 100 million people in the Region, including approximately 32 million children younger than five years of age, and are responsible for around 40,000 deaths annually. Most of this burden results from diarrheal diseases caused by foodborne pathogens such as *Escherichia coli*, *Campylobacter*, and nontyphoidal *Salmonella*. In addition, agricultural practices involving the extensive use of pesticides, antibiotics, and growth-promoting hormones may contribute to environmental contamination and increase risks to both human and animal health.¹²

Taken together, these interconnected challenges demonstrate that the health of people, animals, and the environment cannot be managed independently. The growing impact of zoonotic diseases, antimicrobial resistance, climate change, food safety risks, and humanitarian crises highlights the need for stronger collaboration across sectors. The One Health approach provides a comprehensive framework for addressing these complex threats through integrated surveillance, coordinated policymaking, and multidisciplinary action aimed at improving health security and building resilient health systems throughout the Eastern Mediterranean Region.

1. [Disease Outbreak News](#)
2. [Perspectives and future directions on the prevention and control of emerging and re-emerging vector-borne and zoonotic diseases: findings from across the WHO Eastern Mediterranean Region | European Journal of Public Health | Oxford Academic](#)
3. [WHO EMRO - Infectious disease outbreaks reported in the Eastern Mediterranean Region in 2022](#)
4. <https://onlinelibrary.wiley.com/doi/abs/10.1002/rmv.2326>
5. <https://www.emro.who.int/emhj-volume-31-2025/volume-31-issue-6/enhancing-outbreak-and-pandemic-alert-and-response-in-the-eastern-mediterranean-region.html>
6. <https://www.who.int/publications/m/item/who-global-health-emergency-appeal-2022-regional-summary-eastern-mediterranean-region>
7. https://academic.oup.com/eurpub/article/35/Supplement_1/1/7951900?guestAccessKey=&login=false
8. <https://www.healthdata.org/research-analysis/health-topics/antimicrobial-resistance-amr>
9. <https://www.sciencedirect.com/science/article/pii/S235277142500093X#bb0025>
10. <https://www.bmj.com/content/383/bmj.p2177>
11. <https://www.weforum.org/publications/quantifying-the-impact-of-climate-change-on-human-health/>
12. <https://applications.emro.who.int/docs/One-Health-EMR-eng.pdf>



2. ONE HEALTH IMPLEMENTATION IN THE EMR: CURRENT LANDSCAPE

2.1 EXISTING REGIONAL AND NATIONAL INITIATIVES

Over the past decade, One Health implementation in the EMR has been supported through a combination of global partnerships, regional initiatives, and national programs. At the global level, the Quadripartite partnership, comprising the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (WOAH), and the United Nations Environment Programme (UNEP), has provided a common strategic framework through the One Health Joint Plan of Action (2022–2026). The plan promotes coordinated action on zoonotic diseases, antimicrobial resistance, food safety, environmental health, and climate change while encouraging countries to strengthen multisectoral collaboration, surveillance, workforce development, and preparedness.¹³

At the regional level, implementation has been supported through several complementary frameworks and collaborative initiatives. The WHO EMRO One Health Operational Framework for Action established the first regional roadmap for strengthening multisectoral collaboration to address zoonotic diseases and other health threats at the human–animal–environment interface.¹⁴ Building on this foundation, the Regional Quadripartite One Health Coordination Mechanism and the Regional Quadripartite One Health Action Plan (2025–2027) were established to strengthen regional coordination, promote integrated surveillance, enhance data sharing, and support coordinated prevention and control of health threats across sectors.^{15 16} Recognizing the growing influence of environmental change on public health, the Region has also adopted the Regional Framework for Climate-Resilient and Environmentally Sustainable Health Systems (2023–2029), which promotes the integration of climate adaptation, environmental sustainability, and health system resilience through collaboration with sectors such as agriculture, water, energy, transport, and finance.¹⁷ Together, these regional frameworks provide a comprehensive foundation for implementing One Health across the EMR.

