



ASIAN INFRASTRUCTURE
INVESTMENT BANK

Infrastructure for Planetary Health



Translating Theory into Practice

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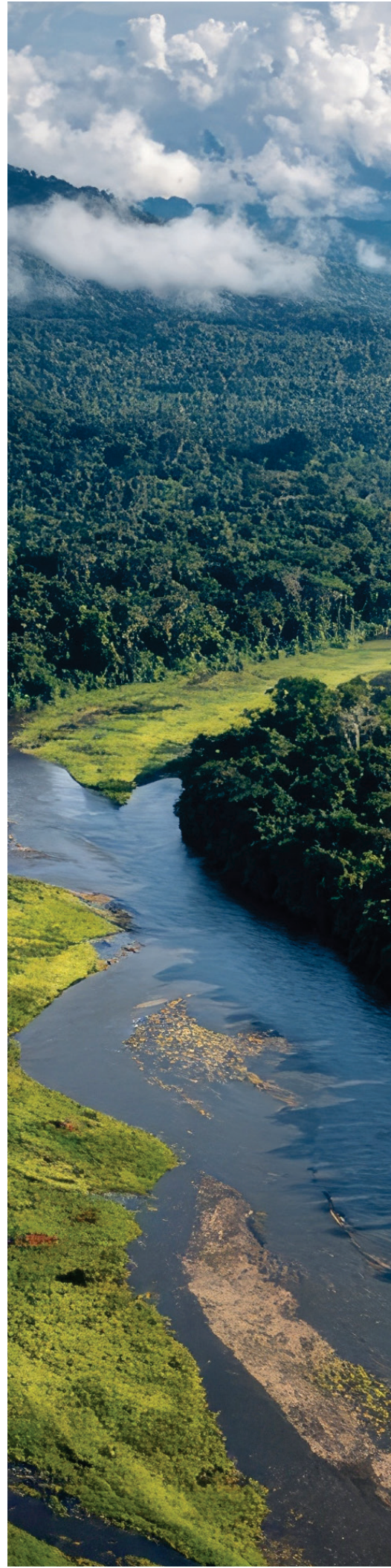
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Foreword



Infrastructure choices made today will shape human health, economic resilience, and environmental sustainability for decades to come. As climate change, nature degradation, and biodiversity loss intensify, the development community faces a clear imperative: to rethink infrastructure not only as a pathway to growth, but as a systemic lever of planetary health outcomes. No country can achieve its full development potential with a sick population on a degraded planet.

This review reflects the Asian Infrastructure Investment Bank's (AIIB) commitment to advancing Infrastructure for Planetary Health—an approach that seeks to maximize health, climate, and nature benefits across all infrastructure sectors. At AIIB, planetary health is viewed as a unifying lens through which infrastructure planning, financing, and delivery can simultaneously address the intertwined challenges of climate change, environmental degradation, and population health risks.

The urgency of this agenda is evident. Today, an estimated 3.3 billion people already face heightened health risks linked to climate change, from extreme heat and floods to air pollution, water insecurity, and the spread of climate-sensitive diseases. These risks are growing most rapidly in emerging and developing economies, where infrastructure gaps remain largest and fiscal space is increasingly constrained. The economic costs of climate-related health impacts already amount to billions of dollars each year, and the cost of inaction will far exceed the investment required to build resilient, low-carbon, and nature-positive infrastructure systems.

Against this backdrop, this review emphasizes that infrastructure for planetary health is fundamentally about systems and people, not isolated assets. It requires integrating health, climate, and nature considerations upstream in development strategies, public investment appraisal, and macro-fiscal frameworks, rather than treating them as downstream safeguards or co-benefits. When infrastructure investments are designed through a planetary health lens, they can reduce long-term fiscal risks, safeguard human capital, and enhance productivity by preventing future health and environmental costs. This systems perspective is particularly relevant as countries confront compounding pressures from climate change, demographic transitions, urbanization, and increasing frequency of shocks.

