

INTERDEPENDENCIES AND FEEDBACK LOOPS: INFORMATION-BASE FOR THE EFFECTIVE EVALUATION ON HOW NATURE AND ANTHROPOGENIC ACTIVITIES SHAPE GLOBAL HEALTH AND ENVIRONMENT IN ECOSYSTEM DYNAMICS (ECODYNAMICS)

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Article Info

Article Received: 03 July 2026,
Article Revised: 24 July 2026,
Published on: 01 August 2026.



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<https://doi.org/10.5281/zenodo.21735423>

How to cite this Article:

Dr Chrysanthus Chukwuma Sr*. (2026). Interdependencies and Feedback Loops: Information-Base For The Effective Evaluation on How Nature And Anthropogenic Activities Shape Global Health And Environment In Ecosystem Dynamics (Ecodynamics). World Journal of Pharmaceutical and Healthcare Research, 3(6), 01-09.

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ABSTRACT

Evaluating baseline ecodynamics necessitates mapping intricately ambiguous, non-linear feedback loops where, for instance, health and environmental determinants, ecological resilience, and socio-economic systems intersect. This establishes an analytical threshold to differentiate natural cyclical spatiotemporal variations from anthropogenic stress, providing sustainability perimeters are not contravened. Natural and anthropogenic events are profoundly intertwined. Natural phenomena define human habitats, whereas anthropogenic activities transform the systems of the Earth. They both enact an intricate feedback loop that ardently drives global health, environmental stability, and long-run sustainability. This, evaluating ecodynamics unravels that natural ecosystems and human health are intertwined in an incessant bidirectional feedback loop. Since pristine environments typically provide critical services, such as clean air, water, and immune-boosting microbiota, anthropogenic activities, for example, deforestation, desertification, pollution, and climate change aggravate environmental hazards which invariably induce adverse public health crises and resilience. The interdependencies between these systems function via diverse disparate but inextricably linked trajectories. Primordially, anthropogenic activities derange the invariant, auto-regulating dynamics of natural ecosystems. The ecological disequilibria present adverse consequences for global health, exacerbating risks due to zoonotic diseases, mining pollution, and climate-enhanced hazards, for instance, thus accentuating the crucial, inextricable linkage between environmental and public health. Rapidly changing and invariant environmental threats are evolving at an accelerated pace than ever. This article tends to provide clear, practical and theoretical insights into the approach as global events define our ecosystem, the environmental perturbations currently targeting individuals and society, as well as accessible and amicable approaches to contextually protect our environment and health. We have to share valuable and critical knowledge, information and practical strategies to protect our ecosystem and environmental health. The ecological perspective of environmental health is an important framework for explicating and understanding the magnitude of attributes which influence health, well-being, welfare and quality of life. It constitutes a model that can contribute in the provision of an encompassing and holistic perspective of the attributes which impact distinct health spheres and behaviours as well as health social determinants. The ecological perspective of the environment is a theoretical and practical strategy to the social sciences that focuses and delves into the interactions linking an individual with his environment. The perspective associates an individual as an active agent integrating contextually in physical, social, and cultural relationships. The ecological perspective theory or ecological model of health promotion states that individual health is tailored by intricately complex, interacting associations encompassing multitudinous stages of the environment of an individual. It transcends the emphasis on victim-blaming to a comprehensive strategy by delineating the physical, social, and policy milieu to create healthy accessible, equitable and amicable options. Thus, the ecological perspective or ecological systems theory ostensibly connotes that human development is driven via dynamic and reciprocal interactions existentially between an individual and his

associated environmental systems on the "person-in-environment" framework, depicting the trajectory disparate life stages, through proximate family to wider culture impact growth. The social ecological model constitutes a developed framework to explicate and elucidate human behaviour as directed through numerous encompassing spheres of the ambient of an individual, as applicable in public health, sociology and psychology for the effective and efficient designations of multi-stage interventions. The major aspects of an ecological system comprise two primary ingredients: biotic and abiotic components, which combinatorially develop and enact a self-sustaining environment that undergirds the integrated organismal communities. The three explicable strategies and tools of ecological research are currently inextricably relevant due to anthropogenic activities on the environment. Ecological studies are dependent on the triad of significant approaches incorporating experimentation, modelling and observation.

