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Review

Environmental justice and One Health: Toward an integrated framework for equitable and sustainable health outcomes

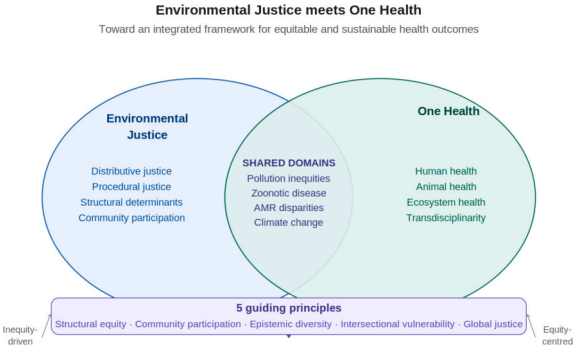
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HIGHLIGHTS

- One Health and environmental justice share core goals of equity and sustainability.
- Marginalized communities face disproportionate exposures to pollutants and zoonoses.
- Antimicrobial resistance and climate change inequities demand an integrated approach.
- Five guiding principles are proposed to embed environmental justice into One Health.
- Recommendations are offered for researchers, policymakers, and global health bodies.

GRAPHICAL ABSTRACT



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ABSTRACT

The One Health framework, which recognizes the interdependence of human, animal, and ecosystem health, has gained considerable momentum in global health policy. However, its full potential to address health inequities remains underexplored. Environmental justice (EJ), defined by the US EPA as the fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies, constitutes a natural and necessary complement to One Health. This narrative review examines the conceptual, empirical, and policy interfaces between EJ and One Health, arguing that each framework is incomplete without the other. This review analyzes how socially marginalized populations bear disproportionate environmental burdens through differential exposures to pollutants, zoonotic risks, antimicrobial-resistant pathogens, and the adverse health consequences of climate change. The manuscript also discusses how the One Health approach can be enriched by incorporating EJ principles, including procedural justice, community participation, and the recognition of structural determinants of health. Five guiding principles for integration (namely, structural equity, community-centered participation, epistemic diversity, intersectional vulnerability analysis, and global justice) are proposed, together with concrete recommendations for researchers, policymakers, and international health organizations aiming to build a more equitable One Health governance architecture.

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1. Introduction

The concept of One Health has progressively evolved from a theoretical proposition to a guiding framework in global health policy. Formally operationalized by the One Health High-Level Expert Panel (OHHLEP), constituted in 2021 under the auspices of the Food and Agriculture Organization (FAO), the World Organization for Animal Health (WOAH, formerly OIE), the United Nations Environment Program (UNEP), and the World Health Organization (WHO), One Health is now broadly defined as an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems (OHHLEP et al., 2022). Its foundational principles include equity, inclusivity, equal access, parity, socioecological equilibrium, stewardship, and transdisciplinarity (OHHLEP et al., 2022; Winkler et al., 2025). This manuscript was prepared in early 2026, immediately prior to the anticipated renewal of the One Health Joint Plan of Action (2022–2026), offering a timely opportunity to embed environmental justice (EJ) principles into the next phase of global One Health governance. In practice, the One Health approach is implemented across multiple sectors and at different geographic levels, from local activities such as zoonotic disease monitoring, food safety inspections, and veterinary public health services to broader national coordination frameworks and global governance for pandemic preparedness. Core elements of this approach include collaborative risk assessment and early warning systems spanning human, animal, and environmental domains; integrated surveillance and laboratory networks; multisectoral coordination structures (e.g., national One Health units), and workforce development initiatives aimed at fostering shared skills and interdisciplinary expertise (OHHLEP et al., 2022; Winkler et al., 2025).

On the other hand, EJ has concurrently emerged as a defining paradigm in public and environmental health research. Emerging from the civil rights movement and decades of community mobilization, EJ addresses the disproportionate burden of environmental hazards borne by racial and ethnic minorities, low-income communities, and other socially marginalized groups (Brulle and Pellow, 2006). The US EPA (2021) defines EJ as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies". In fact, EJ encompasses two interrelated dimensions: distributive justice, to address the unequal distribution of environmental risks and resources, and procedural justice, which ensures meaningful participation of affected communities in environmental decision-making (Schulz et al., 2025). A third, closely connected dimension, recognitional justice, emphasizes the need to acknowledge the identities, histories, and cultural practices of marginalized populations as integral to environmental decision-making (Schlosberg, 2007). In addition to these three widely recognized dimensions, more recent EJ frameworks have introduced further perspectives, including structural, contextual, and corrective (or restorative) dimensions. These respectively address the underlying systemic drivers of inequity, the pre-existing conditions that influence communities' capacity to participate in decision-making, and the need to repair or compensate for harms experienced by affected populations (McDermott et al., 2013; Schlosberg, 2007).

Despite their shared emphasis on health equity and the interaction between social and environmental systems, EJ and One Health have largely evolved along separate historical trajectories. EJ is rooted in the decades-long civil rights movement and community mobilization that predates the formal articulation of One Health by several decades (Brulle and Pellow, 2006), while One Health emerged later from veterinary and biomedical traditions. To date, conceptual integration between the two frameworks has remained limited. According to Murray et al. (2022), One Health can only improve the health of urban communities and ecosystems if it also addresses social inequalities in environmental conditions, exposures, and policymaking. Similarly, the emerging literature on epistemic justice in public health suggests that One Health initiatives have often reflected a predominantly Western, industrialized worldview, potentially marginalizing the lived realities and ecological knowledge of communities in the Global South (Pesliak and Killin, 2025). Related critiques include the relational One Health framework, which similarly cautions against a predominantly biomedical, Western epistemic base and calls for greater engagement with local and Indigenous ways of knowing (Meisner et al., 2024).

The convergence of EJ and One Health is not only intellectually coherent but practically urgent. Environmental racism, the disproportionate siting of polluting industries, hazardous waste facilities, and industrial agriculture in communities of color, simultaneously impairs human health, degrades ecosystems, and increases animal disease pressure (Njoku and Joseph, 2023; Smith et al., 2022). As defined in the EJ literature, environmental racism denotes specifically the racial dimension of environmental injustice, namely the disproportionate exposure of racial and ethnic minority communities to environmental hazards resulting from discriminatory siting, planning, and enforcement practices (Kaufman and Hajat, 2021). Climate change, itself a One Health challenge is further related to these injustices: racially minoritized groups, migrants, and indigenous communities bear a disproportionate burden of climate-related illness and mortality (Deivanayagam et al., 2023). Antimicrobial resistance (AMR), an essential One Health problem, is also shaped by structural inequities, with low- and middle-income countries (LMICs) facing far greater case fatality rates from resistant infections due to limited surveillance infrastructure and restricted access to second-line treatments (AMR Collaborators, 2022).

Based on the above, the present review was aimed at: (a) examining the conceptual foundations and areas of convergence between EJ and One Health, (b) identifying key environmental health domains where social inequities operate at the human–animal–ecosystem interface, (c) critically examining the current limitations of One Health frameworks in addressing structural inequities, and (d) proposing recommendations for an integrated EJ–One Health research and policy agenda. Given the breadth and complexity of the topic, as well as the absence of a universally accepted operational framework for merging these paradigms, a narrative review approach was selected as the most appropriate format, consistent with precedent in the One Health and environmental health literature (Domingo, 2026; Murray et al., 2022; Smith et al., 2022; Souza et al., 2026).