This review builds on AIIB's evolving strategic thinking by moving from concept to implementation. It demonstrates how planetary health objectives can be operationalized through investments that treat ecosystems as productive infrastructure, integrate climate adaptation and mitigation into core systems, and embed health outcomes into infrastructure design and appraisal. Equally important, it highlights how policy-based and results-based financing instruments can help align incentives, strengthen institutions, and translate upstream reforms into bankable investments on the ground.

Mobilizing capital at scale is central to this transition. Public resources alone will be insufficient to meet the growing demand for climate-resilient and health-promoting infrastructure. AIIB's approach therefore emphasizes catalyzing private-sector participation by improving project bankability, strengthening policy predictability, and expanding the use of instruments such as green bonds, blended finance, guarantees, and nature-based investment models. By systematically embedding planetary health objectives into infrastructure and financial systems, we can help shift private capital toward investments that deliver competitive returns while generating lasting benefits for people and the planet. This perspective aligns closely with the work of our partners, including the World Bank, Asian Development Bank, European Bank for Reconstruction and Development, African Development Bank, and others, with whom AIIB co-finances projects designed to deliver systemic and durable development outcomes.

Delivering on this ambition will require collective action. Multilateral development banks, governments, the private sector, and civil society must work together to mainstream planetary health into infrastructure policy, urban planning, public investment systems, and financial markets. Initiatives such as the Development Banks Working Group for Climate and Health provide an important platform for accelerating coordination, learning, and financing across institutions.

This background review is intended as a practical contribution to that effort. It offers a shared theory of change, concrete project examples, and actionable lessons for governments and development partners seeking to align infrastructure investment with planetary health objectives. By doing so, it aims to support a transition toward infrastructure systems that safeguard ecosystems, protect lives and livelihoods, and underpin inclusive and resilient development in a rapidly changing world.

Ajay Bhushan Pandey

Vice President, Investment Solutions
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Executive Summary



As climate change and nature degradation threaten past gains in health and poverty reduction, it is increasingly important to plan, finance, and manage infrastructure that is aligned with planetary health goals. This background review sets out a practical framework for operationalizing infrastructure for planetary health, recognizing that human wellbeing, economic resilience, and development outcomes increasingly depend on the health of natural and climate systems. The review advances a theory of change that positions infrastructure not as isolated assets, but as a systemic lever linking ecosystem protection, climate adaptation and mitigation, and population health. It emphasizes two mutually reinforcing pathways: nature-positive infrastructure, which treats ecosystems such as forests, wetlands, and watersheds as productive infrastructure assets, and climate-adaptive and climate-mitigating infrastructure, which reduces emissions, climate risks, and exposure to environmental hazards while strengthening resilience in core infrastructure systems such as energy, water, transport, and health.

Drawing on project examples across the globe, this review demonstrates how these pathways can be translated into bankable investments through green-grey integration, results-based financing, and policy-based instruments that link upstream reforms to downstream projects. Scaling such investments requires long-term, adaptive infrastructure design that recognizes the time horizons over which ecological and resilience benefits materialize. It also depends on the strategic use of results-based and policy-based financing instruments to embed planetary health objectives into core public finance systems and investment decisions, enabling reforms and investments to be sustained at scale.

Together, these insights offer actionable guidance for governments and multilateral development banks to scale infrastructure investments that simultaneously safeguard ecosystems, reduce climate risks, improve health outcomes, mobilize private capital, and deliver durable planetary health and inclusive development outcomes.

1. Introduction



There have been remarkable improvements in global health and wealth in the past few decades. Average global life expectancy rose by nearly 30 years (Dattani et al., 2025), while child mortality dropped by over 60% (Dattani et al., 2025). The number of people globally living in extreme poverty dropped from 63% to less than 10%, even with an increase of 5.5 billion people since 1950 (Hasell et al., 2022).