KEYWORDS: Environmental perturbation, land degradation, climate change, public health, psychology, sociology.

INTRODUCTION

This article explores the intricate interactions between anthropogenic activities and natural ecosystems with focus on public health and environmental stability. It delves into the ecological perspective of environmental health, with discourse on the bidirectional feedback loops between anthropogenic events and ecosystems. These loops contributory to global health challenges and issues through phenomena and unprecedented zoonotic diseases and climate-induced adverse hazards. The study underlines the pertinence for integrated approaches and holistic frameworks to protect and enhance human well-being in the event of accelerated ecological transformations.^[1-4] Assessing the ecodynamics of human-nature relationships incorporates evaluating coupled socio-ecological systems in which natural/biophysical and anthropogenic/human-driven momentum incessantly interact. It goes beyond considering humans as disparate from the environment, taking into cognizance that ecological stability and human advancement are inextricably linked through intricate reciprocal feedback loops. This article offers an insightful and expansive exploration of environmental health through an ecological perspective lens. The study functions as an ecological perspective of environmental health, explicating the dynamic interactions between individuals and interdependencies between environments and their propensities to derange or promote health, well-being, welfare and quality of life. This work defines an ecological model transcending personal health perspectives, with a multi-layered ecological systems framework. This strategy emphasizes the pertinence for holistic ambience encompassing biotic and abiotic environmental ingredients to tackle extant health-environment challenges and issues aggravated by anthropogenic and natural activities globally.^[1-3]

An integrative health paradigm must be progressive and advanced with emphasis in undergirding sustainable development and environmental management mechanisms contextually in accelerating climatic and ecological perturbations correlated with anthropogenic activities. The ecological framework for health and environment defines human wellbeing, welfare and quality of life as being the dynamic, interdependent and

interactive resultant impact of the association between individuals and the contextual biological, physical, and sociocultural ambients. This goes beyond restricting health as merely an individual metric. The model unravels the way our environments define entire developmental and physical outcomes. This health and environment ecological framework highlights the inextricable linkage associated with human biology, natural ecosystems, and social structures. It posits that wellbeing is incapable of thriving in isolation; thus, presenting human health as reflecting the environment in which humans habit work, and interact^[1,2] Within the anthropocene, health is mandatory for achieving global sustainable development.^[3] This constitutes a challenge since health perturbations are intricately complex and encompass humans, ecosystems and environment by dynamic interactions across spheres. It is pellucid that health issues have been indefatigably tackled by stringent efforts which will not culminate in an all-embracing or all-encompassing theories or effective remedies. It is necessary to emphasise on the intricate interactions of humans, ecosystems and the environment to develop general theoretical grounds and practical remedies to protect global health, using human health as the pivotal indicator and target. In order to expedite this paradigm shift, a holistic framework is enacted that inculcates disruptions and distortions from internal Earth and the solar system, with adaptations to interactions of humans, ecosystems and the environment in a nested hierarchy. An integrative and interdisciplinary health science has been posited contemporaneously with holistic stipulations in the remediation of extant health issues and challenges in achieving health-associated sustainable development goals.^[2, 4]

The invariant dynamics between nature impacts, anthropogenic effects, and health

These inextricably linked dynamics depend on quantifiable feedback loops where environmental degradation invariably drives human morbidity and mortality including anthropogenic interventions, such as pollution and climate change and dictating ecosystem resilience. Earth system modeling of disparate stages of the infractions of the climate and land alter boundaries, and depicts that these anthropogenic impacts on Earth system must be taken into cognizance in a systemic context.^[5] Anthropogenic

activities unceasingly violate safe operating spheres, altering primordial Earth system mechanisms, such as biodiversity dissipation, climate change and nitrogen cycle. Thus, human activities have thrust the Earth greater than seven of its nine scientifically determined Planetary Boundaries, disrupting and distorting the fragile equilibrium that has caused our planet to be habitable. Incessant perturbation of these safe operating spheres, industrial and agricultural practices are rapidly inducing irreversible alterations to basic Earth system mechanisms.