Regional networks have also played an important role in advancing One Health implementation. Organizations such as EMPHNET have strengthened collaboration among public health professionals through regional conferences, technical working groups, and workforce development initiatives.^{18 19} The first High-Level Quadripartite Regional Meeting on One Health, held in Muscat, Oman, in 2023, together with regional scientific conferences and national bridging workshops, provided opportunities for governments, academia, international organizations, and technical partners to exchange experiences and identify priorities for strengthening implementation across the Region.^{20 21}

At the national level, many countries have established multisectoral One Health platforms or institutional mechanisms to coordinate implementation. Countries including Jordan, Egypt, Iraq, Pakistan, Oman, Kuwait, Tunisia, Sudan, and the United Arab Emirates have developed national coordination mechanisms, legal frameworks, or operational plans that facilitate collaboration among ministries responsible for health, agriculture, environment, and wildlife. Although the structure and maturity of these platforms differ across countries, they provide an important foundation for integrated surveillance, preparedness, and coordinated responses to health threats.

2.2 PROGRESS ACHIEVED

One of the most significant achievements across the EMR has been the strengthening of collaborative surveillance and preparedness systems. Joint Risk Assessments (JRAs), integrated surveillance activities, and coordinated outbreak investigations are increasingly being implemented for priority zoonotic diseases. Jordan has strengthened multisectoral preparedness through Joint Risk Assessment training involving the Ministries of Health, Agriculture, and Environment, while Qatar has successfully applied the One Health approach to surveillance and investigation of Middle East respiratory syndrome coronavirus (MERS-CoV) and other zoonotic diseases.^{22 23} These initiatives have improved communication, information sharing, and coordinated decision-making between sectors.

Progress has also been made in strengthening the One Health workforce. Recognizing that effective implementation depends on multidisciplinary expertise, regional partners have invested in education and capacity building through Field Epidemiology Training Program (FETPs), simulation exercises, online learning platforms, and competency-based training. The Competencies for One Health Field Epidemiology (COHFE) framework, jointly developed by FAO, WHO, and WOAH, provides a standardized set of competencies to prepare professionals working across the human, animal, and environmental health sectors. These initiatives are helping countries develop the technical capacity needed to prevent, detect, and respond to emerging health threats.^{24 25}

Innovation is becoming an increasingly important component of One Health implementation. Digital surveillance tools and early warning systems are being introduced to improve disease reporting and strengthen national surveillance capacity. FAO's EMA-i mobile application has successfully enhanced real-time reporting of animal diseases in Iraq and is currently being piloted in Morocco and Tunisia for livestock and wildlife surveillance. These technologies improve the timeliness of disease detection while facilitating information sharing among sectors.²⁶

The application of One Health has also expanded beyond zoonotic diseases to address broader regional priorities. Climate change is increasingly being recognized as a driver of emerging health threats, prompting initiatives that strengthen climate-resilient health systems and promote

collaboration between the health, environmental, water, agriculture, and energy sectors.²⁷ Similarly, growing concern over antimicrobial resistance has reinforced the importance of coordinated action across the human, animal, food production, and environmental sectors. The Third Global High-Level Ministerial Conference on AMR, hosted in Muscat in 2023, further strengthened political commitment to implementing multisectoral strategies for antimicrobial stewardship.²⁸

Despite these advances, important implementation gaps remain. While many countries have established national One Health platforms and launched collaborative initiatives, translating policy commitments into sustainable action continues to be challenging. Limited financial resources, workforce shortages, fragmented surveillance systems, variable institutional capacity, and the effects of conflict and humanitarian emergencies continue to influence implementation across the Region. Addressing these challenges will require sustained investment in workforce development, innovation, operational research, integrated surveillance, and long-term multisectoral partnerships to ensure that One Health initiatives lead to measurable improvements in regional health security.

2.3 EMPHNET’S CONTRIBUTIONS TO ONE HEALTH IMPLEMENTATION

The Eastern Mediterranean Public Health Network (EMPHNET) has contributed to advancing One Health implementation across the Eastern Mediterranean Region by strengthening governance, enhancing surveillance systems, building workforce capacity, and supporting community-based approaches to disease prevention and control. Through collaboration with ministries of health, ministries of agriculture, academic institutions, and international partners, EMPHNET has supported the translation of One Health principles into practical interventions tailored to regional priorities. Its approach emphasizes multisectoral coordination, workforce development, evidence-informed decision-making, and community engagement to strengthen preparedness and response to emerging health threats.

