ONE HEALTH CASES

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Opportunities, Gaps, and Challenges in the Implementation of the One Health Approach in Kenya

This case illustrates the One Health (OH) baseline in research and innovation, governance, education, and implementation in Kenya through the Capacitating OH in Eastern and Southern Africa using a mixed methods approach. OH has been institutionalized in Kenya since 2011 through the Zoonotic Disease Unit, emphasizing interdisciplinary collaboration.

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COHESA
Capacitating One Health in Eastern and Southern Africa

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Table of Contents

Abstract

The health of humans, animals, and the environment are all under unprecedented, interdependent risks. The Quadripartite Organizations (FAO, UNEP, WHO and WOAH) define OH as an integrated, unifying strategy that seeks to optimally and sustainably balance the health of people, animals, and ecosystems. Capacitating One Health in Eastern and Southern Africa (COHESA) is a project with the objective of facilitating the rapid uptake, adaptation, and adoption of solutions using the OH concept embedded across government and research entities, educational and training institutes, and public-private partnerships in Eastern and Southern Africa. The COHESA project team in Kenya conducted a baseline assessment to understand challenges, gaps, and capacities in OH in the country. The findings illustrated that an OH strategic plan for the period 2021 to 2025 was launched in Kenya and had three strategic objectives: (a) to strengthen implementation of the OH approach at national and county levels, (b) to strengthen prevention, surveillance, response, and control of priority zoonotic diseases in both humans and animals, (c) to conduct applied research using OH approach. The findings also illustrated that the country has been involved in several activities involving a multisectoral OH approach, including but not limited to research and innovation, national policies and strategies development, capacity building of human and animal health workforce, and implementation. Despite making these steps, challenges persist in translating policies into effective actions, and limited collaboration among actors while public awareness and involvement of the environmental sector remain suboptimal.

What is the Incremental Value that Makes this a One Health Case?

This study brought together various key players in the health sector. The experts were from human, animal and environmental health sectors including academic institutions, government, and research institutions. The focus was on the knowledge and experience of the experts on OH, collaborations among the key components of OH, integration of OH in the education sector, governance, research, and implementation. The findings showed strides the country has taken and highlighted the gaps that need to be addressed. Antimicrobial resistance (AMR) is one of the elements of OH and this case found that it is the most important area of focus in the country as rated highly by baseline participants. In some academic institutions, OH and AMR are offered as a short course and have about 1060 students. This shows the investment the country is making toward awareness creation and management of risks of AMR in humans, animals, and environmental sectors. Other initiatives of the OH that were rated important included management of emerging zoonotic diseases such as SARS-COV-2, and benefits from plant health in terms of promoting sustainable agriculture as well as landscape health management and interphase with wildlife.

This study has documented successes in OH activities in the country which would improve the general health of the society while also highlighting areas that needs further investments to alleviate potential losses associated with poor quality health for humans, animals, and degradation of environment.

Learning Outcomes

1. Understand the integration of systems and approaches in Kenya's One Health landscape.
2. Critical assessment of the challenges and gaps in implementing OH by pinpointing specific areas where interventions and policies need improvement.
3. Understand the OH assessment tool and how to implement it nationally.
4. Understand and evaluate the formation and operationalization of national OH structures.

Background and Context

The government plays a pivotal role in maintaining the effective functioning of systems by providing funding, human resources, and other essential non-human resources. Additionally, it takes a leading role in addressing major threats to human life, such as zoonotic diseases and epidemics. By fostering interdisciplinary teamwork among healthcare professionals, veterinarians, environmental scientists, policy makers, and communities, OH improves the country's capacity to prevent and respond to zoonotic diseases and addresses broader issues such as AMR, food safety, and environmental degradation (Worsley-Tonks *et al*., 2022).