However, these health and welfare gains are now threatened by emerging challenges due to climate change and nature degradation. The accelerating impacts of climate change, nature degradation, and biodiversity loss are already eroding human health and wellbeing and are projected to expose billions more people by the end of the decade to life-threatening risks—from catastrophic extreme weather to outbreaks of water- and vector-borne diseases, air pollution, chemical hazards, antimicrobial resistance, and emerging zoonotic diseases (Jafino et al., 2020; WHO, 2021). Notably, people living in poverty, especially women, children and the elderly, are particularly impacted and bear the heaviest burden of ill health and increased disease burden due to climate change.

These effects are disproportionately borne by low- and middle-income countries. Asia and the Pacific experience frequent climate hotspots and repeated weather, climate, and water-related disasters. The region has historically been more affected by floods, droughts and storms than any other region of the world: 97% of all people affected by floods, 83% of all people affected by droughts, and 92% of all people affected by storms over the period 1960-2007 reside in Asia and the Pacific (ADB, 2009). With projected temperature increases and the frequency and intensity of storms and tropical cyclones, climate change is expected to impact almost every sector of human and economic activity. After decades of declines in global poverty levels, as many as 44 million people could be pushed into extreme poverty by climate-driven health impacts by the end of the decade, mainly in Africa and South Asia (Jafino et al., 2020). Women in these regions on average face greater risks due to their social, economic, and health vulnerabilities, compounded by caregiving burdens, limited resource access, and economic challenges.

In this context, strategic infrastructure investment emerges not merely as a technical solution, but as a foundational lever for enhancing planetary health outcomes and improving societal welfare.

Globally, infrastructure investment needs are large and highly concentrated in emerging and developing economies, particularly in Asia. Developing Asia alone is estimated to require around USD1.7 trillion in infrastructure investment annually through 2030 to sustain growth, close access gaps, and respond to climate change, with India and other economies in South and Southeast Asia accounting for a substantial share of this demand (ADB, 2017). Yet current investment levels fall significantly short, leaving a persistent infrastructure gap at precisely the time when climate, health, and environmental risks are intensifying.

Targeted investments within and outside of the health sector can lower the cost of environmental stress and damage, enable climate mitigation, and drive nature protection and restoration. **Infrastructure investments, when designed through a planetary health lens, can improve efficiency and deliver sustainable environmental, human, and societal benefits, thereby reinforcing the foundations of long-term sustainable development.** Several countries are beginning to translate this framing into concrete national policy frameworks that guide infrastructure planning and investment decisions through a planetary health lens, with Malaysia offering one illustrative case.

A critical cross-cutting enabler in this transition is digital infrastructure as it connects climate, environmental, and socioeconomic systems through interoperable data platforms, monitoring networks, and early warning systems, thus strengthening resilience, improving public spending efficiency, and amplifying core benefits across transport, water, energy, and health sectors. In this regard, AIIB's Health Strategy converges directly with broader climate, nature, and infrastructure priorities: Digital health systems strengthen preparedness and response to climate sensitive health risks, improve the targeting and efficiency of public spending, and enhance the resilience of health and social systems. When integrated into infrastructure planning, digital solutions can amplify planetary health benefits across transport, water, energy, and urban systems.

However, several key constraints must be addressed to enable infrastructure development that aligns with the vision of planetary health. For low- and middle-income countries, fiscal constraints, debt burdens, and declining Official Development Assistance remain important financial barriers. Even when infrastructure investment occurs, it is often fragmented and lacks strategic cohesion, undermining principles of planetary health, inclusiveness, and climate mitigation. Weak institutional capacity, legal barriers, and operational inefficiencies further hinder progress.