Recently, the intersections between social determinants and the One Health framework (Murray et al., 2022), as well as the integration of EJ principles within public health contexts have been examined (Pesliak and Killin, 2025). Expanding the previous work, the present manuscript contributes to the field by outlining an operational framework for embedding EJ principles into One Health governance and research. Whereas earlier scholarship frequently relegated equity to a peripheral concern, the current study delineates five guiding principles: structural equity, community-centered participation, epistemic diversity, intersectional vulnerability analysis, and global justice, and accompanies them with practical recommendations for researchers and policymakers. Synthesized from Schlosberg's (2007) tripartite and expanded EJ typology, the OHHLEP (2022) equity principles, and the structural-determinants-of-health literature (Egede et al., 2024), these principles and their supporting rationale are further elaborated later in this manuscript. Furthermore, EJ principles are systematically mapped across the core One Health domains (human, animal, and ecosystem health). Their applications are exemplified through a series of empirical case studies, such as concentrated animal feeding operations, zoonotic disease disparities, and climate-related inequities. This framework is aimed at addressing the current gap between the rhetorical emphasis of One Health on equity and its operational implementation.

2. Methods

As noted earlier, this paper adopts a narrative review approach. Narrative reviews are well-established and widely applied in

environmental and public health research (Ferrari, 2015; Sukhera, 2022), offering a flexible framework for integrating diverse and multidisciplinary evidence. This method is particularly valuable for synthesizing large and heterogeneous literatures and for identifying conceptual linkages across distinct research traditions (Murray et al., 2022; Pesliak and Killin, 2025; Smith et al., 2022). This review was not designed as a systematic review. Therefore, elements such as a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart, or a detailed study selection record are not included. The choice of a narrative design reflects the nature of the research question, which centers on integrating environmental justice and One Health. Addressing this topic requires consideration of theoretical models, governance processes, epidemiological findings, and policy discourse—dimensions that cannot be comprehensively covered through a single structured search or evaluated with standardized risk-of-bias tools.

As the main goal of this review is to formulate a new conceptual and operational framework rather than to test a specific empirical hypothesis, the manuscript employs a transdisciplinary synthesis approach. This strategy is crucial for bridging traditionally compartmentalized fields (such as environmental law, veterinary medicine, and social epidemiology) within a coherent and integrative narrative. Adopting a narrative synthesis enables the critical examination of the complex and non-linear interactions occurring at the human–animal–ecosystem interface, which are often beyond the scope of the restrictive inclusion criteria and statistical aggregation methods that are used in conventional systematic reviews.

Literature searches were conducted across three principal databases, PubMed/MEDLINE, Web of Science, and Google Scholar, without date restriction on the lower bound, and a practical upper search date established on March 31, 2026. The following keyword combinations were employed: ("One Health" AND "environmental justice"); ("One Health" AND "health equity"); ("One Health" AND "social determinants"); ("antimicrobial resistance" AND "environmental justice" AND "low- and middle-income countries"); ("zoonotic diseases" AND "social inequity"); ("climate change" AND "health equity" AND "environmental justice"); ("One Health governance"); and ("environmental racism" AND "health"). Additional literature was identified through manual screening of the reference lists of key papers retrieved in the initial searches, as well as through targeted searches for specific topics discussed in the text (e.g., concentrated animal feeding operations, urban zoonoses, procedural justice, epistemic justice). Grey literature was included selectively but systematically, focusing on policy documents and official reports from international organizations (WHO, FAO, UNEP, WOAH, and OHHLEP), especially when constituting primary sources of institutional definitions, strategies, or governance frameworks.

Studies and documents were included if they were focused on: (a) conceptual, theoretical, or empirical dimensions of One Health and/or environmental justice, (b) environmental health inequities at the human–animal–ecosystem interface, (c) governance, policy, or institutional frameworks for One Health implementation, and (d) specific topic areas central to the review (antimicrobial resistance, zoonotic diseases, climate change, environmental pollution, and community participation). Non-English sources were excluded. No formal quality appraisal or risk-of-bias assessment was applied to the included literature, consistent with the narrative review format. To avoid citation errors, throughout the review process, particular attention was paid to the accuracy, traceability, and genuine accessibility of all cited references, being each reference included in this paper independently verified against the primary source.

In the process of selecting and synthesizing the retrieved literature, priority was assigned to sources based on four main criteria: (a) their relevance to the conceptual overlap between Environmental Justice and One Health, (b) the timeliness of publication, with particular attention to studies published during the preceding five years to account for emerging evidence and recent developments, (c) their theoretical, conceptual, or methodological significance within the corresponding fields of research, and (d) their representation of the three interconnected One Health dimensions, human, animal, and ecosystem health, across a range of socioeconomic and geographical contexts, including both high-income and low- and middle-income countries. Given the narrative nature of this review, the synthesis did not rely on a formal content analysis using predefined coding frameworks. Instead, a thematic synthesis approach was adopted. Drawing on foundational concepts identified a priori within the EJ and One Health literatures, the review was structured around five key analytical themes: structural equity, procedural justice, recognitional justice, epistemic diversity, and intersectionality. These themes served as guiding categories for the organization, comparison, and integration of the selected sources throughout the review.

3. One Health and environmental justice

3.1. The One Health framework: definition, scope, and principles

The definition of One Health, developed by the OHHLEP, describes it as an integrated, unifying approach that mobilizes multiple sectors, disciplines, and communities at varying levels of society 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; taking action on climate change, and contributing to sustainable development (OHHLEP et al., 2022). Central to the OHHLEP vision are the named "four Cs": communication, coordination, collaboration and capacity building.

The One Health Joint Plan of Action (OH JPA, 2022–2026), developed by the Quadripartite organizations (FAO, UNEP, WHO, and WOAH), identifies six interconnected action tracks: (1) human health systems, (2) animal health systems, (3) plant health systems, (4) environment, including food safety and nutrition security, (5) AMR, and (6) zoonotic diseases and emerging infectious diseases. It explicitly acknowledges that optimal health outcomes require cross-sectoral governance and multi-level engagement, from community to global scales (Dar et al., 2025; Faijue et al., 2024; Winkler et al., 2025).

However, One Health actually faces several structural limitations. It often remains anthropocentric, prioritizing human health over animal and ecosystem health, and suffers from weak interdisciplinary collaboration (Fernandes, 2026). A strong Western-centric lens can also marginalize ecological and cultural knowledge from communities in the Global South. Although equity is frequently invoked as a core principle, it is seldom translated into concrete practice, leaving structural drivers of health inequalities largely intact.

3.2. Environmental justice: conceptual dimensions

Environmental justice is a multidimensional concept with historical roots in the North American civil rights movement. According to Brulle and Pellow (2006), EJ emerged from the recognition that racial and ethnic minority and low-income communities in the United States were disproportionately exposed to environmental hazards, including proximity to hazardous waste facilities, polluting industries, and contaminated air and water sources. Although this pattern has been documented globally, there are significant regional variations in the terminology and policy frameworks employed (OECD, 2024).

