One Health Strategy 2019: A Review of Nepal's Multisectoral Health Framework

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ABSTRACT

The One Health paradigm integrates human, animal, and environmental health to address complex, interlinked threats such as zoonotic diseases, antimicrobial resistance (AMR), food safety hazards, and climate-sensitive health risks. Nepal, characterized by high biodiversity, intensive human–livestock–wildlife interfaces, open borders, and rapid socio-ecological change, faces elevated vulnerability to emerging and re-emerging zoonoses. In response, the Government of Nepal adopted the One Health Strategy 2076 (2019 AD), South Asia's first formal multisectoral framework to operationalize coordinated surveillance, joint risk assessment, preparedness, and response across the Ministry of Health and Population, Ministry of Agriculture and Livestock Development, and Ministry of Forests and Environment. This review critically examines the legal, institutional, and operational dimensions of Nepal's One Health Strategy within the country's federal governance architecture established by the 2015 Constitution. The analysis synthesizes early implementation gains establishment of federal coordination mechanisms, incremental interoperability, and donor-supported AMR surveillance alongside persistent constraints including fragmented legal mandates, uneven provincial uptake, fiscal limitations, and incomplete digital interoperability. The paper argues that Nepal's One Health Strategy provides a credible policy architecture for spillover prevention and pandemic preparedness, but its transformative potential depends on legal enshrinement.

Keywords: One Health; zoonoses; antimicrobial resistance; multisectoral governance; Nepal

INTRODUCTION

The One Health paradigm (human, animal and ecosystem health) has become a global change agent. About 3 out of 4 emerging infectious diseases are zoonotic in origin, which originates from animal reservoirs and spillfeeds to humans primarily at the interface where the environment is disturbed by human activities (World Health Organization, 2017; Food and Agriculture Organization of the United Nations, 2019). The One Health paradigm is at the core of the emergence and propagation of large-scale threats, such as avian influenza (H5N1), rabies, Ebola, Nipah virus and antimicrobial resistance (AMR). Globalization, including more intensive agriculture and trade in wildlife, rapid urbanization, deforestation and climate change has exponentially increased the risks. The One Health approach was formally agreed by the Quadripartite Alliance (World Health Organization (WHO) FAO, United Nations Environment Programme (UNEP) and World Organisation for Animal Health (WOAH) One Health Joint Plan of Action (2022–2026) and calls for surveillance, risk assessment and governance in a multisectoral platform to address zoonotic spillovers and their prevention in a proactive manner (World Health Organization et al., 2022). It highlighted the need for integrated surveillance systems, data-sharing, genomic sequencing, and ecosystem restoration initiatives to prevent spillovers in a cost-effective manner. The One Health approach maximizes scarce resources by breaking down institutional silos in public health, veterinary medicine, agriculture, and the environment to develop resilience of inter-connected systems that support SDG 3 [Good Health and Well-Being], 13 [Climate Action], and 15 [Life on Land]) and the emerging pandemics. However, substantial barriers still exist that threaten efficient implementation of One Health. National policies remain fragmented, inequity in capacity between the Global North and South is still pervasive, and wildlife trade remains insufficiently regulated.

Nepal's One Health Strategy 2019

Nepal's One Health Strategy 2019 is the first multisectoral strategic framework in South Asia that intentionally links one health domains to alleviate emerging threats of zoonosis. It operationalizes the global One Health concept by integrating surveillance, joint risk assessment, capacity building, preparedness and advocacy to address one health challenges (Government of Nepal, 2019). It emerged in the context of recurrent zoonotic

Forests and Environment (MoFE) and approved by the Council of Ministers in December 2019. The One Health Strategy 2019 operationalizes national commitments by harmonizing with international commitments and standards, such as the Quadripartite Alliance One Health Joint Plan of Action (2022–2026) and Nepal's commitments to the International Health Regulations (IHR 2005), thereby facilitating multisectoral governance, multisectoral surveillance, and multisectoral response to zoonotic and emerging diseases. Importantly, the One Health Strategy 2019 operates within the constraints and opportunities of the federal architecture prescribed by the Constitution of Nepal, which establishes a three-tier governance system and devolves concurrent powers in areas, such as health services, agriculture and livestock development, and the environmental domain, to the province and local governments. Decentralisation, which includes subnational distribution of activities, aims to increase local responsiveness and agility, community ownership and contextual adaptability to zoonotic inputs, but risks mandates (de)multiplexing, fiscal disproportionality, (de)balancing capacities by tier, with potential detrimental effects to multisectoral coordination and One Health consistency.

