



Advancing the implementation of One Health in the Eastern Mediterranean Region

Executive summary

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of humans, animals, plants and ecosystems. It recognizes that the health of humans, domestic and wild animals, plants and the wider environment are closely linked and interdependent. The approach mobilizes multiple sectors, disciplines and communities to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, sustainable development and taking action on climate change. It is a concept that continues to evolve as we learn more about the public health dimensions of the human–animal–environment interface. Key areas addressed by One Health include: control of emerging and re-emerging zoonotic diseases; control of endemic zoonotic, neglected tropical and vector-borne diseases; strengthening food safety; curbing antimicrobial resistance; and integrating environment progressively into the One Health agenda. Linking One Health capacities to health systems strengthening efforts should underlie each area of work.

The WHO Eastern Mediterranean Region is a diverse and complex region profoundly impacted by emergencies resulting from a wide range of hazards. Infectious diseases, particularly emerging zoonotic diseases, are a growing public health threat, and the ongoing COVID-19 pandemic is having a substantial impact on countries, which also face potential future threats, such as the developing monkeypox outbreak. In addition, neglected tropical and wildlife diseases, vector-borne diseases, antimicrobial resistance and illnesses related to water, sanitation, hygiene and food, continue to affect many of the Region's inhabitants, particularly the most vulnerable. The application of the One Health approach across the Region is therefore highly relevant.

This paper aims to guide Member States in the Region in adopting the One Health approach and accelerating its tailored implementation, informed by joint risk assessment and prioritization. It builds on the draft One Health Joint Plan of Action (2022–2026) developed by the recently-formed Quadripartite of the WHO, Food and Agriculture Organization of the United Nations (FAO), World Organization for Animal Health (WOAH, formerly known as OIE) and United Nations Environmental Programme (UNEP). The paper identifies a way forward in implementing the One Health approach in the Region, with a focus on zoonotic diseases, antimicrobial resistance and food safety as the priority One Health threats. One Health global and regional initiatives, national capacities, and gaps and challenges are examined, examples from countries are presented, and the work of the Quadripartite in providing strong leadership for One Health collaboration is described. Finally, a regional operational framework to advance the One Health approach is proposed for Member State endorsement, and its guiding principles, strategic objectives, actions for implementation at country level and expected deliverable are set out. Proposed terms of reference for a regional Quadripartite coordination mechanism to provide countries with coordinated support on One Health are also outlined.

Introduction

1. Human health is intrinsically linked to the health of animals and to our shared environment. The One Health approach recognizes that the health of humans, animals and the environment and ecosystem are interrelated, and recommends practices that support a unified and multidisciplinary approach, involving coordination of these sectors to address One Health threats in a more effective, efficient and sustainable way than would be achieved if the relevant sectors were not collaboratively engaged (1–3).
2. Health threats at the human–animal–environment interface and their associated adverse effects have increased in the last decades. These threats include the spread of zoonotic, vector-borne and neglected tropical diseases (NTDs); food insecurity and food and water safety; antimicrobial resistance (AMR); and environmental health risks. Travel and migration, globalization, urbanization, expanded and evolving agricultural practices, conflict and forced displacement, and inadequate public health infrastructure are all related risk factors. Climate change is leading to deaths and illnesses from increasingly frequent extreme weather events, the disruption of food systems and increases in the incidence of zoonoses and of food-, water- and vector-borne diseases. Climate change also leads to the disruption of the harmonious balance between interacting species, the alteration or destruction of habitat and biodiversity loss. The loss of biodiversity and habitats in the global food system poses a threat to the availability of and access to healthy diets (4). These health risks are disproportionately felt by the most vulnerable and disadvantaged, including women, children, ethnic minorities, poor communities, migrants or displaced persons, older populations and those with underlying health conditions. Those living in fragile, conflict-affected and vulnerable settings – which are common in the Eastern Mediterranean Region – face particular risks.
3. Growing evidence suggest that the ongoing COVID-19 pandemic emerged from a wet market, representing a devastating spillover event from animal to humans. The pandemic’s dramatic global health impact and unprecedented social, economic and political disruption are well documented. It is estimated to have resulted in 14.9 million deaths and cost the world economy US\$ 12 trillion. Despite the collective progress made in the response to the pandemic, as of July 2022 it remained a Public Health Emergency of International Concern (PHEIC), following the advice of the International Health Regulations Emergency Committee. The ongoing monkeypox outbreak in multiple nonendemic countries is another example of the global risks posed by zoonotic disease and was declared a PHEIC on 23 July 2022.
4. WHO has declared that AMR is one of the top 10 global public health threats facing humanity. Antibiotics are becoming increasingly ineffective and antiviral drug resistance is an increasing concern in immunocompromised patient populations. The emergence of drug-resistant parasites poses one of the greatest threats to malaria control, resulting in increased malaria morbidity and mortality, and necessitating a change to alternative artemisinin-based combination therapies in the Region. The prevalence of drug-resistant fungal infections is increasing, and many fungal infections have existing treatability issues.
5. Unsafe food containing harmful bacteria, viruses, parasites or chemical substances causes more than 200 diseases, ranging from diarrhoea to cancers. Many foodborne diseases may lead to long-lasting disability and death. Urbanization, globalization and climate change are all factors known to impact food safety. Globally, 600 million cases of foodborne illnesses are reported every year. Foodborne diseases can quickly evolve into international emergencies due to the speed and range of product distribution.
6. These and other similar emerging and re-emerging health threats highlight the deep connections between health and the environment. A demonstrated need exists for increased cooperation to identify, prioritize and address health threats at the human–animal–environment interface. One Health offers a collaborative approach to reconciling scientific disciplines, policy-making and local knowledge by engaging relevant stakeholders to act together locally, nationally, regionally and globally to prevent, prepare for, detect, investigate and timely respond to One Health threats at their source.

7. The One Health concept has been evolving and its scope has been broadening; several global and regional initiatives have been established to promote and advance it. However, implementing One Health in practice is proving challenging and faces several obstacles. The aim of this paper is to guide Member States in the Eastern Mediterranean Region towards accelerating the implementation of the One Health approach, with a focus on zoonoses, AMR and food safety, by:

- raising awareness about One Health-related threats at the human–animal–environment interface;
- urging the mobilization of political support for establishing the necessary institutional arrangements to operationalize and institutionalize One Health at both national and regional levels; and
- presenting the regional operational One Health framework, which sets out clear strategic objectives and actions for implementation at the country level, for endorsement by Member States.

Situation analysis of One Health threats in the Eastern Mediterranean Region

8. The Region is susceptible to emergencies and risks due to multiple hazards. Nine countries and territories (that is, 41% of countries in the Region) are experiencing large-scale, protracted humanitarian crises, with approximately 102 million people requiring humanitarian assistance, representing 34% of the global humanitarian burden and 15% of the Region's total population (5). The Region continues to be the source of over 60% of the world's refugees, while 18.7 million of its inhabitants are internally displaced (5).