Given these constraints, new approaches, including improved financing mechanisms as well as targeted policy-based financing, are needed that invest efficiently in infrastructure that delivers multidimensional planetary health and economic benefits—advancing natural ecosystem restoration, climate adaptation and mitigation, and inclusive

growth. Malaysia's Planetary Health Action Plan (Box 1) provides an example of how governments are beginning to translate these objectives into a coherent national policy framework. Building on the Asian Infrastructure Finance (AIF) 2025 framing of infrastructure for planetary health, this review proposes a holistic theory of change that aligns infrastructure investment with planetary health principles to protect natural systems, lives, and livelihoods amid rising environmental pressures (AIF, 2025). This review highlights key AIIB and external projects across 11 AIIB Members, illustrating how these principles are being applied in practice to enhance both human and environmental outcomes while offering lessons that are relevant to other emerging markets and developing economies facing similar challenges. While this review does not attempt to cover all infrastructure sectors or issues, it distills policy recommendations for planning and investment considerations for operationalizing infrastructure for planetary health, grounded in recent international good practice and MDB experience. We consider this report a living document, reflecting our recognition that infrastructure for planetary health is an emerging field and that its frameworks, evidence base, and practical applications will continue to evolve, adapt, and strengthen as knowledge and experience accumulate. While it identifies practical entry points for infrastructure investment, further work is needed to refine priorities, assess scalability, address operational challenges, and better understand the political economy of advancing planetary health objectives through infrastructure development.

Box 1: Malaysia's Planetary Health Action Plan

Malaysia's National Planetary Health Action Plan (NPHAP) provides a national framework to address growing risks to human health, economic resilience, and development arising from climate change, environmental degradation, and ecosystem loss. Launched in 2025, the NPHAP is grounded in the premise that human wellbeing and long-term development depend on healthy natural systems, and that fragmented, sector-specific responses are insufficient to manage these interconnected risks. The NPHAP is explicitly designed to be embedded within existing national development frameworks, including energy transition and climate resilience strategies, rather than operating as a standalone plan, and in doing provides a system-based lens that can support the progressive integration of planetary health considerations into development planning and investment decisions.

The core objective of the NPHAP is to re-orient development decision-making and the associated implementation mechanisms, including public investment, policy design, private sector engagement, and institutional coordination, around a systems perspective that captures health, climate, environmental, and economic co-benefits (Academy of Sciences Malaysia, 2025). Malaysia's NPHAP demonstrates how planetary health moves from concept to practice by reshaping how infrastructure and development choices are considered through an integrated planetary-health lens, embedding health, climate, and nature considerations upstream in development strategy rather than treating them as downstream concerns.

To operationalize this shift, the NPHAP adopts a whole-of-nation approach organized around six key result areas covering governance, environment and health, sustainable food systems, research and education, energy transition, and values and behavioral change. Across these areas, the NPHAP aligns policies, institutions, and investments toward outcomes that protect ecosystems while improving population health and supporting inclusive economic growth.

This document is organized as follows. Section 2 sets out the theory of change. Section 3 presents project-level examples for each sub-theme discussed. Section 4 synthesizes cross-cutting insights and lessons learned, with a particular focus on how traditional infrastructure projects can be designed to enhance planetary co-benefits.



2. Theory of Change



This section provides a concise articulation of the selected theory of change, setting out the key assumptions, causal pathways, and enabling conditions through which infrastructure investments are expected to influence climate, nature, and health outcomes. It explains why these pathways matter for governments, multilateral development banks (MDBs), and accompanying policy and financing decisions, and establishes a shared conceptual grounding before turning to concrete project cases.

The theory of change examines two primary impact pathways, (1) nature-positive infrastructure and (2) infrastructure for climate adaptation and mitigation, and explicitly incorporates a set of cross-cutting enabling conditions that determine whether infrastructure delivers sustained planetary health benefits in practice. These include people-centered delivery; political economy alignment and trade-offs; partnerships across public, private, and civil society actors; and policy support, technical assistance, and monitoring systems that create feedback loops for learning, adaptive management, and accountability over time. A circular and regenerative economy lens is applied across both pathways, emphasizing resource efficiency, waste and pollution reduction, life-cycle performance, and the restoration of natural systems to strengthen long-term resilience and adaptability.