Conceptually, EJ is typically structured around three interrelated justice principles: (1) distributive justice, concerning the equitable distribution of environmental risks and benefits, (2) procedural justice, requiring meaningful participation of affected communities in environmental governance, and (3) recognitional justice, which calls for the acknowledgement of the identities, histories, and cultural practices of marginalized groups as essential inputs to environmental policy (Schlosberg, 2007). As noted in the Introduction, this classic tripartite typology has since been further expanded in the EJ literature to include

structural, contextual, and corrective (or restorative) dimensions (McDermott et al., 2013; Schlosberg, 2007). More recently, the concept has been expanded to include also differential adaptive capacity under climate change, with attention to how structural inequalities shape both exposure and vulnerability (Deivanayagam et al., 2023; Smith et al., 2022). Table 1 summarizes the three foundational EJ principles, distributive, procedural, and recognitional justice, illustrating their application across the human, animal, and ecosystem health dimensions of the One Health framework.

Environmental justice research has grown exponentially in recent years. A PubMed search conducted on March 15, 2026, using "environmental justice" as the search term, yielded a total of 3030 results for the last 5 years, out of a total of 5392 results. From this total, 4244 belong to the last 10 years. In turn, a recent review of EJ studies published in 19 environmental and epidemiological journals between 2018 and 2021 identified 402 articles, spanning 69 countries, with most studies addressing socioeconomic status or race/ethnicity as the primary axis of environmental health inequality (Casey et al., 2023). Air pollution was the most common exposure examined, consistent with the substantial literature on racial and socioeconomic disparities in particulate matter (PM2.5) and other criteria pollutants (Kaufman and Hajat, 2021; Tessum et al., 2021).

3.3. Points of convergence and mutual enrichment

One Health and EJ approaches recognize that health is influenced by broad social, environmental, and systemic factors, not just individual actions. They both challenge narrow views that look only at medicine or the environment in isolation and instead promote integrated, cross-disciplinary ways of understanding and improving health. Murray et al. (2022) identified five key domains where One Health and EJ interfaces can be meaningfully aligned in the urban context: (1) the distribution of ecosystem services and disservices, (2) human–wildlife interactions, (3) legacies of land use, (4) environmental disamenities, and (5) access to health-promoting resources.

One Health integrative ambitions align naturally with EJ emphasis on structural determinants of health. While One Health has tended to focus on disease transmission dynamics and biosurveillance, EJ emphasizes the social, economic, and political conditions that render certain communities disproportionately exposed and vulnerable. Integrating EJ perspectives into a One Health framework enriches transdisciplinary assessments of contaminated areas by revealing the historical context and lived experiences of community exposure that standard epidemiological analyses would otherwise miss (Van Horne et al., 2023). Table 2 shows a structured overview of the four central domains, showing for each domain the convergent EJ and One Health dimensions together with a concrete empirical example.

Environmental justice can help One Health transcend its current epistemic limitations. The critique that One Health reflects a 'WEIRD' (Western, Educated, Industrialized, Rich, and Democratic) worldview underscores the need for frameworks that accommodate diverse ecological knowledge systems, local health perceptions, and culturally specific exposure pathways (Pesliak and Killin, 2025). An EJ-informed One Health approach would center community voices, recognize historical injustices, and prioritize interventions in the most overburdened communities.

Previous studies have advanced EJ–One Health integration. Thus, Murray et al. (2022) mapped five urban alignment domains, while Pesliak and Killin (2025) critiqued WEIRD epistemic biases. This manuscript is based on their works by extending the scope beyond urban settings to global rural, agricultural, and climate contexts, by proposing five explicit guiding principles with operational governance recommendations, as well as by providing domain mapping (Tables 1 and 2), corrective principles for One Health limitations (Table 3), and concrete pilot scenarios. These additions shift the discussion from conceptual critique toward practical, equity-centered implementation.

4. Environmental inequities at the human–animal–ecosystem interface

4.1. Disproportionate exposures to environmental pollutants

The evidence base of EJ demonstrates that marginalized communities, defined by race, ethnicity, income, or immigration status, are disproportionately exposed to chemical pollutants across a range of environmental media. This, often referred to as environmental racism when racial disparities predominate, manifests through the co-location of industrial facilities, transportation infrastructure, hazardous waste sites, and petrochemical operations (among others) in communities of color and low-income neighborhoods (Kaufman and Hajat, 2021; Massey and Dorado, 2024; Nashwan and Singh, 2025). Children in these communities represent a particularly vulnerable subpopulation. From conception through adolescence, developing nervous systems are more susceptible to neurotoxic chemicals, including lead, mercury, organophosphate pesticides, and polycyclic aromatic hydrocarbons (Costa et al., 2004; Grandjean and Landrigan, 2014; Peris-Sampedro et al., 2014). Disproportionate lead exposure in low-income and minority communities, partially mediated by older housing stock and proximity to various contaminated sites, including smelters, former industrial facilities, and hazardous waste sites, constitutes one of the most

Table 1
Environmental justice principles and their application across the three dimensions of One Health, with policy implications.

EJ principle	Human health	Animal health	Ecosystem health	Policy implications
Distributive justice (equitable distribution of risks and benefits)	Marginalized communities bear higher pollution burdens (lead, PM2.5, pesticides), contributing to disparities in respiratory, neurological, and developmental outcomes	Communities near CAFOs face amplified zoonotic spillover and AMR exposure; livestock in LMICs lack veterinary oversight	Low-income regions experience disproportionate biodiversity loss, deforestation, and ecosystem degradation, limiting provisioning services	Implement environmental remediation programs in overburdened communities (e.g., lead abatement, CAFO buffer zones) and prioritize these areas for One Health funding
Procedural justice (meaningful community participation in governance)	Affected populations are often excluded from health risk assessments, environmental permitting, and policy design processes	Indigenous and rural communities lack voice in wildlife management, livestock regulation, and transboundary disease control	Local ecological knowledge is undervalued in conservation planning and environmental monitoring programs	Mandate community advisory boards in One Health governance bodies (e.g., WHO, FAO) to ensure affected populations co-design interventions
Recognitional justice (acknowledgement of identities, histories, and cultural practices)	Structural racism and colonial legacies shape exposure profiles and healthcare access, but are rarely modelled in One Health disease burden assessments	Traditional animal husbandry practices and human–animal relationships are frequently overlooked in mainstream One Health frameworks	Indigenous land tenure and ecological stewardship are not systematically integrated into environmental governance	Incorporate indigenous and local knowledge into One Health curricula and fund research led by marginalized groups on health priorities they define

Note: AMR = antimicrobial resistance; CAFOs = concentrated animal feeding operations; EJ = environmental justice; LMICs = low- and middle-income countries. EJ principles are based on Schlosberg (2007) and Deivanayagam et al. (2023).

Table 2
Key domains at the environmental justice–One Health interface: convergent dimensions and illustrative examples.