One of EMPHNET’s major contributions has been strengthening integrated surveillance and laboratory capacity for zoonotic diseases. Through collaborative initiatives in Jordan, EMPHNET supported the establishment of enhanced laboratory-based surveillance for human and animal brucellosis in partnership with the Ministries of Health and Agriculture, the Royal Medical Services, and the U.S. Centers for Disease Control and Prevention (CDC). The project strengthened multisectoral collaboration, improved laboratory diagnosis and surveillance, developed standardized procedures for specimen management, and generated evidence on disease transmission to support national prevention and response strategies.

EMPHNET has also promoted integrated approaches to environmental health by incorporating water, sanitation, hygiene (WASH), and environmental surveillance into infectious disease prevention and control programs. In Yemen, the organization supported the integration of WASH interventions into rapid response team training to strengthen cholera preparedness and outbreak response, while in Afghanistan it enhanced environmental surveillance and WASH activities to support polio eradication through capacity building, coordination, and community engagement. These initiatives demonstrate the practical application of One Health by addressing environmental determinants of health alongside traditional public health interventions.

At the community level, EMPHNET has implemented One Health approaches that integrate surveillance, vector control, and community participation. In Yemen, it supported national efforts to eliminate onchocerciasis through mass drug administration, workforce training, vector breeding-site mapping, and monitoring activities. In Sudan, EMPHNET developed an integrated community-based model for mosquito-borne disease control that combines digital surveillance, geographic risk mapping, community volunteers, environmental management, and capacity building for local health authorities. These initiatives illustrate how community engagement, digital technologies, and multisectoral collaboration can strengthen prevention, early detection, and response to vector-borne diseases.

Beyond project implementation, EMPHNET has contributed to regional One Health governance through the development of operational guidance, workforce development initiatives, and technical collaboration. The organization has produced regional guidance on operationalizing One Health and climate–health integration, contributed to competency-based training and Field Epidemiology Training Programs (FETPs), strengthened communities of practice, and supported regional and international partnerships on antimicrobial resistance surveillance, One Health governance, and policy development. These efforts have helped strengthen institutional capacity, promote evidence-informed policymaking, and facilitate the operationalization of One Health across the Eastern Mediterranean Region.^{29 30}

13. <https://www.who.int/publications/i/item/9789240059139>
14. [One-Health-EMR-eng.pdf](#)
15. <https://rr-middleeast.woah.org/en/news/quadripartite-agencies-in-the-mena-region-celebrate-historic-one-health-milestone/>
16. [Regional leaders unite to strengthen One Health approach in historic agreement](#)
17. <https://www.emro.who.int/media/news/climate-change-health-and-environment-a-new-regional-framework-for-action-20232029.html>
18. [EMPHNET: One Health](#)
19. <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2025.1652846/full>
20. <https://www.emro.who.int/bahrain/news/one-health-national-bridging-workshop.html>
21. <https://www.emro.who.int/media/news/quadripartite-regional-meeting-to-accelerate-implementation-of-one-health-in-the-eastern-mediterranean-region.html>
22. <https://www.emro.who.int/pandemic-epidemic-diseases/news/jordan-combating-zoonotic-diseases-through-joint-risk-assessment-tool.html>
23. https://www.emro.who.int/images/stories/ihr/documents/a_new_one_health_framework_in_qatar_for_future_emerging_and_re-emerging_zoonotic_diseases_preparedness_and_response.pdf
24. [COHFE Framework](#)
25. https://www.who.int/news/item/31-10-2023-fao--who--and-woah-launch-new-online-course-on-joint-response-to-zoonotic-disease-outbreaks?_gl=1*5xg9ah*_ga*MTQ4OTg2NTA4MC4xNzYwNTA4OTMz*_ga_610FGB0GNK*czE3ODI0MDU3ODQkbzEyMyRnMSR0MTc4MjQwNjI0NSRqNDYkbDAkaDA
26. [FAO launches enhanced EMA-i: empowering real-time animal disease reporting](#)
27. <https://www.emro.who.int/media/news/climate-change-health-and-environment-a-new-regional-framework-for-action-20232029.html>
28. <https://www.who.int/news/item/25-11-2022-quadripartite-welcomes-new-political-commitments-in-fight-against-antimicrobial-resistance>
29. [one-health-profile.pdf](#)
30. [EMPHNET: One Health](#)