One Health assessments in Kenya

In Kenya, the convergence of human, animal, and environmental factors poses multifaceted challenges to public health. With a rising incidence of zoonotic diseases, AMR, and environmental degradation, there is an urgent need to explore the interconnected dynamics through an OH lens. This approach has emerged as a pivotal strategy to address complex health challenges at the intersection of the OH elements. The adoption of OH assessments has gained prominence as a holistic approach to address interconnected health challenges and the performance of OH in the country. Prior assessments have suggested that the adoption of the approach has been commendable although challenges persist. The assessments have highlighted the difficulties in planning, thinking, collaboration, and learning as well as in working with and within the system of organization. These difficulties include those pertaining to data, information, and communication exchange; rivalry rather than synergy; inadequate readiness; and a lack of concentrated capacity development (Munyua *et al*., 2019). Similarly, Fasina *et al*. (2022a) while evaluating institutional compliance with the OH concept in 14 institutions from eight African countries found that the OH approach in Kenya faces hurdles related to resource allocation, where funding and infrastructure imbalances across sectors hinder seamless collaboration.

Capacitating One Health in Eastern and Southern Africa (COHESA)

Capacitating One Health in Eastern and Southern Africa (COHESA) aims to facilitate the rapid uptake, adaptation, and adoption of solutions to OH issues using the OH concept embedded across government

and research entities, educational and training institutes and public-private partnerships in Eastern and Southern Africa. The objectives of the study were to promote the significance of OH research and policies in Eastern and Southern Africa by fostering greater cross-sectoral collaboration among government entities with OH mandates and stakeholders across society. Also, to strengthen national and sub-regional partnerships to enhance coordinated efforts and develop educational and research institutes to effectively train the next generation of OH professionals. Finally, the project aimed to build the capacity of both government and non-governmental stakeholders to identify and implement OH solutions, addressing key health challenges in the region.

The project first conducted a baseline assessment to better understand individual, institutional, and countrywide understanding of the OH situation inclusive of strengths and weaknesses. This was done through secondary and primary data sources. The secondary data were collected through desk review of a series of OH-published articles, government policies/strategies, WHO/WOAH/FAO reports and OH tools available in Kenya in line with OH research and innovation, governance, education, and implementation themes. The primary data were collected through a semi-structured interview assessment to collect information from key informants and a stakeholder discussion with experts who had experience with OH issues. This brought together diverse expertise and fostered a comprehensive understanding and awareness of the OH landscape in Eastern and Southern Africa. This case therefore adds to the existing OH studies by looking at the status of research and innovation, governance, education, and implementation and identifying gaps and challenges in OH in Kenya. The purpose of the study was to understand the following about OH in Kenya:

1. One Health challenges, gaps, and capacities within Kenya.
2. Current OH research, innovation, and implementation within Kenya.
3. One Health performance in governance, and current capacity, and bottlenecks within Kenya.

Transdisciplinary Process

The project sought insights from 21 key informants consisting of 15 male and 6 female participants. The participants had experience with OH issues and originated from diverse disciplines, including human health and medicine, public health, veterinary medicine/animal health, plant sciences/plant health, biological sciences, laboratory, and economics. Three respondents had spent less than 5 years on OH while the other three had spent 6–10 years and 15 respondents had spent more than 10 years. By integrating these diverse disciplines, this project aimed to understand OH issues holistically while considering the complex interplay between human, animal, and environmental factors.