9. There are diverse One Health threats in the Region. Several global and regional initiatives have been put in place to address these threats separately, such as the global and regional road maps for NTDs (2012–2020 and 2021–2030), global and regional plans for vector control response (2017–2030), global and regional plans for combating AMR, strategic framework for prevention and control of emerging and epidemic-prone diseases in the WHO Eastern Mediterranean Region (2020–2024) and regional frameworks on food safety and on climate change. These initiatives and plans are mostly implemented through vertical programmes at the country level. While some progress has been made, achieving all global and regional targets has been challenging. Disease outbreaks of endemic zoonotic diseases (such as leishmaniasis), emerging zoonotic diseases (such as Middle East respiratory syndrome (MERS-CoV)), vector-borne diseases (such as dengue) and foodborne diseases (such as those caused by *Vibrio cholerae* and *Escherichia coli*) continue to occur. Bloodstream infections caused by resistant pathogens (such as methicillin-resistant *Staphylococcus aureus* and *Klebsiella pneumoniae*), show an increasing trend overtime.

10. A paradigm shift is needed to implement these plans in an integrated, cohesive and collaborative manner using the One Health approach to drive the implementation process and achieve the various strategic objectives and targets. The priority One Health areas are zoonoses, AMR and food safety. The identification of threats within these areas and their expansion to include others should be informed by risk assessment. The following subsections provide a summary of the current situation and main challenges related to One Health threats by area.

Zoonotic diseases

11. Zoonotic diseases constitute around 60% of existing human infectious diseases, and 75% of emerging infectious diseases have an animal origin, including Ebola virus disease, HIV, and avian and other zoonotic influenzas. Endemic zoonotic diseases such as anthrax and brucellosis continue to cause illness and death in humans and animals, causing economic losses in some countries. The risk of disease emergence and amplification increases with the escalation of human activities intruding into natural habitats, which enables pathogens in wildlife reservoirs to spill over to livestock and humans (6). The emergence of MERS-CoV exemplifies the risks that the Region is facing from emerging infectious zoonoses. The COVID-19 pandemic has its origin in the emergence of the SARS-CoV-2 virus from what is currently believed to be bats, possibly transmitted through an intermediate host. The monkeypox outbreak is another example. The virus was initially isolated from monkeys, but the primary animal

reservoir remains unknown. Human-to-human transmission occurs by close contact with lesions, bodily fluids, respiratory droplets and contaminated materials. Uncertainty remains regarding how virus circulation is maintained in nature.

12. WHO has classified a subgroup of 20 NTDs¹ that threaten the health and livelihoods of more than a billion humans (7). Many NTDs are vector-borne diseases² and/or are classified as zoonoses, have animal reservoirs and are associated with complex life cycles. Dengue and chikungunya are NTDs and major contributors to the human vector-borne diseases burden and impede economic growth. The primary vector for these diseases and for yellow fever and Zika virus disease is the mosquito (*Aedes aegypti*). The vector has expanded and is currently established in eight countries in the Region (Afghanistan, Djibouti, Egypt, Oman, Pakistan, Somalia, Sudan and Yemen). In 2020, *Aedes aegypti* was detected in several sites in the south-east of the Islamic Republic of Iran. Rabies and leishmaniasis are other NTDs that are endemic in some countries in the Region and have always been of great health and economic concern. Other priority vector-borne zoonotic diseases for the Region are Crimean-Congo haemorrhagic fever (CCHF), Rift Valley fever (RVF) and West Nile virus (8) (see Table 1).

13. The implementation of the One Health approach is especially important for preventing and managing zoonoses. Understanding objectives from a whole-system perspective is important for identifying common ground for different sectors to collaborate and implement effective, locally adapted and sustainable interventions.

Table 1. Severity and status of selected zoonoses

Pathogen/ Disease	Severity	Status in the Region
COVID-19	Continues to be a PHEIC. The epidemiology of SARS-CoV-2 virus infection remains unpredictable as the virus continues to evolve, through sustained transmission in the human population and in domestic, farmed and wild animals in which the virus has been newly introduced.	As of 22 August 2022, the COVID-19 pandemic has resulted in more than 22 million cases and 347 000 deaths in the Region. Globally, excess deaths have been estimated at 14.9 million, and 90% of health care system services have experienced some level of disruption (9).
Monkeypox	Declared a PHEIC. Global and regional risk is moderate. First time that numerous monkeypox cases and clusters have been reported concurrently in non-endemic and endemic countries in widely disparate geographical areas.	As of 26 August 2022, a cumulative total of laboratory-confirmed cases is 38 cases reported from seven countries in the Region (Lebanon, the Islamic Republic of Iran, Morocco, Qatar, Saudi Arabia, Sudan and the United Arab Emirates). No deaths reported (10).
MERS-CoV	Continues to be a notifiable disease under the International Health Regulations (2005) (IHR) as it poses a threat to global health security.	Between 2012 and May 2022, the total number of laboratory-confirmed MERS-CoV infection cases reported to WHO globally was 2591, including 894 associated deaths. More than 90% of the reported cases have occurred in countries in the Arabian Peninsula. Outbreaks of MERS-CoV have occurred in Bahrain, Egypt, the Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Tunisia, United Arab Emirates and Yemen (11).
Dengue	Dengue has been a growing threat for decades. It can be lethal and kills up to 20% of those with severe disease. An estimated 40% of the world is at risk of dengue fever, and there are around 390 million infections each year.	Outbreaks of dengue have been documented in Djibouti (2012), Egypt (2015), Oman (2014, 2018), Pakistan (2012–2019), Sudan (2012–2017) and Yemen (2012, 2016–2019) (8).

¹The diseases defined by WHO as NTDs are: Buruli ulcer; Chagas disease; dengue and chikungunya; dracunculiasis; echinococcosis; foodborne trematodiasis; human African trypanosomiasis; leishmaniasis; leprosy; lymphatic filariasis; mycetoma, chromoblastomycosis and other deep mycoses; onchocerciasis; rabies; scabies and other ectoparasitoses; schistosomiasis; soil-transmitted helminthiasis; snakebite envenoming; taeniasis and cysticercosis; trachoma; and yaws.

²Vector-borne diseases include viral diseases such as dengue, chikungunya, Zika virus disease, yellow fever, West Nile fever, Japanese encephalitis, tick-borne encephalitis, sandfly (*Phlebotomus*) fever and Crimean-Congo haemorrhagic fever; bacterial diseases such as plague, typhus, louse-borne relapsing fever, Lyme disease, relapsing fever (borreliosis), rickettsial diseases and tularaemia; and parasitic diseases such as lymphatic filariasis, malaria, schistosomiasis, onchocerciasis, leishmaniasis, Chagas disease and human African trypanosomiasis (sleeping sickness).