3. SYSTEMIC CHALLENGES TO OPERATIONALIZING ONE HEALTH IN THE EMR

3.1 LEADERSHIP AND GOVERNANCE ^{31 32 33 34}

The One Health approach relies on effective leadership and governance to facilitate coordinated action across the human, animal, and environmental sectors. According to the One Health High-Level Expert Panel (OHHLEP) Theory of Change, successful implementation depends on shared governance, joint responsibility and accountability, effective communication, collaboration, coordination, and adequate institutional capacity. These principles provide the foundation for implementing One Health at community, subnational, national, regional, and global levels, enabling stakeholders to jointly address complex health challenges and develop equitable, holistic solutions.

Within this framework, One Health leadership is characterized by an inclusive, participatory, and collaborative approach that promotes systems thinking and cross-sectoral engagement. Effective leadership is responsible for setting strategic priorities, fostering trust among stakeholders, mobilizing multisectoral collaboration, ensuring accountability and transparency, and creating an enabling environment for coordinated decision-making.

One Health governance encompasses the legal, institutional, and policy frameworks that support collaboration across sectors by defining roles, responsibilities, coordination mechanisms, and accountability arrangements necessary for sustainable implementation.

Despite increasing recognition of the importance of leadership and governance, several challenges continue to impede effective implementation across the EMR. Although most countries have established multisectoral coordination mechanisms and national One Health platforms, important governance challenges continue to limit their effectiveness. Organizational structures and available resources remain insufficient in many countries to support the prevention, early detection, and containment of One Health threats.

One of the main challenges is the fragmented nature of multisectoral coordination. While coordination mechanisms are present in most countries, collaboration among the human health, animal health, and environmental sectors is often inconsistent and not fully institutionalized. Differences in sectoral priorities, communication processes, and ways of working can limit information sharing and joint planning, making it difficult to implement One Health activities in a coordinated and sustainable manner.

Another important challenge is the lack of clear governance arrangements to support collaboration across sectors. In many countries, policies are not well aligned, legal and regulatory frameworks remain incomplete, and the roles and responsibilities of institutions involved in One Health are not always clearly defined. As a result, coordination mechanisms often have limited authority to oversee multisectoral activities, reducing their ability to support integrated surveillance, routine joint risk assessments, and coordinated decision-making.

Limited institutional capacity and resource constraints further affect the implementation of One Health across the region. Many countries continue to face shortages of financial resources, trained personnel, and technical infrastructure, while institutional capacity varies considerably across the EMR. In addition, the absence of integrated data-sharing systems limits timely exchange of information between sectors and weakens evidence-based decision-making.

Sustaining political commitment also remains a challenge. Political instability, changing national priorities, and dependence on externally funded projects can affect the continuity of One Health programs and coordination mechanisms. Many donor-supported initiatives have proven difficult to sustain once external funding ends, highlighting the need for nationally led approaches supported by long-term financing. Strengthening political commitment, improving advocacy, and expanding collaboration with academic institutions, healthcare organizations, the private sector, and local communities can help mobilize additional resources and support the long-term implementation of One Health.

We can clearly realize that governance challenges vary across the region. In relatively well-resourced settings, the main governance challenge is often coordination across separate sectoral systems, whereas in fragile or humanitarian settings it may be the absence of minimum functional coordination, that could maintain joint reporting, and ensuring that emergency response mechanisms include animal, environmental, and community health actors.

Addressing these governance challenges will require stronger institutional arrangements, clearer governance and policy frameworks, improved multisectoral coordination, and sustainable investment in national One Health systems. Strengthening collaboration across sectors and supporting nationally owned approaches that could be tailored to fragile or conflict settings. Aligning all with the One Health Joint Plan of Action (2022–2026) will be essential for embedding One Health within national health security and development agendas across the EMR.