Environmental degradation directly depicts human "exposome", the entire environmental exposures humans encounter. Air pollution, contaminated/polluted water, and toxic chemical exposure drive systemic health perturbations.^[6] Climate change due to anthropogenic activity shifts the geographic magnitude or extent and transmission dissemination seasons for infectious vectors. Altered precipitation patterns and warmer temperatures broaden the precincts for vector-borne diseases, such as ebola, dengue, malaria, and Zika which are incessant aetiologies of inordinate numbers of infections, morbidity and mortality yearly, especially in low- and middle-income and vulnerable regions of the world.^[7] Recently, climate change has enormously transformed the dissemination and characterisation of arthropod vectors, enhancing their expansion into novel ecological niches, unravelling an unexpected epidemiological shift. Significantly, this emerging stance signals greater than an environmental mechanism. Furthermore to every aspect, it unravels profound social vulnerabilities associated with poverty, deforestation, desertification and restricted access to health services, capable of amplifying outbreak effects and constrict timely response. Contextually, the climate-vector-inequity triad provides an integrative perspective for understanding the convergence of climatic and structural attributes in risk magnification. Dealing with this challenge necessitates sensitive surveillance systems, ecosystem revitalisation, and health policies undergirded in the One Health trajectory to fortify prevention, diagnosis, and response resilience especially in vulnerable and rural areas where inequitable distribution of resources and socioeconomic disparities exert transmission and dissemination/distribution risks.

Ecosystem degradation decreases the capability and propensity of nature to provide regulating services, such as natural water filtration and air purification, culminating in exacerbated health states, furtherance of anthropogenic interventions, such as exorbitant healthcare costs, heavy industry, or therapeutics. The dissipation of ecosystem regulating functions, such as natural air and water filtration, produces a degenerative feedback loop. A resultant failure purification of the purification system of nature culminates in the dereliction of public health, imposing it on society to depend on exorbitant, energy-intensive interventions, such as water treatment plants and therapeutics which paradoxically succumb further in environmental degradation.^[8] Interactions between

humans and the physical environment which they habit have been researched expansively because anthropogenic activities on a massive scale impose impacts on the environment, both abiotic and biotic. Conversely, pollution is injecting adverse objects into the environment which are deranging to humans and other living organisms. Pollutants constitute inimical gases, liquids and solids formulated in concentrations greater than normal which degrade environmental quality. Anthropogenic activities impose degrading impacts on the environment air, water, climate alterations and land degradation. This research tends to expose environmental pollution emanating from anthropogenic activities and provide a comprehensive understanding of the interconnectedness between anthropogenic activities and their environmental implications as a critical approach for sustainable development.