Pathogen/ Disease	Severity	Status in the Region
Chikungunya	The disease shares some clinical signs with dengue and Zika virus disease and can be misdiagnosed in areas where they are common. Consequently, there is no real estimate for the number of people affected by the disease.	Outbreaks of chikungunya have been reported in Pakistan (2016–2018), Somalia (2016), Sudan (2018) and Yemen (2010–2011) (8).
RVF	Severe threat to human, animal and livestock health. Places a high burden on the economy and on food security.	Sporadic cases reported in countries in Africa and the Arabian Peninsula. Outbreaks have been reported in Egypt (1997), Saudi Arabia, Yemen (2000–2001) and Sudan (2019). RVF seropositive animal cases have been detected in Libya for the first time in sheep and goats, with insufficient evidence to support RVF clinical cases among the confirmed seropositive animal cases (12).
CCHF	Constitutes a major threat to public health because of its epidemic potential and high case fatality rate. Places a high burden on the economy and food security	Widespread in the Region. Sporadic human cases and outbreaks of CCHF have been reported in nine countries: Afghanistan, Iran (the Islamic Republic of), Iraq, Kuwait, Oman, Pakistan, Saudi Arabia, Sudan and the United Arab Emirates.
West Nile virus	Regularly circulates in the Mediterranean basin.	Human outbreaks recorded in Tunisia in 1997, 2003, 2012 and 2018, which caused cases of encephalitis and deaths; the virus is also endemic in horse populations in Morocco.
Zika virus disease	Zika infection with clusters of microcephaly and other neurological disorders were declared a PHEIC in 2016. An increased risk of neurologic complications is associated with Zika virus infection in adults and children, including Guillain-Barré syndrome, neuropathy and myelitis.	No human cases of Zika virus disease have yet been reported from any country in the Region. However, the risk is high due to the presence of a competent vector.
Yellow fever	The virus is endemic in tropical areas of Africa and Central and South America. A small proportion of patients who contract the virus develop severe symptoms and approximately half of those die within 7 to 10 days.	Outbreaks of yellow fever took place in Sudan in 2005, 2012 and 2013 (8).
Ebola virus disease	Ebola virus disease is a rare but severe, and often fatal, illness in humans. The average case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks.	Ebola was not reported from any country in the Region during the 2014–2016 outbreak in West Africa, although the risk was thought to be very high. Ebola outbreaks have previously been reported in parts of Sudan (after July 2011 in South Sudan) in 1976, 1979 and 2004 (13).
Rabies	Rabies is a significant public health problem in the majority of countries in the Region.	Bahrain, Kuwait, Qatar and the United Arab Emirates have been reported as being rabies-free but cases and deaths have been reported in the other countries of the Region.
Avian and other zoonotic influenzas	Influenza viruses, with the vast silent reservoir in aquatic birds, are impossible to eradicate. Zoonotic influenza infection in humans will continue to occur and the emergence of a different strain may cause an influenza pandemic.	H5N1 outbreaks have occurred in Djibouti, Egypt, Iraq and Pakistan, H9N2 in Egypt and H1N1 in all countries of the Region.
Brucellosis	Brucellosis is found globally and is a reportable disease in most countries. It is a widespread zoonotic disease with serious public health consequences. <i>Brucella melitensis</i> and <i>Brucella suis</i> are on the list of potential agents for biological warfare and bioterrorism.	Human brucellosis is endemic in most countries in the Region, with Iran (Islamic Republic of), Iraq, Saudi Arabia and the Syrian Arab Republic having the world's highest incidence rates. Outbreaks of brucellosis have also occurred in Lebanon and Morocco (14).
Leishmaniasis	The disease affects some of the poorest people and is associated with malnutrition, population displacement and poor housing. It is linked with environmental changes. More than 700 000 cases occur annually. The skin lesions of cutaneous leishmaniasis leave lifelong scars and serious disability or stigma.	Visceral leishmaniasis is the most serious form. It is highly endemic in Iraq, Somalia, Sudan and Yemen, with the latter three being among the top 10 countries that reported more than 90% of cases in 2020. Cutaneous leishmaniasis is the most common form. The Region accounts for 80% of cases worldwide, with Afghanistan, Iraq, Libya, Pakistan, the Syrian Arab Republic and Tunisia among the top 10 countries that reported more than 85% of cases in 2020 (15).
Anthrax	Anthrax continues to cause illness and death in humans and animals and to cause economic losses in some countries. <i>Bacillus anthracis</i> is high on the list of potential agents for biological warfare and bioterrorism.	Outbreaks of human anthrax have been reported in Afghanistan, Iran (Islamic Republic of), Iraq, Morocco, Pakistan and Sudan (16).

Antimicrobial resistance

14. AMR is a major global health concern, with 4.95 million human deaths being associated with bacterial AMR in 2019, including 1.27 million deaths attributable to bacterial AMR (17). In addition to death and disability, the cost of AMR to national economies and their health systems is significant as it affects the productivity of patients and their carers through prolonged hospital stays and necessitates more expensive and intensive care. The rise of AMR is due to many factors, including the misuse and overuse of antibiotics in human health, food animal production and agriculture, and poor management of waste from households, farms, factories and health care settings (18). The lack of regulation for appropriate antimicrobial use for all sectors is an additional challenge in the Region (19).

15. The Eastern Mediterranean Region has a high burden of AMR, as shown by the data reported to the WHO AMR Global Antimicrobial Resistance Surveillance System (GLASS) in 2019. The median percentage of patients with bloodstream infections caused by carbapenem-resistant *Acinetobacter* spp. was highest at 70.3%, where these infections have become resistant to nearly all available antimicrobial drugs, contributing to patient deaths and high case-fatality rates of more than 50%. Infection prevention and control programmes are essential to limit the spread of resistant pathogens in health care and antimicrobial stewardship programmes are needed to prevent the emergence of AMR. Both are evolving in the Region, with countries at various stages of progress. Only 40% of the countries in the Region have developed national infection prevention and control guidelines within the past 5 years, while just five countries in the Region enforce a prescription-only sale policy for antimicrobial drugs in pharmacies, and only two have adopted WHO Access, Watch, Reserve (AWaRe) classification in their national essential medicines lists to increase the use of the access group of antimicrobial drugs (first or second empirical choice) for common infections. Of the antimicrobial drugs prescribed across the Region, 34% are from the access group, 61% from the watch group and 5% from the reserve group (20).

16. All countries in the Region have developed national AMR action plans but the implementation of a multisectoral approach to AMR at the country level is still a challenge for many. Data from the fifth round of the Tripartite AMR country self-assessment survey shows that about 50% of countries in the Region do not have a functional AMR multisectoral working group and less than 60% are implementing their national action plans on AMR (21). Owing to its significant linkages with the health of humans, animals and the environment, AMR has been recognized as a One Health issue (19).