31. <https://www.sciencedirect.com/science/article/pii/S235277142500093X>

32. <https://emphnet.net/media/mvmhm0ou/one-health-in-action-navigating-challenges-and-opportunities-in-the-eastern-mediterranean.pdf>

33. <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2025.1652846/full#ref4%20ref5%20ref6%20ref7>

34. <https://cdn.who.int/media/docs/default-source/one-health/ohhlep/ohhlep--one-health-theory-of-chance.pdf>

3.2 WORKFORCE DEVELOPMENT ^{35 36 37 38 39}

The EMR continues to face significant challenges in developing and sustaining a competent One Health workforce capable of responding to complex and emerging health threats. Limited availability of multidisciplinary training program, insufficient integration of One Health principles into pre-service and postgraduate education, and inadequate retention strategies contribute to workforce shortages across the human, animal, and environmental health sectors. In addition, workforce development initiatives are often not informed by risk assessments, resulting in shortages in critical specialties required for effective preparedness and response to public health emergencies. The limited inclusion of environmental and social sciences within existing curricula further constrains the capacity of the workforce to address interconnected health challenges, including antimicrobial resistance (AMR), environmental degradation, and water, sanitation and hygiene (WASH) issues.

Workforce capacity is further affected by fragmented policies, professional segregation, and uneven distribution of skilled personnel across countries and levels of the health system. Although rapid response teams (RRTs) have been established throughout the Region, their capacities vary considerably, and many are not multidisciplinary. Several countries have established joint RRTs that include experts from both the human and animal health sectors, while others have strengthened multisectoral collaboration during the investigation and response to zoonotic disease outbreaks. However, expanding these multidisciplinary approaches across the Region remains essential to support effective One Health implementation.

Financial constraints, weak health systems, and limited intersectoral coordination continue to hinder workforce development efforts. These challenges reduce the availability of qualified personnel for surveillance, monitoring, outbreak response, and implementation of regulatory measures, particularly in addressing AMR and other emerging public health threats.

To strengthen workforce capacity, it is crucial to expand multidisciplinary education and training programs, integrate One Health competencies into professional curricula, and enhance collaboration across the human, animal, environmental, and social science sectors. The Field Epidemiology Training Program (FETP) provides a competency-based platform for strengthening the skills of health professionals and promoting multidisciplinary collaboration in emergency preparedness and response. By incorporating FETP and other competency-based training programs into national workforce development strategies, countries can address existing training gaps and improve their capacity to prevent, detect, and respond to health threats. In addition, promoting teamwork, improving gender balance, engaging younger professionals, and establishing career development and retention mechanisms are essential to building a sustainable and resilient One Health workforce across the Region.

35. <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2025.1656182/full#sec2>
36. <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2025.1652846/full>
37. <https://www.cureus.com/articles/248262#!/>
38. <https://applications.emro.who.int/docs/One-Health-EMR-eng.pdf>
39. <https://www.sciencedirect.com/science/article/pii/S235277142500093X>

3.3 SURVEILLANCE INTEGRATION AND COORDINATION ^{40 41 42 43 44 45}

Surveillance is a fundamental component of the One Health approach, enabling the early detection, monitoring, and control of health threats at the human–animal–environment interface. Unlike conventional surveillance systems that primarily focus on human disease, One Health surveillance integrates data from human, animal, wildlife, environmental, and vector surveillance to provide a comprehensive understanding of disease transmission and emergence. This integrated approach also incorporates monitoring of the ecological and environmental drivers of disease, such as climate change, biodiversity loss, land-use change, and ecosystem degradation, allowing for earlier detection of emerging threats and more effective prevention strategies.

Despite increasing recognition of its importance, surveillance systems in the Eastern Mediterranean Region (EMR) remain fragmented. Human, animal, and environmental health sectors often operate independently through disease-specific surveillance programs with separate reporting systems, governance structures, and databases. This fragmentation limits interoperability, delays information exchange, and weakens joint risk assessment and coordinated responses to zoonotic disease outbreaks. Many surveillance programs continue to rely on external donor funding, further challenging their long-term sustainability and integration within national health systems.

While surveillance of human infectious diseases is relatively well established in many countries, wildlife surveillance, vector monitoring, environmental surveillance, and ecosystem health assessments remain underdeveloped. This limits the ability to identify spillover risks and monitor the environmental conditions that facilitate disease emergence. Similarly, surveillance for zoonotic diseases and neglected tropical diseases (NTDs), including rabies, leishmaniasis, dengue, Crimean-Congo haemorrhagic fever, Rift Valley fever, and Middle East respiratory syndrome (MERS), is frequently conducted through vertical programs with limited collaboration between public health, veterinary, and environmental authorities.

