



ISSUE BRIEF ON WHO- IUCN REPORT ON “NATURE- BASED SOLUTIONS FOR HEALTH: LEVERAGING BIODIVERSITY TO CREATE HEALTH PROMOTING ENVIRONMENTS”



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BACKGROUND

Our planet is facing a convergence of environmental and societal crises which endanger the health and well-being of humanity. Biodiversity loss, climate change, and pollution—interconnected forces fueling what is now recognized as a planetary emergency—are driving Earth’s natural systems beyond critical tipping points, compromising the foundations of health and well-being. The Paris Agreement under the UNFCCC underscores the critical role of biodiversity, climate, and nature in promoting human health, underlining the urgent need to protect and restore these interconnected systems.

The health implications of climate change are far-reaching, exacerbating inequalities and vulnerabilities globally. Heavier rainfall and rising temperatures undermine access to clean water, amplifying the spread of waterborne diseases like cholera, diarrhoea, and typhoid, while also driving an increase in vector-borne disease such as dengue. Climate change disruptions to food systems heighten the risk of malnutrition in all its forms, and, in the most severe cases, to forced displacement[1]. Climate change and biodiversity loss also threaten medicinal plants which are used in both traditional and conventional medicine and play an essential role in primary healthcare systems globally. Heatwaves, now occurring with greater frequency and intensity, raise the risk of heat stroke and cardiovascular diseases, especially in urban areas with limited green infrastructure[2]. Beyond its effects on physical health, climate change poses risks to mental health, particularly among young people. Climate change has been associated with heightened climate anxiety, depression, and post-traumatic stress disorder (PTSD) following climate-related disasters.

The long-term psychological impacts are especially profound for youth who grapple with uncertainty about their future in the face of escalating climate challenges [3]. Greenhouse gas emissions from fossil fuel combustion, industrial activities, and household air pollution drive both climate change and air pollution, while also causing significant damage to ecosystems and biodiversity.

LEVERAGING NATURE-BASED SOLUTIONS (NBS) FOR CLIMATE, BIODIVERSITY AND HEALTH OUTCOMES

Transformative approaches across health-determining sectors are needed to foster solutions that support healthy and biodiverse ecosystems, a stable climate, and positive health outcomes. Nature-based Solutions (NbS) offer significant potential for addressing interconnected challenges. Defined by the United Nations Environment Assembly (UNEA) in resolution [UNEP/EA.5/Res.5](#) as “*actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic, and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits.*” NbS are opportunities to address biodiversity, climate, and health problems, by adapting to and mitigating climate change; reducing disaster risk; improving health outcomes; and addressing food and water security, and malnutrition.

For example, reforestation, wetland restoration, agricultural diversification and sustainable land management can support global climate mitigation targets while delivering considerable co-benefits for health and nature. When inter-



grated integrated with other strategies, including green- gray infrastructure and technological advancements, NbS can deliver over one-third of the cost-effective mitigation required to meet global climate targets while simultaneously providing co-benefits for biodiversity and human health [2]. Strategic coordination and integration into broader frameworks are critical to maximising the effectiveness of NbS. Moreover, Indigenous Peoples as well as local communities, whose cultures, knowledge systems, and livelihoods are deeply interwoven with environmental stewardship, should play a central role in NbS planning and decision-making.

WHO- IUCN COLLABORATION: 10 KEY RECOMMENDATIONS TO ENHANCE NBS FOR ONE HEALTH

In December 2023 at the UNFCCC CoP28 the World Health Organization (WHO) and the International Union for Conservation of Nature (IUCN) launched a *Highlights Brief* summarising ten actionable recommendations on how nature-health linkages and One Health can be leveraged to improve health outcomes in NbS. At the CBD CoP16 in October 2024, the two organizations launched *Nature- Based Solutions for Health: Leveraging Biodiversity to Create Health- Promoting Environments*, a report that links the ten key recommendations to case studies that illustrate how NbS can address a variety of environmental and health challenges in both rural and urban contexts. The report emphasizes the importance of equity, inclusion, and rights-based governance in scaling up NbS with special attention to equity given the differential health impacts on marginalized communities, such as Indigenous Peoples. The report also highlights the importance of embedding NbS within broader holistic frameworks, such as One Health, to enhance their effectiveness. By situating NbS within this

integrated vision, it aligns with global efforts to tackle planetary and health crises together.