Food safety

17. Access to safe food and meeting the ever-increasing demand for food is becoming more challenging as the human population continues to grow. Moreover, the globalization of food supply chains precipitates conditions favouring the emergence, re-emergence and spread of foodborne pathogens. The primary concerns from a public health perspective are the risks resulting from microbial pathogens and chemical contaminants in food. There is also a vicious cycle of disease and malnutrition. Increased demand for food has strained natural resources, resulting in soil erosion, loss of biodiverse landscapes and pollution of the environment worldwide, presenting new challenges for food safety and security and sustainable food production. Unsafe food causes 600 million cases of foodborne disease and 420 000 deaths worldwide annually, accounting for 33 million healthy life years lost (22).

18. Globalization has made transboundary animal diseases (TADs)¹ a top concern for food safety and food security (23). TADs are highly contagious or transmissible animal diseases, some of which are zoonotic, that cause high morbidity and mortality in animals and humans, with the potential to spread rapidly across the globe and to cause substantial socioeconomic and public health consequences.

¹ TADs include: African horse sickness, African swine fever, avian influenza, bluetongue, classical swine fever, contagious bovine pleuropneumonia, foot and mouth disease, haemorrhagic septicaemia, lumpy skin disease, Middle East respiratory syndrome, Newcastle disease, peste des petits ruminants, Rift Valley fever, rinderpest, sheeppox and goatpox, swine vesicular disease and vesicular stomatitis.

Outbreaks of TADs are economically devastating for farmers and have a significant impact on the cost and availability of food (24).

19. In the Eastern Mediterranean Region, more than 100 million people fall ill from foodborne diseases every year – 32 million of those affected being children under 5 years of age – and about 40 000 of those affected die (22). Based on the estimates of the burden of foodborne diseases made by the Foodborne Disease Burden Epidemiology Reference Group (FERG), in 2015 diarrhoeal diseases were responsible for 70% of the burden in the Region, mainly resulting from *Escherichia coli*, *Campylobacter* and nontyphoidal *Salmonella*, all of which are broadly distributed in the food chain. In addition, chemicals such as pesticides, antibiotics and hormones are widely used to boost plant and animal production and reduce waste.

20. The One Health approach to food safety establishes a transformative farm-to-fork approach, proactively controlling food safety risks to reduce foodborne hazards that can enter the food chain at any point from production to consumption and achieving the global goals of sustainable food safety and security, improved health outcomes and alleviation of poverty. Intersectoral planning and collaboration for environmental health using the One Health approach are also critical to combat environmental destruction.

Economic and social impacts

21. The economic and social costs of zoonotic diseases, AMR and foodborne diseases are not fully understood. Several studies have found that these threats can have cross-sector economic impacts (see Table 2).

Table 2. Estimated economic and social losses related to One Health threats

One Health threats	Economic and social impact
Outbreaks of West Nile virus, severe acute respiratory syndrome, highly pathogenic avian influenza, bovine spongiform encephalitis and RVF in several countries	<ul style="list-style-type: none"> At least US\$ 80 billion between 1997 and 2009. The duration and intensity of outbreaks affect people's lives in different ways, including social disruption and hardship.
Ebola virus disease epidemic in West Africa	<ul style="list-style-type: none"> Projected economic losses of US\$ 32.6 billion in 2014–2016 (25), with the overall economic and social burden estimated at US\$ 53.19 billion. An estimated 17 300 children lost one or both parents from the outbreak. Education was also significantly impacted, with schools closed for approximately 33 weeks for an estimated 4.7 million school children. Moreover, 4.4% more people became severely food insecure, bringing the total number of people with severe food insecurity to 8% of the population (26).
COVID-19	<ul style="list-style-type: none"> Revenue losses in international sectors were US\$ 12 trillion in 2020–2021. Global GDP contracted by 3.4% in the same period. Unemployment reached 7.2% compared with 5.4% in 2019 and over 135 million people are expected to be pushed into poverty by 2030. Around 1.5 billion students dropped out of school, potentially exacerbating social instability. Domestic violence significantly increased in 2020–2021 in the form of physical, emotional and sexual abuse (27).
AMR	<ul style="list-style-type: none"> AMR will elevate the rate of poverty and impact low-income countries more severely than the rest of the world. Globally, increases in health care costs could range from US\$ 300 billion to more than US\$ 1 trillion per year by 2050 (28). By 2050, annual global GDP could fall by 1.1–3.8%, with low-income countries losing more every year leading up to 2050 and the loss exceeding 5% of GDP in 2050 in the latter scenario (of a 3.8% fall) (28). By 2050, the decline in global livestock production could range from a low of 2.6% to a high of 7.5% per year (28).
Foodborne diseases	<ul style="list-style-type: none"> Total productivity loss associated with foodborne disease in low- and middle-income countries is estimated at US\$ 95.2 billion per year and the annual cost of treating foodborne illnesses is estimated at US\$ 15 billion (29). They also strain health-care systems, contribute to productivity loss, and harm tourism and trade.

Global One Health initiatives and frameworks

22. The Operational Framework for Strengthening Human, Animal and Environmental Public Health Systems at their Interface was released by the World Bank in 2018 (30). The Framework provides background on the origin, rationale and added value of taking a multisectoral One Health approach, including a review of existing tools and processes.

23. The Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (WOAH, formerly known as OIE) and WHO, known collectively as the Tripartite, have been working together and providing strong leadership in advocating the One Health concept and promoting interagency and intersectoral collaboration to address health threats at the human–animal–environment interface. The Tripartite Zoonoses Guide was released in 2019; its key elements include multisectoral coordination, mapping of country context, planning and preparedness, investigation and response, surveillance and information-sharing, joint risk assessment, risk communication and community engagement, and workforce development (31).

24. During the 27th Tripartite Annual Executive Meeting held in February 2021, the three organizations called upon the United Nations Environment Programme (UNEP) to join the Tripartite, reaffirming the importance of the environmental dimension in the context of One Health collaboration (32). On 17 March 2022, the heads of the four organizations signed a memorandum of understanding for joint One Health work, by means of which UNEP joined the former Tripartite (FAO, WOAH and WHO) as an equal partner to form a new Quadripartite collaboration for One Health (33).

25. The Quadripartite (FAO, WOAH, WHO and UNEP) has recently developed a draft One Health Joint Plan of Action (2022–2026) (32) through consultations with Member States. The Joint Plan will be an overarching strategic document to promote and protect public health, animal health, food safety and security, and ecosystem health. The Joint Plan will be supported by an implementation plan and a resource mobilization plan, both of which are in development.

26. The Quadripartite has created a One Health High Level Expert Panel with the support of the Governments of France and Germany (34). The Panel has set up four working groups on: (1) One Health implementation; (2) inventory of current knowledge in the prevention of emerging zoonoses; (3) surveillance, early detection and rapid data sharing in the prevention of emerging zoonoses; (4) and factors causing spillover and subsequent spread of diseases. These four working groups have defined terms of reference to maximize the efficiency of their work. They meet regularly and report to the Panel on the progress made in their focus area, which informs strategic, technical and operational One Health guidance and interventions.