Core Components and Objectives

One Health Strategy 2019 formally approved by the Council of Ministers, articulates a cohesive multisectoral architecture to integrate human, animal, and environmental health amid escalating zoonotic pressures. Its stated vision - "Achieve optimal health outcomes through effective management of shared risks across human, animal, and environmental domains" and associated holistic ontology support cross-sector work to promote systemic resilience in Nepalese settings. The strategy's vision aligns with global Quadripartite imperatives but contradicts the coordination-principles of the Bar-on Report, which favors sovereignty to preemptively recognize and mobilize consilience rather than demonetize and respond post hoc. The overall One Health Strategy goal operationalizes the overall vision by acting as an umbrella for One Health activities - "To promote One Health activities through coordinated surveillance, prevention, and resource optimization for priority threats: emerging and reemergence zoonoses and novel sectoral spillovers".

The implementation framework is structured around four interlocking objectives that cascade coherently across the federal tiers of governance.

Build networks of stakeholders for coordination.

This component implies polycentric governance: a Federal One Health Steering Committee (Ministers of MoHP, MoALD and MoFE) to arbitrate politics; Technical Coordination Committees (Directors and Epidemiologists) to operationalize; and devolved provincial/local analogues for execution. Networks include non-state actors, e.g. Nepal One Health Institute and NGOs, and define data-sharing protocols and joint outbreak declaration. In practice, this will precipitate federal fragmentation post-2015 Constitution, with concurrent powers (Article 57) that could lead to mandate overlaps; biannual meetings ensure alignment; and focal points embedded within ministries.

Build robust early warning systems

This objective, focused on sentinel surveillance, calls for community-based event monitoring and digital platforms for real-time risk mapping of priority pathogens (rabies, H5N1, Japanese encephalitis). It also calls for laboratory networking, genomic sequencing hubs and cross-border alerts. Consistent with IHR (2005) and JEE metrics, it aims at 80% timeliness of detection, building on pre-2019 gaps exposed by H5N1 delays; rapid response teams (RRTs) at the provincial level operationalize alerts, reducing over weeks response lags to days.

Upscaling Multisectoral Capacities

Human capital, infrastructure and curricula in IAAS/TU medical programs strengthens capacities. Gender-equitable training targets women smallholders, while Codex-aligned food safety modules focus on wet markets. This tackles rural-urban disequilibria via urban-rural twinning and donor-leveraged scholarships.

Engaging at community levels

Bottom-up resilience is driven by behavior change: targeted IEC campaigns help ethnic smallholders understand zoonoses, and embed One Health in Farmers' Field Schools; political advocacy raises budget lines; evidence-based storytelling to counter misinformation/disinformation.

There are five strategic pillars that enable the implementation of the One Health Strategy in Nepal: coordination; surveillance/labs (human-animal); capacity building; preparedness; and communication. These pillars act as a matrix that works across sectors to produce outputs with measurable impact, including 45% of key performance indicators achieved by 2023 as shown in the MoHP/MoALD joint audits. The coordination pillar is represented by high-level steering committees made up of federal ministers and technical working groups to provide policy coherence across the ministries of health, agriculture, and forest, with cascades through provincial and municipal levels through bylaws that allow for local control of the planning process while respecting Nepal's 2015 constitutional devolution (Article 57). The surveillance and laboratory pillar operationalizes the data fusion of animal and human health platforms with networked diagnostics at national laboratories to provide risk stratification and support for priority pathogens. The capacity pillar brings targeted upskilling, epidemiology trainings, genomic sequencing modules, and food safety curricula, with multisectoral human resource development as a priority and gender-sensitive approaches to address time gaps. The preparedness pillar is represented with simulation drills and prepositioning of resources. The communication pillar is represented by community health networks that mobilize advocacy to instigate behavioral change and the adoption of biosecurity practices. Finally, the federal adaptability of the Strategy, through provincial customization, makes

Nepal a South Asian exemplar of localized One Health praxis in the face of resource constraints. Yet, this potential hinges on legal enshrinement via a dedicated One Health Act to impose binding inter-ministerial obligations, alongside fiscal ringfencing (e.g., 2% ringfenced allocations from health/agriculture budgets) and digital interoperability mandates to surmount enduring silos, data asymmetries, and donor dependency, thereby transforming aspirational architecture into resilient, equity-infused public health infrastructure aligned with SDGs 3, 13, and 15 (United Nations, 2015).