Domain	Environmental justice dimension	One Health dimension	Illustrative example
Chemical pollution and environmental racism	Co-location of polluting industries in communities of color; disproportionate lead and pesticide exposure in low-income and minority populations	Contaminants affect human, animal, and ecosystem health simultaneously; neurotoxic chemicals impair child neurodevelopment	CAFOs sited near low-income Latino/African American rural communities generate nitrate, H_2S, and endocrine-disrupting compound exposures while amplifying AMR (Schultz et al., 2019; Sexton et al., 2011)
Zoonotic diseases	Structural inequities (overcrowding, poor sanitation, limited healthcare access) heighten zoonotic risk and worsen outcomes among marginalized groups	Pathogen spillover at wildlife–livestock–human interfaces; land-use change and habitat encroachment drive emergence	COVID-19 showed racial/ethnic minorities faced higher infection, hospitalization, and mortality due to longstanding structural disadvantages (Irizar et al., 2024; Njoku and Joseph, 2023)
Antimicrobial Resistance (AMR)	LMICs face higher AMR fatality rates due to limited surveillance, restricted access to second-line antibiotics, and weak infection prevention infrastructure. Intensive livestock operations in marginalized communities (e.g., Punjab, India; North Carolina, USA) expose residents to antibiotic-resistant pathogens via air, water, and food.	Antibiotic use in food animals selects for resistant bacteria transmissible to humans. Environmental pathways (e.g., contaminated water, manure runoff) spread resistance beyond clinical settings.	Surveillance in regions with intensive livestock production indicates co-occurrence of pesticide exposure and AMR markers, highlighting the need for integrated EJ–OH surveillance (Guo et al., 2022; Laxminarayan et al., 2024).
Climate change	Racially minoritized groups, migrants, and indigenous communities bear disproportionate climate-health burdens; 'redlining' legacy drives urban heat vulnerability	Climate drives biodiversity loss, disrupts host–pathogen dynamics, expands vector-borne disease ranges (dengue, Lyme, West Nile)	Following Hurricane Harvey (2017), Black Texas residents were ~4× more likely to report high post-traumatic stress than white counterparts and faced greater healthcare access barriers (Deivanayagam et al., 2023)

Note: AMR = antimicrobial resistance; CAFOs = concentrated animal feeding operations; LMICs = low- and middle-income countries; PM2.5 = fine particulate matter; H_2S = hydrogen sulphide.

extensively documented examples of environmental injustice, with lasting cognitive and developmental consequences (Sexton et al., 2011; Yu, 2025).

Rural and agricultural communities present distinct exposure profiles, including elevated pesticide exposure, groundwater contamination from agricultural runoff, and proximity to concentrated animal feeding operations (CAFOs) (Simões et al., 2022). CAFOs serve as a particularly illustrative node at the One Health–EJ interface (Moore et al., 2021). They generate significant environmental pollution (including nitrates, hydrogen sulfide, and endocrine-disrupting compounds) that disproportionately affects nearby rural communities, often predominantly Latino or African American in the United States (Schultz et al., 2019; Sexton et al., 2011; Son et al., 2021). Simultaneously, CAFOs are primary amplifiers of AMR and can constitute reservoirs for zoonotic pathogens, linking EJ with One Health concerns at a single geographic nexus (Guo et al., 2022). Moreover, recent evidence from rural communities located near industrial pig farming operations shows that combined exposure to organophosphate and pyrethroid pesticides is associated with adverse mental health outcomes (Hojas et al., 2026).

The analytical framework proposed by Van Horne et al. (2023) for exposure science, which emphasizes community-driven approaches, structural root causes, and full distributional analysis rather than mean exposures alone, is directly applicable to One Health monitoring (DuBay et al., 2025). Although high-end exposures may be small in absolute population, they represent those most urgently requiring protection, a principle equally relevant to chemical toxicology and infectious disease surveillance. New methodological work on exposure-inequity metrics in the United States has shown that inequality in pollutant burden is not only uneven but systematically unjust, motivating the need for intersectional, socially weighted indicators within One Health monitoring systems (Chambliss et al., 2024).

4.2. Zoonotic diseases and social vulnerabilities

Zoonotic diseases, which are transmissible infections between animals and humans, represent the paradigmatic challenge of One Health. The COVID-19 pandemic clearly demonstrated that emerging infectious diseases exploit pre-existing social vulnerabilities. Racial and ethnic minority groups in the United States were more prone to contract, to be hospitalized, and to die from COVID-19 (Irizar et al., 2024), reflecting longstanding structural inequities in housing, occupational exposure, and healthcare access (Njoku and Joseph, 2023). These outcomes were not coincidental, but they were the product of decades of disinvestment in communities of color, as well as environmental racism that had left these communities with higher baseline rates of respiratory and cardiovascular comorbidities.

Beyond COVID-19, zoonotic disease risk is unevenly distributed across regions and populations. Zoonotic disease risk depends strongly on how land is used, where people live relative to wildlife–livestock–human contact zones, and how easily they can access veterinary and medical care (Fell et al., 2026; Ortiz-Millán, 2025). Rural Indigenous peoples and subsistence farming communities in many low- and middle-income countries often inhabit regions where human activities increasingly overlap with wildlife habitats, fostering conditions conducive to pathogen transmission from animals to humans (Solis et al., 2025; Vora et al., 2023). At the same time, these communities frequently lack robust disease surveillance, laboratory capacity, and healthcare infrastructure, which delays detection of new infections and limits timely outbreak response.

4.3. Global south case studies

The disproportionate burden of zoonotic diseases in LMICs is exemplified by Ebola outbreaks in West Africa and Nipah virus in South Asia, where deforestation, wildlife trade, and limited healthcare infrastructure converge to amplify spillover risks (Ortiz-Millán, 2025). For instance, in Bangladesh, Nipah virus transmission is linked to date palm sap contamination by bats, a risk exacerbated by poverty-driven land-use changes and lack of protective equipment for sap harvesters (Khan et al., 2025). Similarly, in sub-Saharan Africa, bushmeat hunting (often a necessity for food security) creates pathways for Ebola and monkeypox spillover, yet stigmatization of indigenous practices (rather than addressing structural drivers like deforestation or healthcare access) has dominated public health responses (Forgie et al., 2022). These examples indicate the need for One Health interventions that center local knowledge and address root causes of vulnerability, such as land tenure insecurity and colonial legacies of resource extraction.

The report published by OHHLEP et al. (2023) on the prevention of zoonotic spillover explicitly acknowledges that reducing spillover risk requires addressing the social and economic drivers of environmental

Table 3
Structural limitations of current One Health frameworks, EJ-informed corrective principles, practical recommendations, and gaps in literature.