27. The Quadripartite developed a strategic framework for collaboration on antimicrobial resistance in 2022 to advance the One Health response to AMR at global, regional and country levels (35). The framework supports the implementation of the five pillars of the global action plan on AMR, as well as strengthening global AMR governance.

28. COVID-19 and many other emerging and re-emerging threats have increased the urgency of moving this agenda forward. Several WHO resolutions, culminating in resolution WHA 74.7 (36) of the Seventy-fourth World Health Assembly in 2021, have highlighted the urgent need to build on and strengthen the existing cooperation among the Tripartite (now Quadripartite) to develop options for consideration by their respective governing bodies. The second World Health Assembly Special Session in 2021 decided to establish an Intergovernmental Negotiating Body (INB) to draft and negotiate a WHO convention, agreement or other international instruments on strengthening pandemic prevention, preparedness and response (37). One Health is one of the areas potentially to be included under this instrument. The Seventy-fifth World Health Assembly in May 2022 further highlighted and reaffirmed the need for collaboration on One Health.

Table 3. Tripartite activities to establish and build One Health capacity

Activity	Aim or outcome	Tool(s) used	Countries/territories in the Region	Reference
Assessment of One Health-related capacities	Include development actions to meet the gaps in national action plans for health security	IHR assessment using SPAR and JEE tools	All countries/territories used SPAR and 19 conducted a JEE	(40)
Targeted One Health assessment	Include development actions to meet the gaps in national One Health plans and national action plans for health security	One Health assessment tool is under development	Jordan	—
Establishment of a structure for One Health, including the needed legal foundation	Facilitate the implementation of One Health	Technical guidance and expert opinion	Egypt, Jordan, Iraq, Qatar, Pakistan, Saudi Arabia, Sudan	—
Enhancement of multisectoral coordination	Operationalize multisectoral coordination for One Health	Tripartite Multisectoral Coordination Mechanisms Operational Tool	Afghanistan, Iraq, Somalia	—
Identification of strengths and weaknesses in the collaboration between animal and human health services	Joint roadmap of activities developed to improve collaboration between the two sectors and update national action plans for health security	IHR-PVS National Workshops Bridging tool	Jordan, Morocco, Pakistan	(41)
Conducting joint risk assessments of priority diseases	Joint roadmap of activities developed to improve One Health planning and implementation	Joint Risk Assessment Operational Tool	Afghanistan, Egypt, Jordan, Libya, Morocco, Pakistan, Qatar, Sudan, United Arab Emirates	(42)
Identifying a list of diseases of high concern at the human–animal–environment interface	Joint roadmap of activities developed to improve One Health planning and implementation for priority One Health threats	CDC tool for disease prioritization	Jordan and Sudan	(43)
Development of a system to facilitate timely information-sharing among sectors	Early detection of One Health threats and conducting risk assessment to inform mitigation measures	Applications are under development	Jordan, Sudan, Tunisia	—
Ensuring health threats at the human–animal–environment interface are managed by public health emergency operation centres	Risk assessment conducted jointly between relevant stakeholders for rapid and coordinated response	Electronic public health emergency risk management software and application for data management	Jordan, Sudan, Yemen and under development in Palestine, Lebanon, Qatar, Tunisia	—
Implementation of an IDS strategy	Rationalize and optimize use of the existing programme-related resources to benefit other priority diseases	Regional framework for IDS	—	—
Development of technical products to prevent and manage threats	Technical products	Quadripartite guidance and other technical documents	all countries	—
Development of a One Health curriculum for professionals	A standardized approach to introduce and build capacity of One Health workers through degree and non-degree educational programmes	A curriculum	Egypt, Jordan	(44)

Regional efforts to advance One Health implementation

29. Before the formation of the Quadripartite, several activities were conducted by the Tripartite to establish and build capacity for One Health in the Region (see Table 3). For example, an assessment of One Health-related capacities was conducted in 19 countries using the JEE tool, and development actions to meet the gaps were included in national action plans for health security (38,39). The implementation of these plans is ongoing. Joint risk assessments of priority One Health diseases (MERS-CoV, brucellosis, RVF, CCHF, avian influenza and rabies) using the Joint Risk Assessment Operational Tool

were supported in Egypt, Jordan, Libya, Morocco and Sudan. This was followed by developing national plans of actions to fill in the identified gaps in national capacities to prevent and manage these diseases. Identifying a list of priority diseases of high concern at the human–animal–environment interface using the CDC tool for disease prioritization was supported in Jordan and Sudan. In Jordan, rabies, brucellosis, MERS-CoV, leishmaniasis, avian influenza, rickettsiosis and salmonellosis were identified as priority diseases, while in Sudan, the identified priority diseases were MERS-CoV, brucellosis, RVF, CCHF, avian influenza, rabies, salmonellosis and hepatitis E.

30. The role of One Health was highlighted within the plan of action for ending the COVID-19 pandemic and preventing and controlling future health emergencies in the Region, which was endorsed by the 68th session of the Regional Committee in 2021. The plan addressed the importance of promoting and supporting specific research addressing knowledge gaps regarding One Health and zoonotic diseases and building the One Health approach at regional and national levels (45).

Current One Health capacities, gaps and challenges in the Eastern Mediterranean Region

Governance and leadership

31. There has been growing acceptance of the One Health concept and implementation of some of its elements in the Region in recent years. Some countries have sought to use a One Health approach to tackle emerging and re-emerging zoonoses. For example, highly pathogenic avian influenza A(H5N1) has been enzootic in Egypt since 2008 (46). From 2010, FAO, OIE (now WOA) and WHO supported the Government of Egypt to jointly launch a four-way linking task force to bring together the relevant sectors. This task force is now self-sustaining and has become the technical advisory body to the Government to ensure the availability of science-based information to inform decisions to reduce H5N1 risks as well as risks from other zoonotic influenza viruses (47). Another example is Pakistan, where the One Health concept has been promoted and substantial investments to establish a One Health network have been made since 2010. Further examples include the One Health strategy developed and implemented by Saudi Arabia that has succeeded in limiting the effects of outbreaks of RVF (48) and the One Health strategy implemented in Oman, Saudi Arabia and the United Arab Emirates that has largely succeeded in controlling MERS-CoV outbreaks. However, despite these efforts, the organizational structures and resources for the prevention, early detection and containment of One Health threats are still inadequate in most of the countries the Region.