Research breakthroughs are pathways to a more sustainable future

An ecological perspective on health focuses on both individual and contextual systems as well as their interdependent relations. This strategy originated from diverse fields over past decades by utilising a lexicon of perspectives, mechanisms, and settings which correlate to an ecological modality in health research.^[9] Varied complex factors are determinants of human health and disorders. Health threats from the human-animal-ecosystems interface (HAEI) and zoonotic diseases or zoonoses exert incessant risk on public health, from (re-) emerging pathogenic organisms which are transmitted, for instance, through various animals, food, water and contaminated environments and disseminated in diverse media. Expansive challenges are imposed on the ecological perspectives per food and the eco-environments, as well as aquaculture, agriculture and the entire food chain. Exploration of the influence of food and eco-environments on human health are pertinent in mitigating adverse impact on biodiversity. The complexity of distinct health states depicted as contributory factors to the ecological health determinants ought to be unravelled through disparate perspectives based on conceptualisations and models. These must take into cognizance deranging consequences of anthropogenically-induced perturbations in the environments and food systems, in conjunction with the burden of ecosystem disruption, distortion, environmental hazards and dissipation of ecosystem functionalities. The eco-health literacy awareness and promotion must be increasingly pursued within the ambit of "One Health" vision, and "One World" concept of the Ecological Public Health Model in the sustenance of the environments and Earth, contemporaneously echoing Confucian theory of environmental ethics in tandem with ecological harmony.^[10,11]

A holistic strategy is compliant in risk decrement and management in biodiversity, environment and human health due to extreme hydrological events and climate change, land use policy, infrastructure, and community

resilience. Reliance on adaptive capacity from training and education, economic stability and inclusive governance, can engender and foster resilience against incessant disasters. The decrement of greenhouse gas emissions, and prioritisation of the health sectors combined with disaster risk management are crucial. Extreme weather and climate-related incidents inhibit proper human health culminating in morbidity, mortality and socioeconomic deprivation, inequitable distribution of resources and attendant sequelae.^[12] This article places particular emphasis on human health to understand and manage the global scourge related to the determinants of risk and impact of vulnerabilities to extreme hydrologic events and climate change, depreciated risk reduction and the concomitant sequelae. The most effective and efficient *modus operandi* for risk reduction linked with biodiversity, environmental, and health vulnerabilities caused by climate change and extreme hydrological events, an ecological framework ought to incorporate exposure, vulnerability, and resilience in the entire approach.^[13] This framework enunciates the pertinence of understanding the interactions between ecosystems and human communities in their exposure and susceptibility to hazards, sensitivity to the hazards, and capacity to respond, cope, adapt, and recuperate. Risk reduction involves structurally ameliorating or diminishing exposure, augmenting resilience, and sustainably strengthening entire vulnerability management. Extreme weather and climate-associated incidents perturb and disrupt human health culminating in morbidity, mortality and socioeconomic burden, issues, challenges and constraints.^[1,14]

An ecological framework for perspectives and reflections

Baseline ecodynamics unravel that complex human-nature interdependencies produce cascading feedback loops. Anthropogenic interventions in the systems of the Earth usually induce natural responses which directly disrupt or distort environmental stability and human well-being, necessitating integrated sustainability resolutions. The conceptual and categorical upstream thinking highlights the social, economic, and environmental emergence of health issues and challenges which are evidenced at the population stance. The upstream thinking perspective is applicable in the exploration of environmental health related anomalies, as well as the priorities and opportunities for information and resources which may variably be accessible or inequitably distributed for the global population to be involved in progressive health-promoting choices in responding to environmental health risks and deranging determinants. A determinant framework to ameliorate environmental health risks incorporates purposeful, distributive and strategies. Distributive actions involve tracking, embedding, and translating; whereas strategic actions involve discovery by aetiological investigation, community-based studies, proponent, and re-strategising. In combination, these approaches mediate response concerns of vulnerable populations regarding environmental health^[15] challenges

and issues.^[16] Public health presents the resolution to progressively augment the healthcare benefits of entire communities globally, but extant clinical medicine practice has self-imposed restrictions. Enhanced improvement in public health^[4], rather than individualised patient care diseases is achievable via the integration and care management^[17] of novel perspectives in therapeutic measures, with the adaptation, acceptability and conceptualisation of biopsychosocial medicine integration in patient therapy and care.^[17,18] Patients and the rest of the community are engaged in almost all spheres of health systems but the integration, interaction and engagement literature is inchoate, siloed and fragmented, making it cumbersome to connect these efforts with expansive objectives of equity, health and sustainability. Integration, interaction, engagement and inclusion models are required to undergird increased transformative efforts.^[19]