Several operational challenges further constrain surveillance capacity across the region. Humanitarian emergencies, conflict, population displacement, weak laboratory infrastructure, limited diagnostic capacity, shortages of trained personnel, and inadequate digital health systems reduce the effectiveness of surveillance and delay outbreak detection and response. Although advances such as genomic surveillance, wastewater surveillance, and digital epidemiology have improved early warning globally, their implementation remains uneven across the EMR because of differences in technical capacity and available resources.

Evidence also suggests that surveillance capacity varies considerably across the region. A bibliometric analysis of public health surveillance in the EMR found increasing research productivity over the past decade but identified substantial disparities between countries in surveillance research, collaboration, and institutional capacity. The literature has largely focused on infectious diseases, particularly COVID-19, while relatively limited attention has been given to integrated One Health surveillance, environmental surveillance, and surveillance of neglected tropical diseases, highlighting important gaps for future research and investment.

Recognizing these challenges, WHO and its partners have prioritized the development of integrated surveillance systems through the One Health Joint Plan of Action and the WHO Regional Strategy for Integrated Disease Surveillance. These initiatives promote interoperable electronic reporting systems, standardized data-sharing mechanisms, strengthened laboratory networks, and multisectoral governance to improve preparedness and response. Sustained investment in surveillance infrastructure, workforce capacity, and collaboration between the human, animal, and environmental sectors will be essential to operationalize One Health and strengthen health security across the EMR.

3.4 RESEARCH AND INNOVATION

Research and innovation are essential to strengthen One Health implementation across the EMR, particularly for countries facing diverse and evolving related risks. However, operational research remains uneven in many countries across the region. Research agendas are often fragmented across sectors, with insufficient collaboration among public health, veterinary, environmental, academic, and technological institutions. Added the limited capacity to analyze and translate evidence into policy and practice.

Innovation gaps are also evident in the uneven adoption of digital surveillance tools, rapid diagnostics, genomic sequencing, climate-informed early warning systems, artificial intelligence, and data analytics. While several countries have begun introducing digital reporting platforms and mobile surveillance tools, these innovations are not consistently integrated or adopting One Health approach. Limited infrastructure, financing, interoperability, and skilled personnel constrain their use, particularly in fragile and conflict-affected settings where early detection and timely response are most urgent.

3.5 FINANCING AND SUSTAINABILITY 46 47 48 49 50 51 52 53 54

Sustainable financing remains one of the greatest challenges to the effective implementation and long-term institutionalization of the One Health approach across the Eastern Mediterranean Region (EMR). Although many countries have established national One Health coordination mechanisms and strategic plans, implementation continues to rely heavily on short-term external funding from international partners rather than sustained domestic investment. This dependence on donor-supported projects weakens national ownership, limits continuity, and often results in fragmented interventions that are difficult to sustain once external funding ends. Political instability, competing national priorities, and the absence of dedicated budget allocations further constrain governments' ability to invest in essential components of One Health, including integrated surveillance systems, laboratory infrastructure, workforce development, research, and multisectoral coordination. Consequently, strengthening sustainable financing has become a critical prerequisite for translating national One Health strategies into long-term operational programs.

Addressing these challenges requires a shift from traditional project-based funding toward integrated program-based financing. While individual projects are often easier to manage and may respond quickly to specific priorities, they are frequently donor-driven and can contribute to fragmented implementation across sectors. In contrast, program-based approaches provide a more coordinated framework that aligns investments with national policies, promotes collaboration across the human, animal, and environmental health sectors, and supports longer-term health system strengthening. Such an approach also facilitates integrated planning and budgeting, enabling governments to pool resources across sectors rather than maintaining separate financing streams for individual ministries or programs.

Strategic prioritization is equally important for ensuring that limited financial resources are invested where they will have the greatest impact. National capacity assessments and priority-setting frameworks, including the Joint External Evaluation (JEE), the State Party Self-Assessment Annual Reporting (SPAR), and the Performance of Veterinary Services (PVS) pathway, Pathway, provide evidence to identify critical capacity gaps and priority areas, thereby informing national One Health

investment decisions. Linking these assessments to national budget planning enables governments to allocate resources more efficiently while ensuring that financing reflects country-specific priorities rather than external funding agendas. Integrated budgets and pooled financing mechanisms further strengthen cross-sectoral collaboration by supporting joint action instead of isolated interventions.