Multisectoral coordination

32. Multisectoral coordination mechanisms exist in almost all countries but in a fragmented manner. For example, different multisectoral coordination mechanisms are in place for zoonotic diseases, AMR, food safety, climate change and specific diseases (such as influenza, MERS- CoV, COVID-19 and rabies), while other coordination mechanisms exist for emergency preparedness and response. These different coordination mechanisms achieve mixed results and have an inconsistent level of performance as reported in the Joint External Evaluation (JEE) reports (38). A One Health multisectoral coordination structure exists in six countries (Egypt, Jordan, Oman, Qatar, Saudi Arabia, Sudan and the United Arab Emirates). The establishment of these structures is supported by ministerial decrees with defined terms of reference, but most lack defined roles and responsibilities for each sector. Civil society, private sector and other non-health stakeholder engagement is still weak, with no specific activities or platforms to encourage their full participation.

Early warning system and information-sharing

33. Countries in the Region have established surveillance systems with varied capacity among countries and among the different sectors of human and animal health, agriculture and environment. Early warning functions for known and unknown events also exist in most countries. The overall JEE results had a mean

score of 3/5 (“developed capacity”) in event-based surveillance and electronic real-time reporting systems, and 2/5 (“limited capacity”) in surveillance of infections caused by drug-resistant pathogens.

34. Surveillance systems are fragmented in many countries across disease-specific programmes and the mechanisms for information-sharing among the different sectors are mostly based on individual efforts. This fragmentation leads to many problems such as inconsistencies, duplications and gaps in procedures, case definitions and data systems. Integrated surveillance using a single electronic platform to improve both the efficiency and effectiveness of the use of data to guide decisions, including for early detection of health threats, priority-setting, planning, resource allocation, and monitoring and evaluation, is yet to be implemented in countries of the Region (49).

Preparedness and response

35. There was an overall mean JEE score of 4/5 (“demonstrated capacity”) in laboratory testing for priority diseases and capacity to summon support from multiple sectors to respond to public health emergencies and send and receive medical countermeasures and personnel (39). There was an overall mean score of 3/5 (“developed capacity”) in real-time management of priority zoonotic disease, foodborne disease and food contamination. The COVID-19 pandemic has shown that such capacities may not be initially available when unknown diseases emerge. Furthermore, the identification of priority diseases was mostly not informed by any risk assessment process.

36. There was an overall mean JEE score of 2/5 (“limited capacity”) for laboratory quality system and for risk communication and community engagement (RCCE) (37). These limited capacities have been demonstrated in the response to COVID-19 and other public health emergencies.

Multidisciplinary workforce

37. There was an overall mean JEE score of 3/5 for workforce development and for addressing the uneven distribution of sufficiently skilled human resources at all levels of the health system. However, workforce development programmes are mostly not informed by risk assessment; for example, some workforce specialties (such as infectious diseases) that were critical in the response to COVID-19 had only a limited presence in some countries. Barely any countries of the Region include One Health in professional pre- or postgraduate education and training. There are limited human resources in the different One Health disciplines, which hinders progress in establishing and sustaining One Health in the Region.

38. Rapid response teams (RRTs) exist in all countries but with varied capacities and distribution. They are mainly not multidisciplinary. Joint RRTs, including experts from both human and animal health, have been established in Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, Sudan and the United Arab Emirates. Collaboration between RRTs in the animal and human sectors has taken place in the investigation of and response to zoonotic disease outbreaks in Egypt, the Islamic Republic of Iran, Jordan and Lebanon.

A regional framework to advance One Health

39. There are many benefits to be gained by advancing the implementation of One Health in countries. These include: opportunities for cooperation and collaboration among relevant sectors; combined use of infrastructure and skill sets to optimize the use of limited resources; systematic allocation of existing resources for IDS and mitigation programmes; improved understanding of the emergence and re-emergence of health problems at the human–animal–environment interface; and economic benefit through cost-effective programmes. The principles, strategic directions and objectives supporting the One Health approach will also have a direct or indirect impact on achieving the Sustainable Development Goals (SDGs) and their targets (50,51).

40. A five-year regional operational framework to advance the One Health approach is therefore proposed, presented in Annex 1 of this paper. The operational framework aligns with the strategic

directions of the One Health Joint Plan of Action (2022–2026). It was developed using the findings of several assessments and reviews that have taken place in countries of the Region, including the JEE. An early draft framework was discussed at an expert consultation conducted in early 2019. The draft was further discussed at a regional IHR stakeholders meeting in December 2019. The modified draft was then shared with One Health focal points in countries of the Region for feedback in 2020–2021 and benefited from the progress made in the conceptual development and understanding of One Health during the COVID-19 pandemic. Staff of the regional and subregional offices of WHO, FAO, OIE (now WOA) and UNEP were also consulted during the development process. The four organizations put together the terms of reference for a regional One Health coordination mechanism, presented in Annex 2 of this paper.

41. The guiding principles of the Framework recognize the importance of:

- **political commitment and national ownership** to establish and operationalize the One Health approach;
- a **supportive and enabling environment**, including legislation, budgetary allocation and endorsement, in which decision-makers responsible for different sectors establish consensus on the best ways to tackle health threats at the human–animal–environment interface;
- a **whole-of-society and whole-of-government approach** to ensure the active engagement of all concerned sectors at all levels in the planning, design and implementation of One Health-related programmes, including a strengthened workforce;
- a **community-centred approach** with improved risk communication to ensure communities are involved in all levels of discussion and implementation of One Health-related programmes and interventions;
- a **gender- and vulnerability-sensitive** approach to support gender equity and the empowerment of women and other vulnerable groups identified in each country, consistent with the 2030 SDG targets; and
- **partnerships** with and among the Quadripartite and other relevant international and civil society organizations to provide support and guidance, and a platform to share experiences and lessons learned from other countries.

42. The operational framework presented in Annex 1 is designed to guide the countries/territories of the Region in establishing the necessary institutional arrangements, strengthening core multidisciplinary capacities and implementing practical interventions to prevent, prepare for, detect and respond to current and future health threats and challenges at the human–animal–environment interface. In settings of fragility, conflict and violence, a further internal consultation will be needed to prioritize areas of work and rationalize resources to meet needs.

43. The strategic objectives of the framework are to:

- **Establish governance and leadership:** clear governance and leadership for sound policy-making and strategic planning is the foundation for implementing the One Health approach at all levels. National legislation needs to be reviewed and updated to create the needed legal foundation. Defining both an organizational structure with clear leadership and the roles and responsibilities of involved sectors will create a sustainable system to lead, govern and implement all One Health-related activities. Developing a national policy or strategy for establishing One Health linked to an operational plan that is integrated into national action plans for health security is key, as well as allocating the needed resources.
- **Foster multisectoral coordination:** identifying priority One Health threats and reviewing and updating existing coordination structures (for zoonoses, food safety, AMR, emergency preparedness and response, etc.) is needed to ensure all concerned sectors are engaged and technically aligned. Developing terms of reference for the coordination structure and for standard operating procedures, along with proposed chains of commands, is also necessary to ensure the coherent, multisectoral implementation of One Health activities.