This work is not merely dependent upon the comprehensive articulation of environmental health via the multifaceted lens of an ecological model with the nuanced interplay between biotic and abiotic attributes augmenting health outcomes which advance theoretical frameworks but emphasises systemic, integrated strategies to health and environmental challenges, issues, opportunities and priorities. The intricate association between environmental states and human health is predominantly evidenced as a critical sphere of public health investigation.^[20] With global challenges encompassing climate change urbanization, and biodiversity dissipation exerting their impact, understanding the interactions between these environmental attributes and health outcomes is pertinent in the development of effective and efficient public health modalities and geopolitics.^[21] Analytical perspectives have delved into the extant complex interactions between environmental impacts and health, with focus on the exigence for integrated strategies which concomitantly promote ecological sustainability and enhance community well-being.^[22] Environmental and land degradation^[23] present deleterious repercussions for human health, as numerous morbidities, comorbidities and mortalities^[24] become associated with preventable environmental health risks. Research accentuates the pivotal role of soil health.^[25] in strengthening climate resilience, protecting biodiversity, and undergirding long-run food security.^[26,27] With greener infrastructure being realised, recent studies depict that sturdy environmental impact assessments^[28] and progressive green building frameworks can mitigate ecological risks, enhance resource effectivity and efficiency, and increasingly strengthen sustainable urban development.^[3, 29-31] These risks encompass an expansive sphere of challenges and issues, as well as air and water pollution, hazardous substances exposure and vulnerability, climate change impact, with concomitant disproportionate impact on susceptible communities.

A conceptual framework is presented to elucidate the multifarious linkages between environmental exposures, health determinants and outcomes, providing clearer understanding of how these components interrelate with each other. Perspicuous cohesive modalities, exemplified by the one-health strategy, opt for partnership embracing diverse sectors, such as public health and environmental management, to tackle the presenting health perturbations^[32] and environmental degradation.^[23] Furthermore, the principles of global health propound the interdependence of ecosystems and human well-being, emphasizing the pertinence for sustainable management of natural resources to protect health for feasible outcomes. A combinatorial exploration of the concept of "green prescriptions," that incorporates proposing nature-based interventions for the promotion of physical, psychological and social well-being is pertinent.^[22] These sorts of recommendations demonstrate effective health promotion which enhance the commitment of environmental management and care. The synthesis of extant presentations and case studies, emphasise the importance of incorporating a holistic perspective that adopts and adapts environmental concerns into healthcare features.^[33] In essence, collaborative posturing between diverse stakeholders enhances the growth of resilient populations which are more adjusted to steer the intricate challenges and issues of sustainability in health and environmental spheres.

The essence of education for sustainable development

Education for Sustainable Development (ESD) and the Psychology of Sustainability constitute intersecting frameworks designed to equip persons with information, knowledge, values, and mental resilience needed to confront contemporary ecological, economic, and social disruptions and distortions. In combination, a trajectory is created for more inclusive, equitable, and resilient future.^[34] In the arena of sustainability education, researchers merge Education for Sustainable Development and sustainability psychology to enhance resilience, inclusivity, and equitable progress that augments communities to become proficient in response to environmental and social challenges and issues.^[35,36] Education for Sustainable Development (ESD) is the response of UNESCO to our critical global challenges and issues is Education for Sustainable Development (ESD). This empowers the populace knowledge, skills, values, attitudes and behaviours to inhabit in a manner that is beneficial for the environment, economy, and society. This enables the citizens to present intelligent and responsible choices which help enact a beneficial future for all and sundry. UNESCO's ESD for 2030 programme offers and disseminates knowledge, provides policy guidelines and technical reinforcement to countries, and executes presenting projects. This promotes peer learning and innovation by means of information gathering and dispensation, as well as networks and partnerships.^[37] Healthy ecosystems exist as the central focus or fulcrum of sustainable development.^[3] Furthermore, the author

presents an adept synthesis of intricate interactions between environmental systems and human health as precursors or pivotal multidisciplinary strategies incorporating public health, psychology and sociology. Thus, this article presents a substantive and proficient assessment and contribution to the discourse on environmental health applying an ecological framework to impact policy and practice in public health, sustainability, and administrative spheres.^[38]