This section provides a brief articulation of the selected theory of change, clearly setting out the key assumptions and causal pathways through which infrastructure investments are expected to influence climate, nature, and health outcomes. It will also explain why these pathways are relevant for governments and MDBs and accompanying policy. The purpose of this section is to ensure a shared conceptual grounding among participants before turning to specific project cases.

Nature-Positive Infrastructure



The concept of nature as infrastructure, or nature-based infrastructure, recognizes that nature itself is a productive asset class and functions as essential infrastructure, delivering critical services such as climate regulation, water purification, and biodiversity support. Many of these services function like infrastructure, yet are often unpriced, undervalued, or externalized over the project life cycle. This concept embraces a transformative approach that treats nature as integral to infrastructure systems, strengthening incentives to protect, restore, and regenerate ecosystems while improving the long-term performance, resilience, and sustainability of investments.



Nature supports planetary health through several interlinked pathways. **First**, restoration and protection of natural water infrastructure, through wetland and floodplain rehabilitation, riparian buffers, removal or modification of obsolete barriers, and nature-based stormwater systems, enhance natural filtration, water retention, and hydrological connectivity. These outputs improve water quality, reduce flood risk, support biodiversity, and strengthen groundwater recharge and local water availability. Over time, these outcomes deliver more resilient water systems that contribute to planetary health outcomes while increasing climate and ecological resilience.



Second, restoring degraded forests and landscapes, promoting sustainable land and soil management, strengthening protected areas, and reducing land-based pollution improve soil health, ecosystem functioning, and biodiversity. These actions enhance agricultural productivity, carbon sequestration, air quality, and water regulation while reducing chemical runoff and land degradation. Over time, these outcomes support healthier food systems, climate-resilient livelihoods, and improved human health through cleaner environments and sustainable ecosystem services.



Third, integrating nature-based solutions with conventional engineered systems, such as green roofs, permeable pavements, bioswales, urban forests, and vegetated buffers improve how cities and agricultural areas manage air, water, and land pollution. These green-grey infrastructure enhance natural filtration, reduce runoff and soil degradation, and increase resilience to climate and environmental stressors. Over time, this integrated approach delivers cleaner air and water, healthier ecosystems, and improved planetary and human health through more resilient and sustainable infrastructure systems. Together, these pathways demonstrate that maintaining and investing in nature as infrastructure is not only an environmental or climate strategy, but a foundational requirement for safeguarding long-term human and non-human health within planetary boundaries.

Infrastructure for Climate Adaptation and Mitigation



Infrastructure designed to mitigate climate change and adapt to evolving climatic conditions is foundational to planetary health and essential for protecting all populations, particularly vulnerable communities with limited capacity for private risk management. This pathway is grounded in the recognition that climate change is already reshaping health risks, and while poorly designed infrastructure can amplify exposure, inequality, and vulnerability, climate-aligned infrastructure can substantially reduce harm, strengthen resilience, and deliver sustained co-benefits across sectors.



Climate-adaptive and climate-mitigating infrastructure supports planetary health through several interrelated pathways. **First**, mitigation-oriented infrastructure reduces greenhouse gas emissions and exposure to harmful air pollutants, delivering immediate and long-term health benefits. Reducing reliance on coal and other fossil fuels through renewable energy deployment, grid modernization, cross-border electricity trade, and strengthened pollution controls lowers exposure to fine particulate matter and associated cardiovascular and respiratory diseases. Complementary measures, such as peatland restoration, circular biomass management, and reduced agricultural residue burning, further improve air quality.