- **Strengthen early warning and information-sharing systems:** indicator- and event-based surveillance systems with early warning functions are fundamental for the early detection of health threats. The implementation of IDS is central to rationalizing resources. Also needed is an established mechanism for real-time information-sharing among One Health sectors to share alerts and guide risk assessments. The evolution of events and emergencies needs to be monitored and the effectiveness of the response tracked. The importance of transparent data-sharing, data management and analytical capacities, including forecasting and modelling to both predict and guide the control of outbreaks, is becoming increasingly evident.
- **Enhance preparedness and response capacities:** strengthening IHR (2005) core capacities also facilitates the assessment and strengthening of One Health-related capacities. This includes enhancing screening and inspection capacities, including at countries' points of entry, diagnostic capacities, joint RRTs for investigation, infection prevention and control, vaccination programmes and response measures, and threat-specific preparedness and response plans and contingency plans. In countries where specific plans for sectors or technical areas exist, such as for influenza, MERS-CoV and AMR, these need to be reviewed and integrated, if possible, to ensure coherence in implementation. Capacities need to be regularly assessed and tested and national action plans for health security need to be regularly performed. The success of a One Health approach also relies on effective RCCE, which includes multifaced interventions for awareness-raising, fostering two-way communication and behaviour change. National RCCE plans should therefore integrate One Health elements.
- **Develop a skilled multidisciplinary workforce:** an adequate number of skilled and trained staff need to be made available for the execution of One Health-related activities at different administrative levels in countries. Technical skills need to be developed in surveillance, rapid response, testing, quarantine, infection prevention and control, case management and mass treatment, culling, and maintaining operational capacity through after-action reviews and simulation exercises. It is important to identify expertise for implementation of the One Health approach and to establish a roster of experts who can be rapidly deployed as surge support. Collaboration with academia needs to be strengthened to generate the required personnel in the different disciplines of One Health. Establishing short- and longer-term training programmes is also necessary to ensure the continuous capacity-building of existing personnel.

Way forward

44. To move forward, Member States are recommended to:

- conduct a One Health risk assessment to identify priority threats and establish a baseline of current capacities and gaps for One Health implementation. The risk assessment should be regularly updated to inform the prioritization of One Health threats;
- review the One Health regional operational framework presented in Annex 1 and develop a national One Health plan adapted to the national context and informed by the risk assessment;
- set a mechanism for the monitoring and evaluation of the national One Health plan using agreed multisectoral indicators to guide implementation and the needed course corrections. Key performance indicators are included in the regional operational framework and can be used or adapted for use at the national level; and
- advocate for One Health and its implementation within different platforms to facilitate the mobilization of domestic and external resources to establish, strengthen and sustain One Health at the country level.

45. The Quadripartite will support the adaptation and implementation of the regional operational framework at the country level. To facilitate the process, a regional taskforce, including representatives from the four organizations of the Quadripartite, will be established. Annex 2 provides terms of reference for the regional task force. Similar coordination mechanisms need to be developed at the country level between the four organizations, where they do not already exist.

46. Key performance indicators will be developed by the regional task force to monitor the support provided to countries to implement the regional operational framework. Progress in implementing the One Health approach will be reported annually to the WHO Regional Committee for the Eastern Mediterranean.

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Annex 1. Operational framework for the adoption, adaptation and implementation of a One Health approach in countries of the Eastern Mediterranean Region, 2022–2027

Strategic objectives	Actions	Expected deliverables
1. Establish governance and leadership	1.1 Identify all sectors relevant for One Health as well as sectors that will take leading or support roles	Organizational structure for sectors relevant to One Health identified
	1.2 Review and update national legislation to provide the needed legal foundation for all One Health-related sectors	Enabling, and gender- and vulnerability-sensitive, One Health regulatory frameworks in place
	1.3 Develop One Health strategy/plan informed by risk assessment and align with other relevant national strategies and plans, including the national action plan for health security (NAPHS)	One Health strategy/plan developed, tested and aligned with relevant national strategic priorities
	1.4 Identify financial needs and possible funding mechanisms (internal and external) to implement the One Health plan and build One Health capacity across relevant sectors at national and subnational levels	Funds allocated for the implementation of One Health priorities
	1.5 Conduct economic analyses to quantify the costs and benefits of One Health prevention and control interventions, and use the results to advocate for sustainable financing	One Health-related cost-effective and cost-efficient plans implemented
	1.6 Map and integrate, where possible, specialized disease programmes related to One Health to rationalize resources	Opportunities for joint usage of infrastructure and logistics, broadening the scope of existing networks (e.g. cold chains, vector-control programmes, vaccination campaigns), identified
2. Foster multisectoral coordination	2.1 Review and update existing multisectoral coordination mechanisms and ensure involvement of all One Health-related sectors including agriculture, environment, civil society organizations, academia and the private sector, as needed	One Health multisectoral coordination mechanisms in place
	2.2 Develop terms of reference for the One Health multisectoral coordination mechanisms identifying expected deliverables and modalities of work	Line of reporting, main tasks and deliverables identified
	2.3 Hold regular meetings (monthly or quarterly) to implement agreed activities aligned with the terms of reference	Meeting minutes circulated and follow-up actions taken and reported
3. Strengthen early warning and information-sharing systems	3.1 Include One Health threats in the integrated disease surveillance system and develop guidelines and standard operating procedures (SOPs) to facilitate and standardize its implementation	One Health elements included in integrated disease surveillance system, including surveillance reports, alerts and disease notifications
	3.2 Establish linkages among disease databases and environment databases to support integrated surveillance and risk modelling	Information shared for informed, science-based decision- and policy-making
	3.3 Develop a system and capacities for forecasting and modelling related to One Health	System and capacities for One Health forecasting and modelling in place
	3.4 Strengthen notification and reporting of One Health events of potential national and international concern using the IHR notification system	Notes for the event information site (EIS) posted
	3.5 Develop a digital platform for information-sharing on health threats among all relevant sectors	Information shared in a timely manner among sectors for risk assessment with dashboard and maps
4. Enhance preparedness and response capacities	4.1 Utilize existing rapid response teams (RRTs) where present and establish a joint response or field investigation team with regular training and capacity-building activities	Investigation of One Health threats jointly conducted at all levels
	4.2 Revise/develop, as needed, guidance and SOPs for threat investigation relevant to One Health	Investigations of events with One Health dimensions properly conducted
	4.3 Map out One Health laboratory capacities, including those in the private sector and academia	National diagnostic capacities identified
	4.4 Strengthen laboratory diagnostic capacity and capability for the detection and confirmation of One Health threats as identified in the assessment report	National diagnostic capacities strengthened for the early detection and confirmation of One Health events