Structural limitation of current One Health frameworks	EJ-informed response/ corrective principle	Practical recommendation	Gaps in literature
Peripheral community participation; governance relies on state-centered, technocratic mechanisms	Procedural justice: require active and equitable community involvement in all decision-making stages	Mandate community-based participatory research (CBPR) as a standard feature of One Health field research; require community consultation in program design and governance	Few studies evaluate long-term outcomes of community-led OH initiatives or barriers to participation (e.g., power imbalances, lack of funding)
Biomedical/ ecological framing underweights structural social determinants (poverty, discrimination, housing insecurity, structural racism)	Structural equity as foundational concern: explicitly model structural forces (racism, poverty, historical dispossession) in health risk assessments and surveillance	Incorporate equity metrics at all stages of One Health research design, surveillance, and evaluation; stratify epidemiological analyses by sociodemographic and geographic vulnerability indicators	Limited research on how structural racism shapes OH priorities (e.g., why AMR in LMICs receives less funding than in HICs)
Western-centric evidence base ('WEIRDness'): data, methods, and frameworks generated primarily in high-income countries	Epistemic diversity and cultural competence: incorporate diverse ecological knowledge systems and culturally specific health perceptions beyond the Western epistemic base	Explicitly acknowledge epistemic limitations when applying Western-derived One Health models in non-Western contexts; direct investment toward communities at the intersection of high environmental burden and low adaptive capacity	No systematic reviews compare OH interventions designed in HICs vs. LMICs or assess cultural adaptability
Equity-insensitive surveillance metrics: disease burden monitored in aggregate without stratification	Intersectional vulnerability analysis: attend to how race, income, gender, age, immigration status, and geographic marginalization interact to produce health vulnerability	Build equity-sensitive surveillance systems capable of detecting disparities in environmental and health outcomes across human, animal, and ecosystem dimensions; incorporate EJ equity metrics into the OH JPA monitoring and evaluation framework	No standardized equity metrics exist for OH monitoring; most systems do not stratify data by race, income, or geography
Global inequity in burden and resources: LMICs bear greater AMR and climate-health burdens with fewer resources	Global justice and North–South solidarity: apply distributional and recognitional justice principles to international One Health investment decisions	Establish dedicated funding streams for One Health implementation in LMIC communities facing the greatest cumulative burdens; include targeted support for AMR surveillance and treatment infrastructure in low-resource settings in global action plans	No cost-benefit analyses of OH investments in LMICs vs. HICs, despite disproportionate burdens in the Global South

Note: CBPR = community-based participatory research; EJ = environmental justice; LMICs = low- and middle-income countries; OH JPA = One Health Joint Plan of Action (2022–2026).

encroachment, yet systematic integration of EJ considerations into spillover risk modeling remains nascent.

Murray et al. (2022) reported how human–wildlife interactions in cities are structured by residential segregation and socioeconomic gradients. Low-income urban neighborhoods, characterized by inadequate housing, limited green space, and poor waste management, often host higher densities of urban wildlife vectors (including rats and other rodents), thereby increasing exposure to leptospirosis, hantavirus, and other zoonoses (Rulli et al., 2025). Thus, the differential distribution of urban nature constitutes both an EJ issue and a One Health challenge, with disadvantaged communities bearing both a deficit of green space amenities and an excess of wildlife-mediated disease risk.

4.4. Antimicrobial resistance and global inequities

Antimicrobial resistance represents a prototypical One Health challenge, as the evolution, transmission, and dispersal of resistance occur largely in environmental settings (farms, waterways, livestock operations, and wildlife) before manifesting clinically as treatment failure (Laxminarayan et al., 2024). The One Health dimensions of AMR are well established. Antibiotics administered to food-producing animals select for resistant bacteria that can be transmitted to humans through direct contact, the food chain, or environmental pathways, including contaminated water and agricultural runoff (Van Boeckel et al., 2019).

Although it is equally significant, the EJ dimension of AMR is less frequently acknowledged. In LMICs, limited resources for infection prevention, weak surveillance infrastructure, and restricted access to second-line antimicrobials result in higher fatality rates, as well as greater onward transmission of resistant pathogens. The diverging resource availabilities, needs, and priorities of the Global North and the Global South in terms of the actions required to mitigate AMR, constitute a direct threat to global mitigation success, with infection prevention interventions (clean water, sanitation, and vaccine coverage), being the priority for LMICs rather than the research and development focus that dominates high-income country agendas (Aguiar et al., 2025; Mendelson et al., 2023). These communities often face the dual burden of higher agricultural antibiotic use, driven by intensive production systems and inadequate veterinary oversight, as well as reduced capacity to manage the clinical consequences of resistance.

As above indicated, CAFOs, in low-income communities, illustrate the convergence of environmental injustice and AMR risk. Residents living near intensive livestock operations face not only elevated exposure to air pollution and nutrient-contaminated groundwater, but also greater proximity to high-density antibiotic use, and its environmental consequences (Schultz et al., 2019). An integrated EJ–One Health framework should treat these communities as priority sites for AMR surveillance, regulatory intervention, and environmental remediation.

4.5. Climate change: the amplifier of environmental and health injustice

Climate change constitutes perhaps the most expansive domain where One Health and EJ intersect. The health impacts of climate change such as heat-related morbidity and mortality, vector-borne

disease expansion, air quality deterioration, extreme weather events, food and water insecurity, and mental health consequences, are neither uniformly distributed, nor independently determined by individual physiology. They are rather profoundly shaped by structural inequalities of race, income, and geography (Agache et al., 2025; Deivanayagam et al., 2023; Smith et al., 2022). Deivanayagam et al. (2023) noted that racially minoritized groups, migrants, and indigenous communities faced a disproportionate burden of illness and mortality due to climate change, across multiple contexts and regions. It includes differential heat vulnerability in residential areas characterized by higher surface temperatures and lower green space coverage (a legacy of racially discriminatory "redlining" in the USA) (Hoffman et al., 2020), as well as disproportionate exposure to wildfire smoke, flood damage, and hurricane-related displacement. Following Hurricane Harvey in 2017, Black Texas residents were four times more likely to report high post-traumatic stress than their white counterparts and were also more likely to experience poor healthcare access in the immediate aftermath (Deivanayagam et al., 2023).

From a One Health perspective, climate change drives biodiversity loss, disrupts host–pathogen dynamics, and expands the geographic range of vector-borne diseases such as dengue, Lyme disease, and West Nile fever (ECDC, 2024). These ecological shifts interact with social vulnerabilities in complex ways. Deforestation and habitat encroachment in the Global South, frequently driven by poverty and insecure land tenure, not only heighten the risk of zoonotic spillover but also impose additional health burdens on already marginalized communities (Pantha et al., 2026). The Intergovernmental Panel on Climate Change (IPCC) has explicitly identified historical patterns of colonialism as a structural factor in climate vulnerability (IPCC, 2022), a recognition that aligns directly with the EJ framework's attention to structural racism and historical dispossession.

Climate justice, the normative demand that climate burdens and responsibilities be distributed equitably, both within and between nations, can be understood as the climate-specific dimension of EJ. Recent global modeling studies show that climate mitigation pathways emphasizing equity can substantially increase health co-benefits for LMICs, whereas least-cost pathways may inadvertently widen EJ gaps (Scovronick et al., 2026). Countries of the Global South, which have contributed least to cumulative greenhouse gas emissions, bear disproportionate climate-health impacts, mirroring the domestic patterns of environmental racism documented within high-income countries (Bolte et al., 2023). Therefore, integrating climate justice into One Health research and policy agendas is not supplementary but constitutive. Thus, a One Health framework that does not account for structural inequities in climate vulnerability cannot accurately model disease risk or design effective interventions.