Research and innovation

Research and innovation play a pivotal role in underpinning the OH approach in Kenya. Through fostering transdisciplinary research and innovation, Kenya can effectively combat zoonotic diseases, safeguard food security, and conserve its biodiversity. From the baseline assessment on OH for Kenya, numerous interdisciplinary studies on OH issues have been carried out, touching on various areas including but not limited to emerging and neglected zoonotic diseases (Munyua *et al*., 2016), prevalence of the zoonotic diseases (Ngugi *et al*., 2018; Akoko *et al*., 2021; Lokamar *et al*., 2022), disease surveillance and reporting (Wamwenje *et al*., 2019; Mutua *et al*., 2019), socio-economic impact of zoonotic diseases (Bukachi *et al*., 2017; Lokamar *et al*., 2020), and knowledge, attitudes, and practices about zoonotic diseases (Nyokabi *et al*., 2018; Mbai *et al*., 2021; Mugo *et al*., 2021). A key finding of the baseline was that collaborative efforts from various OH fields strengthened Kenya's research and innovation initiatives. However, these collaborations were hampered by coordination and communication among actors, limited funding and resources, and differing priorities and agendas. Overall, the landscape of research and innovation concerning OH exhibits a burgeoning but evolving framework with a need to amplify investment, foster robust partnerships, and emphasize community engagement. These are pivotal in fortifying Kenya's endeavors in advancing the comprehensive principles of OH for a resilient and interconnected health system (AFROHUN, 2021).

Emerging and neglected zoonotic diseases

In Kenya, like many other countries, prioritizing emerging and neglected zoonotic diseases follows the OH approach. Experts, drawing from various sectors, have compiled a list of these diseases, ranking them from the most significant to the least. This ranking considers multiple factors, including the severity of illness in humans, the potential for epidemics or pandemics in humans, socio-economic burdens, the prevalence or incidence rates, and the availability of interventions (Munyua *et al*., 2016). This prioritization plays a crucial

role in strategically allocating resources and shaping zoonotic disease prevention and control initiatives in Kenya. Among the prioritized diseases are anthrax, trypanosomiasis/HAT, rabies, brucellosis, and RVF, each demanding specific attention and focused efforts to mitigate their impact on public health and well-being (Kimani *et al*., 2019).

Kenya has been actively promoting transdisciplinary research and innovation as a means to tackle emerging and neglected zoonotic diseases. Efforts have fostered collaborations among researchers from diverse disciplines encompassing human health, animal health, ecology, and social sciences, collectively addressing complex health challenges (Omondi *et al*., 2020). These collaborations predominantly involve professionals from national research institutions, often commissioned by external entities such as the University of Washington, WHO, USAID, and FAO. However, the baseline findings revealed that partnerships between government bodies and external stakeholders in research and innovation occur sporadically, relying more on personal connections than structured, systematic efforts. Despite some existing interagency cooperation, it tends to be ad hoc, driven primarily by individual relationships rather than institutional frameworks. This sporadic collaboration highlights a pressing need for formalized structures, standardized protocols, and policy frameworks to facilitate consistent and impactful joint initiatives in advancing OH research and innovation within Kenya.

External funding and heightened prioritization of zoonotic diseases in Kenya have been instrumental in propelling the OH agenda. Increased financial support from international organizations and collaborations has catalyzed comprehensive research initiatives and interventions (Mwatondo *et al*., 2017). This backing has enabled the development of surveillance systems, interdisciplinary studies, and capacity-building programs, fostering a deeper understanding of OH.

Prevalence of the zoonotic diseases

Zoonotic diseases are a significant public health concern due to the country's diverse wildlife, livestock, and close interactions between humans and animals. Research on zoonotic diseases has included research on brucellosis in both humans and animals (Kairu-Wanyoike *et al*., 2017; Muturi *et al*., 2018; Munyua *et al*., 2019), Rift Valley fever (RVF) (Grossi-Soyster *et al*., 2017; Tigoi *et al*., 2020) and rabies (Ngugi *et al*., 2018). These multidisciplinary research and innovation activities have been critical in understanding the complex dynamics of zoonotic diseases and have fostered a more comprehensive understanding of the OH issues surrounding zoonotic diseases, leading to more effective solutions including targeted and context-specific interventions on transmission pathways and risk factors and early detection and timely responses to the five priority zoonotic diseases outbreaks (Keshavamurthy *et al*., 2021).