Strategic objectives	Actions	Expected deliverables
	4.5 Assign national reference laboratories for the human health, animal health and environment sectors, if not already established	Systems for laboratory confirmation and reference in place for different threats
	4.6 Use pandemic risk assessment approaches (e.g. WHO's Tool for Influenza Pandemic Risk Assessment, molecular risk assessment, FAO's EMPRES-i genetic module) to proactively identify pre-pandemic vaccine candidates for existing zoonotic pathogens to inform vaccine production	Access to vaccines arranged
	4.7 Establish and maintain a regular supply chain for relevant medical countermeasures, supplies and equipment for One Health-related preparedness and response interventions	One Health-related preparedness and response interventions carried out and maintained
	4.8 Develop plans, SOPs and capacities for response to potential One Health events and emergencies, integrated as much as possible with existing guidance and SOPs	Response to One Health emergencies carried out efficiently and effectively at all levels
	4.9 Develop guidelines to manage cases infected with any of the priority One Health threats	Case management guidelines of priority One Health threats are in place and used
	4.10 Establish/strengthen infection control programmes, including at facilities	Infection prevention and control measures are adhered to and health-care associated infections are prevented/minimized
	4.11 Establish/strengthen antimicrobial stewardship programmes	Antimicrobial use is optimized to ensure access to effective therapy
	4.12 Enrol and continue to report to the Global Antimicrobial Resistance and Use Surveillance System (GLASS)	Knowledge gaps are continuously filled to inform strategies at all levels
	4.13 Enhance country participation in the standard-setting work of the Codex Alimentarius Commission	National food safety standards identified and aligned with international standards
	4.14 Provide access to quality basic water, sanitation and hygiene (WASH) services	Access to quality basic WASH services improved
	4.15 Conduct simulation exercises and after-action reviews for priority One Health threats	One Health preparedness capacities tested and response interventions reviewed to inform future activities
	4.16 Ensure One Health is integrated in the national RCCE plan and SOPs	One Health RCCE plan and SOPs developed and implemented
	4.17 Empower communities and increase engagement and awareness of One Health threat prevention, diagnosis and control measures	Campaigns to mobilize communities to address endemic zoonotic, neglected tropical and vector-borne diseases conducted
	4.18 Establish a system for social listening (online and offline) to collect behavioural insights and provide feedback to communities	Two-way communication established to inform RCCE and public health interventions
	4.19 Conduct RCCE capacity-building activities for volunteers and civil society organizations to provide support as needed in reaching out to communities	Capacity for reaching out to targeted communities increased at all levels
	5. Develop a skilled multidisciplinary workforce	5.1 Map existing human resources (identifying level of experience, skills, training and tasks of assigned staff) in all sectors concerned with One Health
	5.2 Review and expand the national workforce development strategy for staff capacity-building in all One Health-related sectors	One Health-related personnel available at all levels
	5.3 Develop and conduct training programmes as identified in the gap analysis report (in field epidemiology, case management, laboratory services, infection prevention and control, etc.).	Trained and skilled One Health-related personnel available at all levels
	5.4 Establish agreements (in-country and internationally) with universities and technical institutions to develop graduate and fellowship programmes for One Health and generate a One Health workforce	Additional One Health personnel trained
	5.5 Establish an incentive system to attract public health graduates	Additional public health graduates generated

Annex 2. Terms of reference of the regional One Health coordination mechanism

Background

The past two decades have witnessed a global increase in the frequency of epidemics and pandemics due to emerging and re-emerging One Health threats. There is compelling evidence linking the disruption of the human–animal–environment interface with disease outbreaks. There is thus a need for a holistic approach, with one vision and one strategy, to better understand and address contemporary health issues created by this convergence. A One Health approach can assist countries of the WHO Eastern Mediterranean Region in effectively tackling the endemic, emerging and re-emerging health threats at the interface. In March 2022, the directors-general of four international agencies – the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (WOAH, founded as OIE), the UN Environment Programme (UNEP) and the World Health Organization (WHO) – signed a ground-breaking agreement to strengthen cooperation to sustainably balance and optimize the health of humans, animals, plants and the environment. Ensuring coordination at the regional level is necessary. A regional coordination mechanism is therefore being established among the Quadripartite organizations.

Purpose

To foster collaboration and coordination among the regional and subregional Quadripartite organizations to maximize resources, implement joint strategies and plans, and provide the support needed for implementation of One Health in the countries and territories of the WHO Eastern Mediterranean Region.

Membership

The regional One Health Quadripartite coordination mechanism will comprise the following arrangements:

- The **One Health Executive Board (OHEB)** comprises the respective regional heads of the Quadripartite organizations or their designated directors or assistant directors; and
- the **One Health Technical Group (OHTG)** comprises relevant liaison unit/staff from each Quadripartite organization.

Key responsibilities of the OHEB

- **Leadership and political engagement for One Health**
 - Identify opportunities and priorities to advance the One Health agenda across the Eastern Mediterranean Region;
 - Promote and advocate for strengthening One Health governance structures and political commitment in the Region's Member States;
 - Facilitate resource mobilization for strengthening One Health in the Region.
- **Supervision and guidance of One Health implementation**
 - Monitor progress and advise on strategic directions to enhance the implementation of the One Health approach in the countries and territories of the Region;
 - Liaise with the global Quadripartite joint secretariat and other regional secretariats at the strategic level;
 - Draw upon advisories from the technical group to inform decision-making.

Key responsibilities of the OHTG

- **Technical support**
 - Support the development and implementation of One Health national action plans and the integration of those plans with other plans;
 - Provide guidance and technical expertise, and develop and disseminate materials, to facilitate the implementation of the regional and national One Health plans;
 - Bring strategic gaps and opportunities to the attention of the OHEG for their decision and action.
- **Coordination and partnership**
 - Support One Health coordination and its related operations at the country level;
 - Facilitate the engagement of other United Nations and international organizations, technical partners, nongovernmental organizations, societies, foundations and others working in the area;
 - Support proposal development and donor outreach activities.

- **Administrative and secretariat work**

Each Quadripartite organization nominates one liaison unit/officer to represent their organization at the OHTG. These liaison units/officers and their alternates are responsible for:

- chairing the OHTG on a rotating basis;
 - attending all OHTG and other meetings of relevance for the defined agreed actions;
 - sharing all communications and information internally within their organization in a complete, accurate and timely manner;
 - making timely decisions and taking action in consultation with relevant staff in their respective organizations;
 - bringing in relevant technical staff from their respective organization to discuss and coordinate specific technical issues or activities.
- **Organization and reporting**
 - The OHEB meets annually and ad hoc if needed. Meetings will be coordinated with other high-level meetings and activities at regional or global level.
 - The OHTG will meet every three months or when/as needed.
 - The OHTG reports to the OHEB through an annual progress report. Other reporting can be agreed ad hoc.
 - The WHO Regional Office for the Eastern Mediterranean's Country Health Emergency Preparedness and International Health Regulations unit will act as a liaison unit for the OHTG and as a secretariat for the coordination mechanism.