5. Limitations of current One Health frameworks in addressing structural inequities

The OHHLEP definition of One Health emphasizes equity as a core principle. However, in practice, several structural limitations continue to constrain its ability to address EJ concerns. A recent legal analysis of One Health implementation concludes that if equity, recognitional justice, and multisectoral participation are not clearly written into law, One Health governance may end up reinforcing the same structural inequities it is meant to confront (Bullón Caro, 2025; Lerner, 2026). The governance architecture of One Health has been widely criticized for its predominant reliance on state-centered and technocratic mechanisms. In a recent review on One Health governance frameworks, Faijue et al. (2024) highlighted that, while coordination mechanisms and partnership arrangements have become increasingly formalized, meaningful community participation (particularly from affected or marginalized populations) remains largely peripheral. This deficiency stands in direct contrast to the procedural justice dimension of EJ, which requires that communities be actively and equitably involved in decision-making processes related to the management of environmental and health risks that affect them. In addition, One Health's predominantly biomedical and ecological framing tends to locate health problems within the human–animal–environment interface, while underweighting the social, economic, and political structures that generate differential vulnerability (Jeleff et al., 2022). In One Health practice, the term environment is often interpreted narrowly to refer to the natural or built physical environment, rather than the social environment that encompasses factors such as poverty, discrimination, housing insecurity, and structural racism (Meisner et al., 2024). These social conditions critically shape patterns of exposure, susceptibility, and health outcomes. This conceptual limitation reflects a broader tendency in global health to acknowledge the social determinants of health rhetorically yet fail to integrate them meaningfully into operational frameworks and interventions (Smith et al., 2022). Moreover, One Health research and implementation have been concentrated in high-income countries and have relied heavily on data, methods, and conceptual frameworks generated in these contexts. The inherent "WEIRDness" (Western, Educated, Industrialized, Rich, and Democratic bias) shapes both the questions that are prioritized and the solutions that are advanced, potentially undermining the global validity of One Health approaches. Communities in LMICs often experience fundamentally different configurations of human–animal–environment interactions, requiring locally adapted, culturally sensitive, and epistemically plural methodologies. Integrating EJ frameworks, which emphasize the recognition and inclusion of affected communities' knowledge and lived experiences, can help counter this epistemic bias and promote more contextually grounded and equitable One Health practices. In turn, the metrics used to assess progress in One Health remain inadequate for capturing equity dimensions. Surveillance systems typically monitor disease burden in aggregate, without systematic stratification by sociodemographic characteristics, geographic vulnerability indices, or historical patterns of environmental disadvantage. In the absence of equity-sensitive monitoring, it is not possible to determine whether One Health interventions are narrowing or, inadvertently, exacerbating health disparities (Nerenz et al., 2021; Williams and Fagbemi, 2025). Table 3 matches each structural limitation identified above with its EJ-informed corrective principle and the corresponding practical recommendation proposed in the next section.

6. Toward an integrated EJ–One Health framework

6.1. Guiding principles for integration

Based on the analysis presented above, we propose that an integrated Environmental Justice–One Health (EJ–OH) framework should be grounded in the following five guiding principles. Fig. 1 illustrates the convergence of the three EJ principles, the three One Health domains, and the key health challenges examined in this review, situating human, animal, and ecosystem health within the EJ integration zone and linking them to the underlying structural determinants of inequity (race, income, colonialism, geography, and political economy).

(1) Structural equity as a foundational, not supplementary, concern. Health inequities at the human–animal–ecosystem interface are not residual variations but systematic products of structural forces (racism, poverty, and historical dispossession), which must be explicitly modelled and addressed. Equity metrics should be incorporated into all stages of One Health research design, surveillance, and evaluation (Egede et al., 2024). (2) Community-centered participatory approaches. EJ commitment to procedural justice, ensuring meaningful community participation, must be embedded in One Health governance. In addition, community-based participatory research (CBPR) approaches, which have demonstrated effectiveness in identifying environmental health disparities and driving policy change (Aranda et al., 2024; Massey and Dorado, 2024), should be systematically integrated into One Health implementation, particularly at local and subnational levels. (3)