NBS IN ACTION: CASE STUDIES LINKING CLIMATE, BIODIVERSITY AND HEALTH

The report showcases twenty-one case studies including six briefly described below. The following case studies span diverse sectors and regions, illustrating the multifaceted role of NbS in attaining positive climate, biodiversity, and health outcomes.

RESILIENT FOOD SYSTEMS

The report demonstrates the urgent need to **transform food systems to be both nature-positive and resilient**. Sustainable food systems bolster climate resilience, reduce waste and promote equitable access to nutritious diets. By supporting agroecology, regenerative agriculture, and traditional food systems, these approaches contribute to enhanced food security, improved nutrition, and overall environmental health.

The **Naandi Foundation** in India promotes regenerative agriculture and sustainable farming methods to jointly improve soil health, reduce pollution from crop burning, and enhance food security. By promoting organic composting, cover cropping, and no-till farming, Naandi's approach not only restores soil health, but also boosts crop yields and reduces farmers' reliance on chemical fertilisers, ultimately improving the nutritional quality of food. These practices enrich soil biodiversity and enhance carbon sequestration, which is essential for climate mitigation. By preventing the burning of crop residues, Naandi also helps reduce air pollution and greenhouse gas emissions, directly benefiting both climate and community health. This case study shows how NbS can enhance



agricultural resilience and community health while fostering economic stability, especially for rural and tribal farmers.

WATER, SANITATION AND HYGIENE (WASH)

The report emphasizes the need to use NbS to **improve access to safe water, sanitation, hygiene, and waste management (WASH)**. Natural watersheds and wetlands play an instrumental role in water supply management, reducing contamination, and enhancing access to and the resilience of WASH services. By harnessing the natural filtration and resilience of ecosystems, these interventions directly address critical public health challenges, ensuring access to clean water, effective sanitation, and sustainable hygiene systems that are vital for reducing disease and promoting long-term health outcomes.

The **New York City Watershed Agricultural Program** is an example of how harnessing nature can aid the access of WASH, mitigate pollution, and promote the economic stability of local farms and forests. The Watershed supplies unfiltered drinking water to 9.5 million residents and the program manages agricultural and forestry practices that could harm water quality. Best Management Practices like manure management, covered barnyards and fencing are used to prevent pollutants (pathogens, nutrients and sediment) from entering the water supply. This reduces agricultural runoff and contamination of drinking water, supporting ecosystems and human health. The program preserves agricultural and forest lands from development through conservation easements, and many farmers adopt no-till farming methods to minimise soil disturbance. Farmers are also incentivised to reduce nutrient imports and improve nutrient cycling on their farms.

URBAN GREEN SPACES

The report stresses the need to **integrate urban ecosystems with public health planning**. In urban areas, NbS such as increased quality green spaces have demonstrated important health co-benefits, including through enhanced metabolism and immune function, lower rates of cardiovascular disease and premature mortality, as they improve air quality and provide cooling effects [4]. The creation and maintenance of urban green spaces increases carbon storage and sequestration and results in lessening the detrimental consequences from heatwaves, noise pollution, improved air quality, physical fitness, social interactions, and mental health.

The **Green Heart Louisville Project** was designed to test the hypothesis that exposure to neighbourhood greenery diminishes the risk of cardiovascular disease by decreasing the levels of air pollution. After trees were planted, participants living in the target areas had approximately 22% lower levels of C-reactive protein (CRP), a sensitive biomarker of inflammation. In addition, over 5 years, there was a 20% decrease in CRP levels per 0.1 unit increase in the Normalised Difference Vegetation Index (NDVI), a satellite-derived index of greenness. Given that inflammation is the underlying driver of many chronic diseases, these findings suggest that increasing levels of urban greenness could lead to a decrease in the risk of chronic diseases such as cardiovascular disease. Through community-driven efforts and community engagement, the project advances science to pilot, test, and implement-at-scale NbS aimed at improving human health.

REDESIGNING ENERGY SYSTEMS



Addressing the environmental and health impacts of **energy and transport systems** is an essential precondition to meeting global climate targets. Redesigning these systems is essential to ending reliance on fossil fuels and ensuring people-centred adaptation and resilience. Integrating NbS with green-gray infrastructure, which combines the strengths of both natural (green) and engineered (gray) systems, can support the energy transition, promoting clean energy and zero-emission transportation.