Beyond strengthening domestic investment, leveraging international financing is essential for expanding One Health implementation. Developing evidence-based investment cases enables countries to demonstrate priority needs and attract external resources while maintaining national ownership of decision-making. The Bangladesh case illustrates how systematic prioritization can be used to identify priority investment areas, profile international funding opportunities, and align national One Health priorities with available financing mechanisms. This approach improves the efficient use of limited resources while strengthening preparedness, collaborative surveillance, and multisectoral coordination.

Innovative financing mechanisms, particularly the Pandemic Fund, provide important opportunities to support sustainable One Health implementation. Rather than replacing domestic financing, these mechanisms are designed to leverage additional investment by combining national commitments, domestic budget allocations, in-kind contributions, grants, concessional loans, and matched co-financing arrangements. This model places governments at the center of financing decisions., encouraging national leadership while mobilizing international support for pandemic preparedness and health system resilience. Aligning domestic investments with international financing opportunities can strengthen the implementation of the One Health Joint Plan of Action and improve countries' capacity to prevent, detect, and respond to zoonotic, foodborne, and environmentally driven health threats.

Ultimately, achieving sustainable One Health implementation in the EMR requires financing models that extend beyond emergency preparedness and short-term projects. Long-term investment in surveillance systems, workforce development, governance structures, laboratory capacity, research, and multisectoral coordination should be embedded within routine national planning and budgeting processes. Diversifying funding sources, strengthening domestic investment, integrating budgets across sectors, and leveraging international financing mechanisms will be essential for ensuring that One Health initiatives remain sustainable and capable of addressing the region's evolving health challenges.

The analysis identified several recurring implementation gaps across the Eastern Mediterranean Region that limit the effective operationalization of the One Health approach. Table 1 summarizes the principal challenges identified in this review and the corresponding strategic priorities proposed to address them.

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Domain	Key Gaps Identified	Strategic priorities
Leadership and Governance	Weak governance arrangements; fragmented multisectoral coordination; unclear institutional roles; inconsistent political commitment	fragmented multisectoral coordination; unclear institutional roles; inconsistent political commitment Institutionalize national One Health coordination mechanisms; strengthen legal and policy frameworks; improve accountability and political commitment
Workforce Development	Limited multidisciplinary training; workforce shortages; inadequate integration of One Health into academic curricula; weak retention strategies	Expand competency-based education and FETPs; integrate One Health into professional curricula; strengthen career development and multidisciplinary collaboration
Surveillance Integration	Fragmented surveillance systems; limited interoperability and data sharing; underdeveloped environmental and wildlife surveillance; variable laboratory capacity	Develop integrated surveillance systems; strengthen laboratory networks; improve electronic reporting, genomic surveillance, and joint risk assessments
Research and Innovation	Limited operational research; uneven adoption of digital technologies; insufficient evidence to inform policy	Invest in operational research, digital health technologies, artificial intelligence, and regional innovation to strengthen preparedness and decision-making
Financing and Sustainability	Dependence on short-term donor funding; limited domestic investment; lack of dedicated budgets; fragmented financing mechanisms	Increase domestic financing; adopt program-based budgeting; leverage international financing mechanisms; align investments with national priorities

Table 1. Summary of Identified Gap and Strategic priorities.





4. STRATEGIC PRIORITIES AND RECOMMENDATIONS FOR THE EMR

Despite growing commitment to One Health across the Eastern Mediterranean Region (EMR), significant gaps remain in translating policy into sustained implementation. Building on the challenges identified in this report, six strategic priorities are recommended to strengthen One Health operationalization across the Region.

STRENGTHENING GOVERNANCE AND MULTISECTORAL COORDINATION



Countries should institutionalize national One Health coordination mechanisms with clear mandates, legal frameworks, and defined roles for the human, animal, and environmental sectors. Strengthening political commitment, improving accountability, and integrating One Health into national health security and development plans will support sustainable implementation.