Medical research Is defining contemporary healthcare

Research is the key to advances in medicine and other fields, extending from life-saving diagnostics to intelligent patient care, as well as newfangled trajectories to improve the welfare, wellbeing and quality of life of the global population. Artificial intelligence, AI is an emerging proficient sustainability optimizing resource management tool that enables emission reduction and undergirds environmental monitoring and evaluation^[39] including conservation endeavours. AI enables smarter, data-driven resolutions to intricately complex environmental challenges^[40] and issues. Also, AI assists medical practitioners in the early detection of diseases; while researchers employ artificial intelligence in the improvement of medical imaging, undergird disease diagnosis, and individualise therapeutic regimen for diseases. The advances assists clinicians to determine and establish conditions, such as cancer and neurological anomalies earlier, with resultant accelerated interventions and beneficial patient outcomes.^[41] AI accelerates the discovery and target of novel therapeutic measures. Drawing from experiences of the COVID-19 pandemic, studies are leveraging AI to rapidly determine therapies and explore nascent applications for extant drugs. The advances are liable to feature effective therapies to patients faster during health crises in the future.^[42] Digital health is unravelling new opportunities. Integrated health files and AI-enhanced healthcare systems assist clinicians benefit a full outlook of patient health. This can undergird prompt risk identification, better disease predictability, and enhanced proactive care, while continuing research increasingly strengthen confidentiality and data safeguard frameworks.^[43] Machine learning (ML) and artificial intelligence (AI) are modifying biomedical studies through promoting diagnostic accuracy, augmenting therapeutic modalities, and undergirding altered patient care.^[44]

Smarter healthcare places patients centrally. Wearable devices^[33] Chukwuma Perspectives Women], real-time monitoring and evaluation, as well as AI-powered health systems are altering the trajectory of healthcare delivery. These newfangled spheres can assist patients in the management of chronic states better efficiently and effectively, facilitate rehabilitation, and cause healthcare to be highly individualised than previously.^[45] Sustainable newfangled approaches are improving patient care. Medical research personnel are producing advanced biomaterials and eco-friendly medical fabrics for usage in sepsis^[17] or wound care, implants, sutures, and drug target

and delivery. These advancements do not merely enhance treatment outcomes but also strengthen a beneficial sustainable healthcare future.^[46]

On the whole, healthcare is culminating in being highly human-centered. These do not constitute mere research breakthroughs but do present healthier future, such as promoting prompt diagnoses, enhance patient awareness and experience, accelerating drug and treatment target and discovery^[47], or determining greater sustainable healthcare, the sphere of medical research incessantly transform lives globally. The future generation of healthcare incorporates the professionalism of healthcare with more intelligent technologies. Research explores how AI, robotics, and correlated systems promote diagnostic accuracy, streamline workflows, and enact proficient care experiences in consonance with enhancing patient well-being at the fulcrum of apt decision making.^[48]

DISCUSSION

Baseline ecodynamics refer to the primordial relationships and feedback loops between natural Earth mechanisms and anthropogenic activities. These interdependencies direct that human health, environmental vitality, and long-run sustainability are inextricably linked, where disruptions or distortions in any sphere swiftly transverse others. This article offers an insightful and expansive exploration of environmental health through an ecological perspective lens. The study emphasises the ecological perspective of environmental health, explicating the dynamic interactions between individuals and interdependencies between environments and their propensities to derange or promote health, well-being, welfare and quality of life. Furthermore, it illuminates an ecological model transcending personal health perspectives, with a multi-layered ecological systems framework. This strategy pinpoints the pertinence for holistic ambience encompassing biotic and abiotic environmental ingredients to tackle extant health-environment challenges and issues aggravated by anthropogenic and natural activities globally.^[49,50] An integrative health paradigm^[51] must be progressive and advanced with emphasis in undergirding sustainable development and environmental management mechanisms contextually in accelerating climatic and ecological perturbations correlated with anthropogenic activities.