Priority Areas and Risks Addressed

One Health Strategy 2076 (2019) delineates priority areas centered on new, re-emerging, zoonotic, and novel diseases, operationalizing multisectoral efforts that span wildlife conservation, food safety, and environmental management to preempt shared health threats at human-animal-ecosystem interfaces. The Strategy's multisectoral lens integrates these risks through delineated action domains: zoonotic disease prioritization mandates joint surveillance for 12 high-burden pathogens, leveraging wildlife interfaces in 20+ protected areas; food safety aligns with Codex Alimentarius via multisectoral inspections of informal markets; AMR stewardship promotes antibiotic formularies and resistance mapping across veterinary/public health labs; and environmental health incorporates climate risk modeling for vector-borne escalations, linking to National Adaptation Plans.

Strategic alignment with international norms amplifies efficacy: full concordance with International Health Regulations (IHR 2005) core capacities ensures 24/7 event reporting via unified platforms, while Joint External Evaluations (JEE) benchmarking elevated from 40% in 2017 to projected 60% by 2026 bolsters national committees' roles in prevention, detection, and response (World Health Organization, 2022). National One Health committees operationalize JEE indicators (e.g., zoonotic surveillance scoring), fostering real-time data fusion from EWARS (human events) and AHMIS (animal health), with wildlife inputs from Department of National Parks (Ministry of Health and Population, 2023).

This framework not only mitigates immediate burdens—estimated at NPR 5 billion annually in rabies/AMR costs—but preempts pandemics, as COVID-19's wet-market echoes underscored, positioning Nepal's federalized approach as a scalable model for LMICs navigating biodiversity-agriculture-health nexuses.

Implementation Progress (2019–2026)

Nepal's One Health Strategy 2019 AD has laid a foundational multisectoral framework for addressing interconnected zoonotic, AMR, and environmental health threats, yet its implementation reflects a mix of progress and persistent structural challenges. It established key governance mechanisms, including federal steering and technical committees involving the Ministry of Health and Population (MoHP), Ministry of Agriculture and Livestock Development (MoALD), and Ministry of Forests and Environment (MoFE). At the provincial level, advancements in federal health transition such as health policies enacted in Gandaki and Lumbini provinces have supported broader domestication efforts, but dedicated provincial One Health bylaws remain limited, with most activities guided by federal directives rather than distinct subnational legislation. Official capacity building continues under entities like the Epidemiology and Disease Control Division (EDCD) and Central Veterinary Laboratory (CVL), rather than a centralized "Nepal One Health Institute."

Surveillance enhancements show incremental gains, with the 2025 National SOP for the Early Warning and Reporting System (EWARS) prioritizing interoperability and digital integration. However, full real-time interfacing with the Animal Health Management Information System (AHMIS) for zoonotic alerts is still in pilot or testing phase. Performance metrics indicate moderate attainment; mid-term reviews of the Nepal Health Sector Strategic Plan (NHSSP 2023–2030) suggest alignment with around 55% indicator progress in related areas, while the 2022 Joint External Evaluation (JEE) highlighted lower scores (typically 20–40% in response and workforce categories). The Universal Health Coverage (UHC) service coverage index stood at approximately 58 in 2023, progressing toward SDG targets of 65+ by 2030, though the pace remains gradual amid systemic constraints.

Disease-specific efforts underscore both achievements and gaps. Rabies control mass dog vaccination have advanced community awareness and response, yet national incidence reductions are not yet substantiated by surveillance data, complicated by vaccine supply issues and fluctuating cases. AMR containment benefits from Fleming Fund-supported surveillance in poultry and livestock, with protocols for active monitoring in broilers and other populations, alongside training for farmers and veterinarians on biosecurity and rational use.

CONCLUSION

Nepal’s One Health Strategy 2076 (2019 AD) marks a pivotal shift toward institutionalizing multisectoral governance for zoonotic diseases, antimicrobial resistance (AMR), food safety, and climate-sensitive health risks within a federal system. Early implementation demonstrates the feasibility of coordinated action in resource-constrained settings, reflected in the establishment of federal steering and technical committees. To translate policy intent into durable practice, Nepal should prioritize four enabling reforms: (i) enactment of a dedicated One Health Act to clarify mandates, accountability, and inter-ministerial obligations; (ii) predictable, ring-fenced financing across health, agriculture, and environment budgets; (iii) interoperable digital platforms linking human, animal, and wildlife surveillance in real time; and (iv) sustained investment in subnational laboratories, workforce development, and community-based surveillance.

Keywords: One health, Zoonoses, Policy, Nepal.

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