Disease surveillance and reporting

Kenya has conducted disease surveillance and reporting on the prioritized zoonotic diseases, including anthrax, rabies, and RVF. Integrated disease surveillance systems are essential components of the OH approach. Literature review shows that Kenya has invested in digital bio-monitoring and leveraging local news to identify possible neglected zoonotic disease occurrences in situations with inadequate resources (Keshavamurthy *et al*., 2021). The focus of this biosurveillance is to attain early warning, detection, and general situational awareness of disease activity through the systematic collection, combination, and interpretation of health information through the Department of Disease Surveillance and Epidemic Response in the Ministry of Health. The country has also enhanced disease surveillance in animals through the rollout of the Kenya Animal Biosurveillance System (KABS) which is a pivotal initiative ensuring disease vigilance in animal populations. The tool monitors, tracks, and analyzes animal health data, facilitating early detection and swift response to potential disease outbreaks (Njenga *et al*., 2021).

For human disease surveillance, the government introduced the Health Management Information System (HMIS) which has shown promising effectiveness in enhancing healthcare services. Through data collection, analysis, and reporting mechanisms, it has bolstered the country's health infrastructure. The system facilitates informed decision making, resource allocation, and policy formulation, contributing to improved public health interventions and disease control. Despite challenges such as data accuracy and system integration, Kenya's HMIS has significantly improved health service delivery, monitoring, and evaluation, fostering better healthcare outcomes across diverse populations. The uptake of such surveillance systems is impacted by the lack of training on using these tools, the absence of timely data, and the lack of tools for surveillance (Omondi *et al*., 2020). Enhanced surveillance serves as a source of knowledge and awareness among government institutions and citizens although the use of additional breakthroughs in technologies, especially in Kenya's arid and semi-arid lands (ASAL), where they offer workable solutions for enhancing and integrating existing systems with surveillance and reporting in distant rural areas. There is a need to mobilize stakeholders across disciplines to incorporate isolated rural residents, their livestock, and coexisting wildlife into current monitoring systems (Worsley-Tonks *et al*., 2022).

Munyua *et al*. (2019) indicated that it is costly to set up surveillance programs, especially when the partners willing to give support are fewer, yet without a surveillance system in place, preventing zoonotic diseases will be more challenging. Data on the burden of zoonoses is scanty. Therefore, convincing policy makers on the benefits of planning and investing in animal surveillance for public health gain is quite a challenge, especially when the threat is not immediately apparent. The baseline findings for OH in Kenya showed a missing link between various relevant disciplines, derailing OH's work.

AMR in humans and livestock

The emergence of AMR is quickly rendering standard therapies for common ailments ineffective, posing the risk of a global resurgence of incurable diseases caused by common pathogens. Kariuki *et al*. (2021) found that AMR is an example of OH issues that originate from complex interactions at the intersection of humans, agriculture, and the environment. The country has hugely targeted AMR activities, including the Kenya National Action Plan on Antimicrobial Resistance, monitoring antibiotic consumption in humans, and public awareness campaigns among others although more efforts need to be channeled into such activities. However, limited attention has been directed specifically toward understanding the prevalence, transmission pathways, and socio-cultural determinants of AMR in the human population within the Kenyan context. AMR is also a concerning issue in livestock farming in Kenya although a few studies have been conducted on this issue. Muloi (2019) observed a high prevalence of bacterial strains resistant to commonly used antimicrobials. These resistant bacteria were primarily found in humans, pigs, and poultry, compared to other species such as cattle, goats, and rabbits. AMR has also remained a challenge among urban wildlife due to a clinically relevant antimicrobial-resistant *E. coli* in Nairobi. This organism has exhibited resistance to drugs considered crucial for human medicine by the WHO (Hassell *et al*., 2019). The realm of environmental research and innovation stands as a critical yet inadequately explored facet within the broader framework of OH. Despite acknowledging the intricate interplay between environmental health, animal well-being, and human health, there remains a notable gap in dedicated research initiatives and innovative interventions centered explicitly on environmental aspects. Overall, Kenyan research and innovation has concentrated on the biological elements of diseases and OH concerns, failing to thoroughly examine the socio-economic burden on the community and their effects on the performance of livestock production and human health. This has left a vacuum in our understanding of how zoonotic infections interact with the socio-economic life of livestock keepers, despite the many known financial costs associated with zoonotic illness (Bukachi *et al*., 2017). In order to comprehend the broad impact of zoonotic illnesses on the population, the nation needs to apply a broader societal approach to understanding these impacts without leaving any aspects behind.