Second, climate-adaptive infrastructure reduces health risks associated with extreme weather and climate variability. Flood-resilient transport, water, and sanitation systems limit exposure to waterborne and vector-borne diseases, while heat-resilient urban design, cooling strategies, and green and blue infrastructure reduce heat stress and excess mortality—especially among the elderly, outdoor workers, and low-income communities. By safeguarding essential services, these investments prevent climate shocks from overwhelming health systems and reversing development gains.



Third, resilient, low-carbon, and inclusive healthcare infrastructure plays a critical enabling role. Climate-resilient health facilities ensure continuity of care during disasters and adapt service delivery to shifting disease burdens, while resource-efficient and low-carbon health systems reduce emissions and waste from the health sector itself. Inclusive healthcare infrastructure strengthens system-wide resilience and helps reduce health disparities as climate risks intensify.

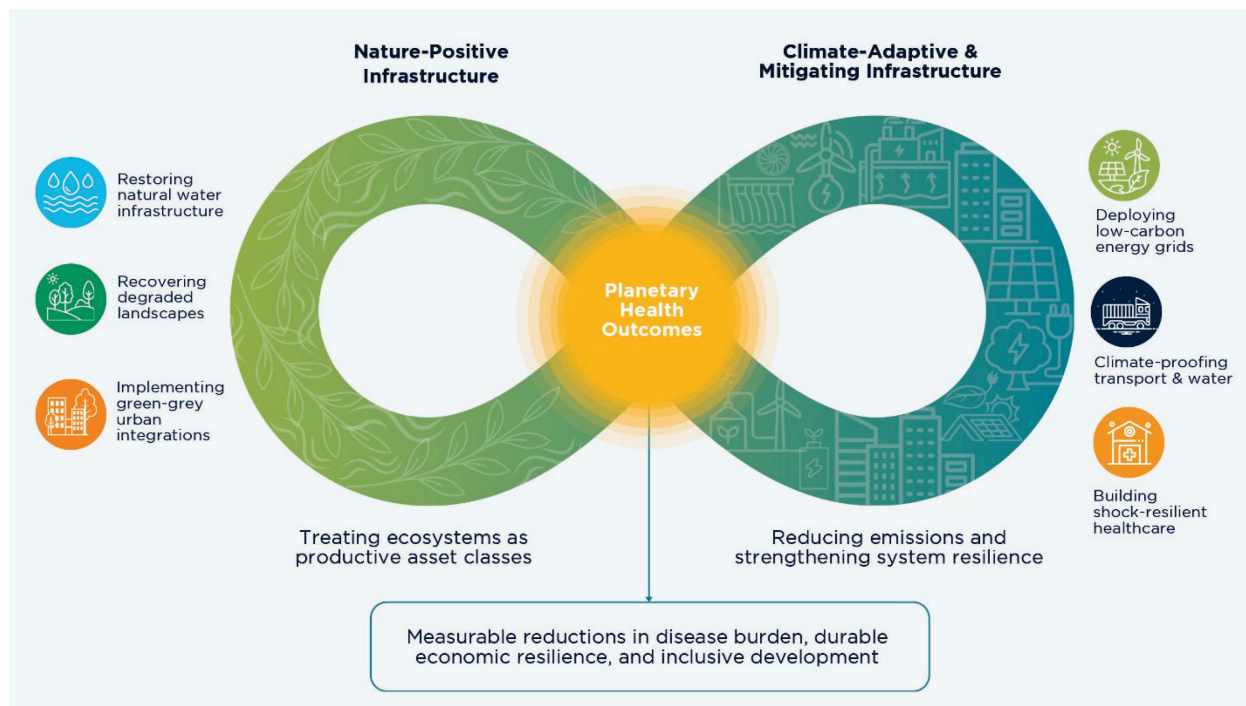


Fourth, climate-aligned land infrastructure supports planetary health by stabilizing ecosystems, reducing environmental degradation, and strengthening livelihoods. Unsustainable land use—such as deforestation, peatland drainage, poorly managed agriculture, and unplanned urban expansion—interacts with climate change to increase flood risk, air pollution, heat exposure, and food insecurity, disproportionately affecting vulnerable populations. Investments in sustainable agriculture, climate-smart irrigation, landscape restoration, peatland re-naturalization, and resilient rural infrastructure mitigate emissions, improve air and soil quality, reduce exposure to environmental health risks, and buffer communities against climate shocks. When paired with inclusive land governance, secure tenure, and participatory decision-making, these investments enhance food security, reduce displacement risk, and ensure benefits accrue equitably.