INVEST IN A MULTIDISCIPLINARY ONE HEALTH WORKFORCE



Expanding competency-based education and training is essential to develop professionals capable of working across sectors. Countries should strengthen interdisciplinary curricula, Field Epidemiology Training Programs (FETPs), joint simulation exercises, and career development pathways while promoting collaboration among public health, veterinary, environmental, and social science professionals. Strengthening research capacity through academic partnerships, operational research, and regional knowledge-sharing networks will further support evidence-informed decision-making and workforce development.

STRENGTHEN INTEGRATED SURVEILLANCE AND EARLY WARNING SYSTEMS



The Region should prioritize interoperable surveillance systems that integrate human, animal, environmental, and climate data. Strengthening laboratory networks, genomic surveillance, digital reporting systems, and joint risk assessments will improve early detection of zoonotic and other emerging health threats.

PROMOTE RESEARCH, INNOVATION, AND REGIONAL CAPACITY



Operational research should focus on regional priorities such as zoonotic diseases, antimicrobial resistance, food safety, and climate-sensitive health risks. Investment in digital technologies, artificial intelligence, rapid diagnostics, and regional manufacturing of diagnostics and vaccines will improve preparedness and reduce dependence on external supply chains.

SECURE SUSTAINABLE FINANCING



Countries should move from short-term project funding toward integrated program-based financing supported by domestic investment and strategic use of international financing mechanisms. National priority-setting tools, including JEE, SPAR, and PVS assessments, should guide resource allocation and strengthen long-term sustainability.

STRENGTHEN PARTNERSHIPS AND COMMUNITY ENGAGEMENT



Effective One Health implementation requires collaboration beyond government institutions. Engaging academia, civil society, the private sector, communities, and regional organizations will strengthen surveillance, improve public awareness, support innovation, and promote coordinated action across the Region.

Implementing these strategic priorities will strengthen regional preparedness for emerging health threats while improving collaboration across sectors. Sustained investment in governance, workforce development, surveillance, innovation, financing, and partnerships will be essential for translating One Health commitments into measurable improvements in health security across the Eastern Mediterranean Region.

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Their insights on governance, workforce development, innovation, financing, surveillance, and multisectoral action informed this report and contributed to the broader effort to advance One Health implementation across the Eastern Mediterranean Region.

5. CONCLUSION

The Eastern Mediterranean Region faces an increasingly complex public health landscape shaped by the convergence of zoonotic diseases, antimicrobial resistance, food safety risks, climate change, and humanitarian emergencies. These interconnected challenges transcend traditional sectoral boundaries and highlight the need for integrated approaches that recognize the close links between human, animal, and environmental health. As demonstrated throughout this report, significant progress has been made in advancing the One Health agenda through regional frameworks, national coordination mechanisms, workforce development initiatives, and collaborative surveillance. However, implementation remains uneven across the Region, and substantial gaps persist in governance, workforce capacity, surveillance integration, financing, and multi-sectoral coordination.

Strengthening One Health implementation requires moving beyond policy commitments toward sustained operational action. This will depend on strong political leadership, institutionalized multisectoral collaboration, investment in a competent One Health workforce, integrated surveillance systems, sustainable financing, and continued research and innovation. Equally important is fostering partnerships among governments, academia, international organizations, the private sector, and communities to ensure that One Health approaches are both nationally owned and locally responsive.

As countries across the EMR continue to strengthen health security and build resilient health systems, the One Health approach provides a practical framework for preventing, detecting, and responding to current and emerging health threats. Sustained commitment to implementing the strategic priorities outlined in this report will not only enhance preparedness for future pandemics and outbreaks but also contribute to healthier populations, resilient ecosystems, and sustainable development throughout the Eastern Mediterranean Region.



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GHD|EMPHNET: Working Together for Better Health

The Eastern Mediterranean Public Health Network (EMPHNET) is a regional network that focuses on strengthening public health systems in the Eastern Mediterranean Region (EMR) and beyond. EMPHNET works in partnership with ministries of health, non-government organizations, international agencies, private sector, and relevant institutions from the region and the globe to promote public health and applied epidemiology. To advance the work of EMPHNET, Global Health Development (GHD) was initiated to build coordination mechanisms with partners and collaborators. Together, GHD|EMPHNET is dedicated to serving the region by supporting efforts to promote public health policies, strategic planning, sustainable financing, resource mobilization, public health programs, and other related areas.

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