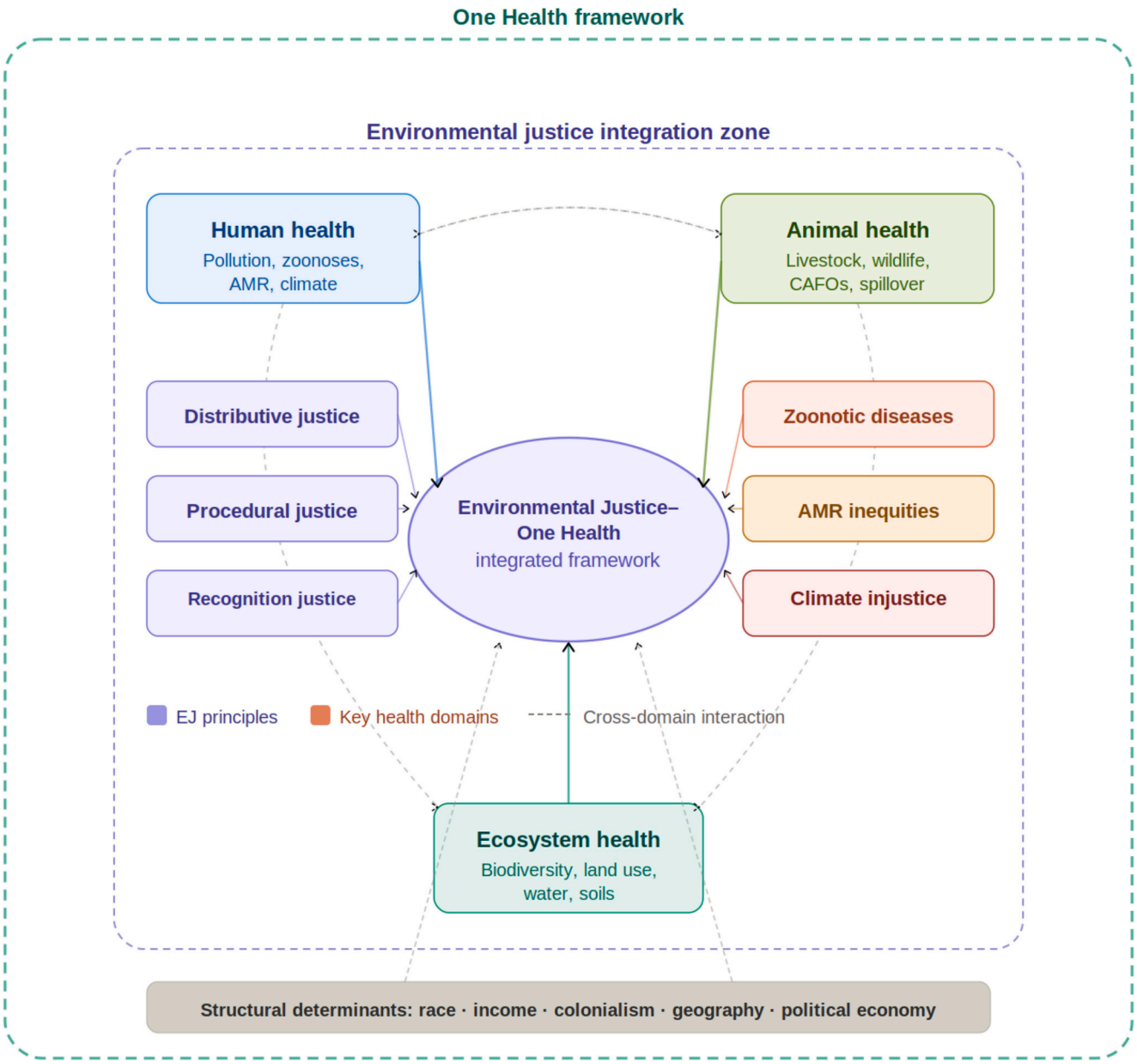


Fig. 1. Conceptual framework for the integration of Environmental Justice and One Health. The figure illustrates the convergence of the three environmental justice principles, the three One Health domains, and the key health challenges examined in this review.

Epistemic diversity and cultural competence. One Health must expand beyond its current predominantly Western epistemic base to incorporate diverse ecological knowledge systems and culturally specific health perceptions. According to Murray et al. (2022), equitable integration of EJ into One Health demands cultural competence, including awareness of privilege and critical engagement with systemic inequities. This is particularly important in Indigenous and traditional community contexts (Pérez-Martín and Esquivel-Martín, 2024), where ecological knowledge and human–animal relationships may differ fundamentally from those modelled in mainstream One Health frameworks. (4) Intersectional vulnerability analysis. Both EJ and One Health recognize that health risks lay at the intersection of multiple disadvantages. Integrating an intersectional lens, attending to how race, income, gender, age, immigration status, and geographic marginalization interact to produce health vulnerability, would significantly enhance the precision and equity relevance of One Health risk assessments (Vidal et al., 2025). (5) Global justice and North–South solidarity. The climate change dimension of One Health makes global equity an inescapable priority. High-income countries bear primary historical responsibility for greenhouse gas emissions and their health consequences, while LMICs bear disproportionate burdens (Ha, 2025). EJ principles of recognitional and distributive justice require that international One Health investments be directed toward the most burdened communities, and that global AMR action plans include targeted support for surveillance and treatment infrastructure in low-resource settings.

While the five core principles described above establish a conceptual basis for an integrated environmental justice and One Health (EJ–OH) framework, their practical application requires the development of clear and measurable indicators. To complement these qualitative principles, equity-oriented surveillance systems are necessary. Such systems should systematically classify data on exposures, diseases, and health outcomes according to the social, demographic, and geographic determinants of marginalization (Nerenz et al., 2021; Williams and Fagbemi, 2025). In this context, Table 4 provides a set of illustrative equity indicators corresponding to each principle, together with possible approaches for data collection. Consistent with the exploratory scope of this narrative

review, these examples are intended as an initial basis for further refinement and validation, rather than as a definitive measurement framework.

6.2. Practical recommendations for researchers and policymakers

Several concrete measures would advance the operationalization of an EJ–OH integrated framework. For researchers, the main recommendations are the following: (a) stratifying all One Health epidemiological analyses by sociodemographic and geographic vulnerability indicators, (b) adopting community-based participatory designs as a standard feature of One Health field research, (c) developing cross-disciplinary methodological frameworks that link environmental exposure science, social epidemiology, and ecological health assessment, (d) explicitly acknowledging epistemic limitations when applying Western-derived One Health models in non-Western contexts, and (e) directing research investment toward communities at the intersection of high environmental burden and low adaptive capacity.

For policymakers and international health organizations, this is recommended: (a) incorporating EJ principles and equity metrics into the monitoring and evaluation frameworks of the One Health Joint Plan of Action, (b) mandating community consultation as a required element of One Health program design and governance, (c) establishing specific funding streams for One Health implementation in LMIC communities facing the greatest cumulative burdens of pollution, zoonotic risk, AMR, and climate vulnerability, (d) developing regulatory instruments that address the co-location of environmental hazards in marginalized communities as a One Health risk factor, and (e) building equity-sensitive surveillance systems capable of detecting and monitoring disparities in environmental and health outcomes across human, animal, and ecosystem dimensions.

Table 4
Illustrative equity-sensitive indicators for operationalizing the five EJ–OH guiding principles.

Guiding principle	Illustrative equity-sensitive indicator(s)	Data source/approach
Structural equity	Proportion of One Health surveillance and research datasets stratified by race/ethnicity, income, and geography; density of regulated pollution sources within a fixed radius of overburdened communities	Administrative/regulatory data linked to census and socioeconomic indicators
Community-centered participation	Proportion of One Health program governance bodies with voting seats held by representatives of affected communities; number of formal community-based participatory research (CBPR) partnerships per program	Program governance records; CBPR partnership registries
Epistemic diversity and cultural competence	Proportion of One Health guidance documents and evidence syntheses that cite or incorporate Indigenous or local ecological knowledge; share of included studies authored by LMIC-based research teams	Structured content review of guidance documents and evidence syntheses
Intersectional vulnerability analysis	Composite social-vulnerability index (combining race/ethnicity, income, age, immigration status, and geography) linked to zoonotic, AMR, and climate-health risk maps	GIS-linked vulnerability indices (e.g., an EJ–OH-adapted Social Vulnerability Index)
Global justice and North–South solidarity	Share of international One Health funding directed to LMIC-based implementation relative to HIC-based research; AMR surveillance infrastructure investment per capita, HICs vs. LMICs	Donor and funder reporting; WHO/FAO/WOAH investment tracking

Note: AMR = antimicrobial resistance; EJ–OH = Environmental Justice–One Health; HICs = high-income countries; LMICs = low- and middle-income countries; WHO/FAO/WOAH = World Health Organization/Food and Agriculture Organization/World Organization for Animal Health. Indicators are illustrative and proposed for future empirical validation.

6.3. Illustrative convergence scenarios

Various contemporary public health challenges indicate how an integrated EJ–OH framework would generate more equitable and effective responses than either framework alone (Murray et al., 2022). Thus, in the context of urban zoonotic disease, an EJ-informed One Health approach to municipal rat management would not merely optimize pest control strategies but would examine how the distribution of rat populations is shaped by neighborhood disinvestment, housing quality, and waste management inequities (Schell et al., 2020). These factors are socially patterned and reflect structural racism (Alvarez, 2023). Interventions would be co-designed with community members, would address upstream social determinants, and would evaluate outcomes stratified by sociodemographic indicators (Murray et al., 2022; Schell et al., 2020).

On the other hand, in the context of antibiotic use and AMR at the food–agriculture interface, an integrated framework would link regulation of antibiotic use in livestock with EJ monitoring of communities near CAFOs, tracking both AMR spread and its differential health consequences across socioeconomic strata. Regulatory enforcement would be calibrated to the cumulative burden already borne by affected communities, consistent with EJ principles of remedial priority. In turn, in the context of climate change adaptation, an EJ–OH lens would direct ecosystem-based adaptation investments (including urban greening, wetland restoration, and sustainable land management) toward communities simultaneously facing the greatest climate health risks and the fewest existing adaptive resources, rather than defaulting to areas where economic returns to investment are most readily measured.