Governance

One Health office in Kenya

In 2010, the World Organization for Animal Health (WOAH) called for the creation of mechanisms to help member countries assess the performance of OH within the veterinary services of member countries. Kenya was not left out in the effort to prevent, control, and manage zoonotic diseases. In 2010, representatives from the Ministry of Health, Ministry of Agriculture, Livestock, and Fisheries, United States Centres for Disease Control and Prevention (CDC), WHO, and other stakeholders held a 3-day workshop to review Kenya's response to zoonotic diseases (Mbabu *et al*., 2014) and as a result of one of the recommendations from the workshop, to create a national OH office incorporated animal and human health ministries, the Zoonotic Disease Unit (ZDU) was established. This showed Kenya's commitment to adopting the OH approach (Salm-Reifferscheit, 2023). The ZDU is Kenya's OH coordinating office and its role is to create and sustain active collaboration at the animal, human, and ecological interfaces to improve the prevention and management of zoonotic diseases. It became operational in 2012 consisting of one medical epidemiologist from the Ministry of Health and one veterinary epidemiologist from the Ministry of Agriculture and Livestock Development. The two personnel are permanent representatives of their respective ministries (Nyariki, *et al.* 2017). However, the ministry of Environment and Natural Resources have not been actively engaged in its activities. The ZDU also serves as a secretariat to the zoonotic disease technical working group which is the watchdog of OH approach in Kenya. The ZDU also engages with counties within the new devolved governance system on issues one health by appointing OH persons in county and sub-county governments (Mbabu *et al*., 2014). The work of ZDU is ongoing at the national level but progress at the subcounty level activities is strained because of sustainability issues, competing interests and insufficient coordination (Griffith *et al*., 2020).

One Health legal framework in Kenya

The legal and policy framework of OH in Kenya was achieved by establishing laws, regulations, and acts related to health from human, animal, and environmental dimensions effected by the parliament of Kenya.

The COHESA baseline report on OH in Kenya established a summary of seven (7) governance documents and laws on environmental health, three (3) on human health, thirteen (13) on animal health, and eighty-nine (89) on cross-cutting documents. Sector policies and strategies play an important role in incorporating critical strategies in the OH approach and are relevant in supporting the institutionalization of the concept in Kenya. The baseline also found six (6) sector policies and strategies on animal health, four (4) on human health, and ten (10) cross-cutting various ministries (Supplementary Materials: Annex 1). Even with the establishment of the OH legal policy and framework, several policies do not mention OH at all even though they mention the importance of multisectoral collaboration in addressing health issues.

The OH approach operates by bringing together stakeholders from different sectors responsible for health to curb zoonotic diseases. In 2006, Kenya established a multisectoral committee bound by global recommendations to coordinate preparedness and prevention of High Pathogenicity Avian Influenza (HPAI) during the global outbreak of H5N1. This multisectoral committee used an OH approach (Munyua *et al*., 2019). The 2006/2007 RVF outbreak in Kenya tested the adopted OH framework (Munyua *et al*., 2019). The outbreak of RVF was better managed than HPAI due to coordinated efforts by the multisectoral committee because of the OH approach that was already in place as compared to the outbreak of 1997 that caught the country unprepared and resulted in many undocumented deaths (Woods *et al*., 2002). Kenya has strengthened its OH approach through collaborations within various ministries such as the Ministry of Health and Ministry of Agriculture, Livestock and Fisheries as in the case of the Zoonotic Disease Technical Working Group in preparedness for future pandemics. Although the mandate of ZDU is to facilitate collaborations among the OH facets (Mbabu *et al.* 2014), it is rooted in the prevention, management, and control of zoonotic diseases leaving out the other aspects of OH. There is a need to actively bring in the other stakeholders and ministries including that of the Environment to collaborate with the ZDU.