Costa Rica's Payments for Ecosystems Services (PES) Programme exemplifies how a country can successfully combine environmental sustainability and positive public health outcomes, by providing financial incentives to landowners for activities such as forest conservation, reforestation, agroforestry, and sustainable forest management. The programme supports the country's hydropower reservoirs by enhancing the health of critical watersheds through reforestation, which sustains both drinking water supplies and hydropower operations. Preventing soil erosion and sedimentation enables forests to maintain hydropower plant efficiency, highlighting the synergy between natural ecosystems and renewable energy. This shift reduces dependence on fossil fuels, a major driver of air pollution responsible for over 7 million deaths annually and associated with respiratory and cardiovascular diseases [5]. The Costa Rican example demonstrates how investing in forest conservation directly supports renewable energy, enhances water security, and advances climate, biodiversity and health goals.

FOREST CONSERVATION AND REFORESTATION

As NbS gain traction in addressing global challenges, their success depends on inclusive, effective governance [6] and the integration of diverse perspectives and ecological knowledge [7]. NbS, particularly in forest conservation, must

prioritize equity by ensuring that the rights and needs of Indigenous Peoples– often the stewards of these ecosystems– are respected and integrated into conservation efforts. Recognizing their vital role in maintaining ecosystem health also supports human health by preserving resources essential for sustainable livelihoods, nutrition, and disease prevention. The report emphasizes the importance of **placing equity at the centre of design, governance and implementation of NbS for health.**

Health in Harmony- Alam Sehat Lestari's project in Indonesia demonstrates how protecting and expanding tropical rainforests can address the climate, nature crises while significantly improving health outcomes. The project centers on a Radical Listening approach, engaging local and Indigenous Peoples to co-develop sustainable solutions tailored to their needs. This participatory method empowers communities to lead initiatives that integrate access to affordable, high-quality healthcare, conservation efforts, and training for just transitions to alternative livelihoods. These holistic strategies have enabled communities to move away from logging and other extractive practices, demonstrating a powerful model for balancing human well-being with ecosystem preservation. The project's twin focus on affordable healthcare and sustainable livelihoods has dramatically reduced dependence on harmful practices like illegal logging. This transformation has delivered substantial human and ecosystem health co-benefits, including a 90% reduction in logging households, a 67% drop in infant mortality, the regeneration of 21,000 hectares of secondary forest, and the prevention of \$65.3 million worth of carbon dioxide equivalent emissions.

RESTORATION OF MARINE ECOSYSTEMS

NbS receive only 1-3% of global public climate



finance, far below the \$542 billion needed annually by 2030 to address climate, biodiversity, and land degradation goals [8]. While public finance remains the primary source of funding, the report highlights the need for greater private sector engagement to support inclusive NbS that prioritize health outcomes, particularly in marine ecosystems like coral reefs—one of the planet's most threatened yet highly productive habitats.

The **Mesoamerican Coral Reef insurance policy** is the first of its kind specifically designed for a natural asset. It is an innovative parametric insurance model that triggers payouts on the basis of predefined weather conditions, enabling rapid funding for damage assessment and post-storm restoration. The Mesoamerican Barrier Reef is crucial for biodiversity, coastal protection, and the local economy, particularly through tourism and fishing. It helps mitigate the impacts of climate change as coral reefs absorb carbon and act as natural buffers against storms. The restoration efforts funded by the insurance payouts contribute to the overall health and resilience of the reef ecosystem, which is vital for marine biodiversity and the conservation of various species dependent on the coral reefs, including an estimated 840 million people at risk from coastal flooding.

FINAL THOUGHTS

The report presents key recommendations and real-world examples to scale up NbS, benefiting both people and nature. delivering tangible benefits for both people and nature. Released at a critical crossroads, it confronts the interconnected health and environmental crises shaping our future. While the window for action is narrowing, there remains a vital opportunity to tackle these planetary crises. NbS, combined with holistic frameworks such as One Health, provide a critical foundation for safeguarding human, animal, plant, and ecosystem health.

Policymakers must collaborate with diverse stakeholders to increase investments in NbS, foster knowledge-sharing, and prioritize the protection and empowerment of vulnerable communities. The time to act is now. The report serves as a catalyst for that action, charting a path forward for a future in which healthy ecosystems support a more stable climate, and drive a healthier, more equitable and resilient future.

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