This article offers an insightful and expansive exploration of environmental health through an ecological perspective lens. The study emphasises on an ecological perspective of environmental health, explicating the dynamic interactions between individuals and interdependencies between environments and their propensities to derange or promote health, well-being, welfare and quality of life.^[32,33] This work defines an ecological model transcending personal health perspectives, with a multi-layered ecological systems framework. This strategy emphasizes the pertinence for holistic ambience encompassing biotic

and abiotic environmental ingredients to tackle extant health-environment challenges and issues aggravated by anthropogenic and natural activities globally. An integrative health paradigm^[51] must be progressive and advanced with emphasis in undergirding sustainable development and environmental management mechanisms contextually in accelerating climatic and ecological perturbations correlated with anthropogenic activities.

The most significant strength of this work relies on the comprehensive articulation of environmental health via the multifaceted lens of an ecological model with the nuanced interplay between biotic and abiotic attributes augmenting health outcomes which advance theoretical frameworks, and emphasises systemic, integrated strategies on health and environment challenges, issues, opportunities and priorities in terrestrial, atmospheric and aquatic domains^[52,53] disrupting the ecosystem^[54, 55] as a result of inter alia mining operations.^[56,57] Furthermore, the author presents an adept synthesis of intricate interactions between environmental systems and human health as precursors or pivotal multidisciplinary strategies incorporating public health, education, psychology and sociology. Thus, this article presents a substantive and proficient assessment and contribution to the discourse on environmental health applying an ecological a to impact policy and practice in public health, sustainability, and administrative spheres.^[38]

CONCLUSION

Baseline ecodynamics relates to the foundational, systemic interplay between natural ecological mechanisms and anthropogenic activities. On the whole, these interdependencies drive the viability of planetary resources, the pathway of climate change, and the encompassing resilience of both human health and the environment. An understanding of these interdependencies necessitates the evaluation regarding the way every attribute participates feeds into the wider, participatory global ecosystem. Evaluating the ecodynamics of human-environment systems involves analyzing how anthropogenic activities (like industrialization, deforestation, and pollution) alter natural ecosystems, and how these environmental shifts feedback to impact public health, ecosystem resilience, and overall global sustainability. The essence and perspectives of the ecological framework of health and environment pertains and focuses on the complexity and complicated correlations among human societies and their physical, biological, and psychosocial ecosystems. Rather than considering health merely as the absence of infirmity or medical conditions, this perspective postulates that human well-being and environmental essence and quality are interdependent, and are extremely and expansively influenced by anthropogenic activities and policies concomitantly and spatiotemporally by environmental attributes extant globally as designated and defined. Resource management needs integrated human-ecological

framework, anthropogenic and natural drivers because inordinate pressures and stressors exert their impacts on ecosystems, with aetiologic hazards impinging on ecological health, such as alterations to ecologic morphology and/or diversity and correlated effects on ecosystem provisions which interact ecological and societal systems. Management functionalities revert to the ecological systems and correlated ecosystem provisions. The integrated evaluation, assessment or decision-making framework services a scientific basis for the designing, implementing, assessing, evaluating and monitoring environmental management policies which impact drivers, stressors and pressures, specifically focused at ameliorating or mitigating environmental perturbations or hazards for the achievement of ecosystem health and sustainability, and to service pertinent ecosystem provisions which promote outcomes of human welfare, well-being and quality of life.

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