AMR governance mechanisms

AMR governance in Kenya involves a multifaceted approach encompassing policy development, regulation, surveillance, and collaboration across various sectors. Among the steps made include the establishment of the Counties Antimicrobial Steering Inter-Agency Committee (CASIC). The CASIC oversees AMR-related activities, implementation and allocate resources at the county level. They are funded from county government budgets and are responsible for implementing the national action plan at the subnational level. They have a responsibility to enforce regulations at the county level. The National AMR strategy explicitly takes an OH approach, concerning itself with surveillance, drug use and resistance in both animals and humans, and to an extent the environment. It has significant political support but fragments a comprehensive OH approach by standing separately from other OH matters in the country, being housed outside the ZDU and with separate funding streams.

The country has four distinct and separate OH coordination mechanisms for: zoonoses, AMR, aflatoxicosis, and the health threats associated with pesticide use. The significance of food safety did not come out strongly in this study in terms of rating its importance to the OH approach by the respondents. This could be because the country does not have a formalized institution that is responsible for food safety issues (Kang'ethe *et al.*, 2019). However, government agencies formed the National Food Safety Coordination Committee (NFSCC) which was established to enhance coordination and minimize overlaps between various food agencies (Guthiga *et al*., 2020). This committee is chaired by the Ministry of Agriculture and Livestock Development through the Department of Crop Development and Agricultural Research. It is still an ad hoc committee not anchored in any policy or law, making it inefficient to deliver on its mandate. It operates under a Memorandum of Understanding (MOU) between the Ministry of Health and the Ministry of Agriculture and Livestock Development.

Education

Kenya has made progress toward integrating OH into the education system, especially in higher learning. The baseline findings indicated that the Africa OH University Network (AFROHUN), formerly OH Central and Eastern Africa (OHCEA), has enabled Moi University and the University of Nairobi to cultivate the culture of multisectoral collaboration through field attachments, experimental learning, training, and research related to the OH. AFROHUN helps member institutions to incorporate OH programs in their curricula by supporting the design and delivery of evidence-based programs such as OH training, career and faculty development, research, and institutional training (AFROHUN, 2021). It has created platforms such as the Students One Health Innovations Club (SOHIC) to enable students to get preservice training to promote OH in learning institutions (Fasina *et al*., 2022a). However, the baseline findings show a gap in integrating OH aspects in lower education (primary education).

Kenya field epidemiology and laboratory training programme (KFELTP)

The Ministry of Health established this program in 2004 supported by the CDC to expand the epidemiological scope in Kenya. The program is designed to strengthen the public health systems in Kenya by building capacity in applied epidemiology and laboratory practice. The program aims to produce skilled public health professionals who can effectively respond to and manage disease outbreaks, conduct surveillance, and contribute to public health research (Fasina *et al*., 2022b). However, the KFELTP continues to face challenges with limited resources, both financially and technically which have hindered the establishment of robust laboratory facilities and surveillance systems (Roka *et al*., 2017).

One Health courses in higher institutes of learning

Kenya's institutions of higher learning have faced inadequacies and explicit limitations in offering OH courses and this has hindered the holistic approach necessary for addressing complex health challenges. Findings from the baseline highlighted that the existing courses often fall short of providing a comprehensive understanding of OH since they only offer aspects of OH as short courses. In many instances, the emphasis remains narrowly focused on either human or veterinary health, neglecting the essential cross-disciplinary knowledge required for effective OH solutions through collaborations. This silos approach has undermined the overarching goal of mitigating diseases and safeguarding public health. Addressing these inadequacies requires a concerted effort from academic institutions, policy makers, and stakeholders to revamp curricula, foster interdisciplinary collaboration, and invest in practical training.