6.4. Challenges to implementation

Several barriers may limit how far the proposed EJ–OH framework can be put into practice, and these need careful attention. First, political and institutional resistance may arise, because One Health governance has often relied on technocratic, top-down approaches rather than community-driven work (Faijue et al., 2024). Second, data limitations, especially in low- and middle-income countries, can hinder equity-focused surveillance and monitoring, since many countries do not routinely collect or report health data broken down by race, ethnicity, or socioeconomic status, which is essential for identifying inequities (Williams and Fagbemi, 2025). Third, persistent funding gaps between high-income and low-income countries can slow progress, highlighting the need for targeted international investment in One Health infrastructure.

Pilot studies are proposed to test how the EJ–OH framework can be used in practice in different settings. Three example areas are suggested where integrated EJ and One Health approaches could be explored. First, urban zoonotic disease control could be studied in highly segregated cities (for example, Detroit, USA, or São Paulo, Brazil) using community-based participatory research to co-design rat management programs that address housing conditions, waste services, and unequal access to green space, while at the same time monitoring zoonotic risks such as leptospirosis and hantavirus. Second, antimicrobial resistance surveillance around concentrated animal feeding operations could be piloted in regions with intensive livestock production (for instance,

North Carolina, USA, or Punjab, India), using EJ mapping to identify communities facing multiple burdens (air and water pollution together with AMR exposure) and to prioritize them for targeted actions such as antibiotic stewardship and better wastewater treatment. Third, climate adaptation strategies in Indigenous and other climate-vulnerable communities (including Arctic Indigenous groups and Pacific Island nations, for example) could be evaluated by incorporating traditional ecological knowledge into culturally appropriate One Health strategies for vector-borne disease prevention and food security.

7. Limitations

Several limitations of the present review warrant explicit acknowledgment. First, it should be noted that this is a narrative rather than a systematic review, and the selection of literature was guided by expert judgment, which may have introduced selection bias. The review aimed to be as complete as possible within its scope. Nevertheless, some relevant empirical studies, especially those published in non-English languages, or in journals not indexed in the main databases, may have been missed. However, this potential limitation should be partly reduced by the conceptual and framework-oriented focus of the review, which relies mainly on key theoretical contributions, major policy documents, and influential empirical studies, rather than an exhaustive synthesis of all primary research. A second limitation is the very broad scope of this review, which covers antimicrobial resistance, zoonotic diseases, climate change, environmental pollution, and governance. Each of these is a large research area on its own, so the discussion emphasizes how they connect rather than providing detailed analysis of each. Readers seeking in-depth, systematic evidence on any single topic should turn to the specialized reviews cited throughout the manuscript. In third place, the geographic focus of the existing literature is uneven. Although evidence from both high-income and low- and middle-income countries is included, most primary studies on the links between EJ and One Health belong to North America and Europe. This pattern reflects the broader epistemic limitation discussed in the manuscript, the "WEIRDness" of the One Health evidence base (Henrich et al., 2010). It represents both a constraint of this review and a priority area for future research investment. Fourth, because the integration of EJ and One Health remains an emerging field, much of the empirical evidence relevant to the proposed integrated EJ–OH framework is indirect, being drawn from separate disciplinary traditions rather than from studies explicitly designed to test hypotheses at their intersection. Prospective empirical research that operationalizes EJ–OH integration, for example, community-based participatory studies of zoonotic risk stratified by sociodemographic indicators, or equity-stratified evaluations of One Health interventions, is required, being an explicit recommendation of the current review.

Finally, it is basic to highlight that the proposed EJ–OH framework has not yet been formally operationalized or evaluated. The translation of conceptual principles into measurable, equity-sensitive indicators for One Health program design and evaluation remains an open and practically complex challenge, to which future interdisciplinary work must be directed. In addition, the current review adopts a particular interpretive and integrative perspective, which may shape how frameworks and evidence are organized and emphasized. No formal inter-rater reliability procedures were applied to the screening or synthesis stages, as is common in narrative reviews. Consequently, future collaborative reviews on this topic, especially those involving colleagues with expertise in both EJ and One Health, would further enrich and diversify the evidence base.

8. Conclusions

One Health and EJ share a common focus on structural, cross-sectoral, and equity-focused approaches to health. Their integration is not only conceptually sound but also urgently needed in practice, because the major health challenges at the human–animal–ecosystem interface, such as zoonotic diseases, antimicrobial resistance, environmental pollution, and climate change, arise from and reinforce deep social inequalities.

Although they have increasingly developed, the existing One Health governance structures do not yet place equity at the center of their design and implementation. EJ, with its longstanding attention to structural racism, meaningful community involvement, procedural fairness, and the social determinants of health, provides both a useful conceptual language and practical tools to help close this gap. Progress toward health equity for humans, animals, and ecosystems requires that One Health initiatives explicitly identify the populations bearing the greatest burdens, engage these populations as genuine partners, and direct resources toward reducing the underlying structural drivers of unequal vulnerability. This is not only an ethical goal but also a scientific requirement. Ignoring how environmental risks are distributed across different social groups would bias One Health models, weaken the targeting of interventions, and allow the injustices that cause preventable disease to persist. To effectively implement this framework, coordinated and immediate action is needed from all relevant stakeholders, such as:

- Researchers, who must systematically stratify One Health studies using sociodemographic and geographic vulnerability indicators and ensure open-access publication of datasets to facilitate equity and EJ assessments. They must also emphasize community-driven research approaches that elevate the perspectives of marginalized populations.
- Policymakers, whose goals should embrace the integration of EJ into the monitoring and evaluation frameworks of the forthcoming next phase of the One Health Joint Plan of Action (post-2026) by establishing mandatory community consultation processes and equity-sensitive monitoring systems. Secure dedicated financial resources to strengthen One Health implementation in LMICs.
- International organizations (WHO, FAO, UNEP), by formulating global guidelines for embedding EJ considerations within One Health governance, including the adoption of standardized equity indicators and transparent, participatory decision-making procedures.
- Funding agencies, responsible for introducing equity-centered evaluation criteria for One Health research and program grants and prioritizing initiatives that explicitly address cumulative environmental exposures affecting vulnerable and underserved communities.

The time for rhetorical commitments to equity in One Health has passed. Without deliberate action to center justice, One Health risks perpetuating the very inequities it seeks to address.

Considering the above, researchers, international health agencies, and policymakers are required to design, apply, and assess integrated EJ–One Health frameworks as a central scientific and policy priority. A One Health approach that truly serves all populations will only be achieved when EJ is treated not as an optional addition but as a core pillar of both its theory and practice.

CRediT authorship contribution statement

Jose L. Domingo: Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Investigation, Data curation, Conceptualization. **Martí Nadal:** Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation, Data curation, Conceptualization.

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Data availability

This submission is a REVIEW. All data discussed/cited in the manuscript are supported by the corresponding citations that are inlcuded in the list of References.

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