Implementation

Regional clinical and diagnostic capacity

Developing regional clinical and diagnostic capacity for OH issues has become increasingly vital in addressing complex health challenges at the human-animal-environment interface. Kenya has invested in regional laboratories, a Central Veterinary Laboratory, and human diagnostic laboratories to guarantee prompt disease detection and effective and suitable treatment. These activities are done between the government and the animal industry, which have leveraged efforts to comprehend AMR in humans and animals (Worsley-Tonks *et al*., 2022). Despite significant progress, the lack of laboratory and diagnostic capacity in terms of trained personnel and diagnostic equipment is an ongoing challenge in Kenya's efforts to mitigate AMR. There have also been coordination challenges between these laboratories hindering seamless collaboration and data sharing. Issues such as disparate information systems, varying testing protocols, and mandates have continued to pose significant obstacles. Inconsistent communication channels and limited resources exacerbate the challenges, leading to delays in information dissemination and response coordination. Therefore, strengthening collaboration mechanisms and investing in training programs for lab personnel can bridge such coordination gaps, especially at the county and sub-county levels, where most disease management decisions are taken.

Project Impact

The COHESA project has been crucial for informed decision making at various levels as it provided a baseline understanding of the diverse and active OH landscape in Kenya. The project aimed at organizing joint workshops, conferences, and seminars that bring together researchers from various disciplines hence fostering networking and idea exchange. To optimize resources and ensure efficiency in addressing OH issues, the project aimed at establishing synergies with other ongoing activities within the OH framework to avoid duplication and enhance collective impact. These collaborations, for instance, between the ZDU and other OH actors will harness the collective expertise and resources across multiple sectors. Collaborations will assist in capacity building, provision of efficient use of resources, improved coordination among experts, and appreciation of the role of OH outside one's specialty. However, few of these activities have been witnessed since many actors reported working in silos due to competing interests, divergent priorities and inadequate resources. COHESA will contribute toward establishing effective networks and collaborations and creating a platform for different institutions and sectors to better understand each other's mandates to enhance collaboration and synergies. This could involve regular forums, workshops, or training sessions where participants can share insights into their respective goals and contributions, fostering a more comprehensive understanding of OH issues. The project also aims to mainstream the environment arm into the OH operations in Kenya. The COHESA project through its efforts in reviewing and developing OH curricula in various levels, will provide syllabi and curricula to equip learners with prerequisite skills to spearhead OH. Finally, the project will enhance research on OH and the development of innovative OH solutions to address relevant health issues in Kenya. This envisions strengthening of

research on OH across the various institutions as well as incorporating other sectors such as the private sector and formation of partnerships to provide OH solutions.

Project Outlook/Conclusions

Kenya's commitment to OH activities and institutionalization reflects a forward-thinking approach to address complex health challenges holistically and the country is ahead of many others. These concerted efforts underscore the recognition of interconnected systems although there remain unresolved problems in making everything work smoothly. Stakeholders appreciate COHESA's role in pushing the OH approach and fostering collaborative research in Kenya by allowing experts to lead the process in Kenya. The government through the ZDU and line ministries has also pledged to recognize the role of the OH approach and integrate its principles into national policies.

Group Discussion Questions

1. What policies and regulations need to be harmonized or updated to support OH efforts nationally?
2. How can we engage international partners and neighboring countries for regional cooperation in OH?
3. How can we promote sustainability and resilience in the face of evolving health and environmental challenges?
4. How can we effectively engage missing disciplines of OH such as environment in the implementation of OH?
5. What lessons can we learn from successful OH initiatives in other countries?

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Conflict of interest

The authors have no conflicts of interest to declare.

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