Fifth, climate-resilient water infrastructure safeguards health by ensuring safe, reliable, and sustainable water systems under climate stress. Climate change is intensifying water scarcity, flooding, salinization, and water quality degradation, threatening drinking water safety, sanitation, food production, and ecosystem integrity. Climate-adaptive water supply, sanitation, drainage, and flood management systems, such as flood-resilient sanitation, decentralized wastewater treatment, climate-robust drinking water systems, and nature-based flood control, reduce water-related disease risks and protect service continuity during extreme events. At the same time, energy-efficient pumping and treatment, reduced water losses, wastewater reuse, and integrated water–energy planning lower emissions, while watershed restoration and wetland protection enhance carbon sequestration, water regulation, biodiversity, and long-term service sustainability.

For governments and MDBs, investing in infrastructure for climate adaptation and mitigation underscores the need to systematically integrate climate and health considerations into core planning and investment decisions. MDBs increasingly operationalize this approach through climate risk assessments, emissions analysis, and health co-benefit considerations in project preparation and appraisal, alongside financing instruments—such as concessional climate finance, guarantees, and blended finance—to accelerate the transition away from high-polluting assets while scaling up resilient, low-carbon infrastructure. A planetary health-in-all-infrastructure approach reinforces this pathway by treating clean air, safe water, thermal comfort, and reduced environmental exposure as core development outcomes central to inclusive, resilient growth within planetary boundaries.



3. Projects in Focus: Illustrative Case Examples



For each of the two impact pathways, this section presents concrete project examples that translate the theory of change into real, implementable practice and highlight good practices that can be adapted, replicated, or scaled in different contexts. The examples draw on a combination of AIIB-financed projects, AIIB-supported project preparation activities, and initiatives undertaken by AIIB Members and other development partners. Together, they illustrate how planetary health principles can be operationalized through infrastructure investment and related policy reforms, while also demonstrating how AIIB is helping its Members address interconnected climate, environmental, and health challenges through its financing, technical assistance, and knowledge work. While not all examples are AIIB-supported, each offers lessons relevant to emerging market and developing economy Members seeking to advance infrastructure for planetary health. Boxes 2 and 3 provide detailed illustrations of how nature-based approaches can be incorporated into infrastructure planning, drawing on experiences from Liberia and Sri Lanka.

Nature-Positive Infrastructure

This subsection draws on a combination of AIIB-supported operations and selected initiatives financed or implemented by governments, other MDBs and development partners to demonstrate how nature-positive infrastructure can contribute to climate resilience, biodiversity conservation, and human wellbeing. The examples highlight a range of approaches for integrating ecosystem restoration, nature-based solutions, and nature finance into infrastructure planning and investment, including several cases that illustrate how AIIB is supporting its Members in advancing these objectives.

China's Sanbei (Three-North Shelterbelt) Program, launched in 1978, is one of the world's largest ecological restoration initiatives, aimed at combating desertification, reducing sand and dust storms, and stabilizing degraded landscapes across northern China. Over the first two phases (1978-2018), forest cover in the Sanbei region increased from 5.1% to 13.6%, while combined forest and grassland cover rose from 31.7% to 42.4%. Rigorous quasi-experimental analysis in the 2023 AIF shows that participating counties experienced a 38% increase in leaf area index over 2001-2020, with statistically significant forest expansion emerging only after a decade, highlighting the long gestation period of ecological investments. Importantly, the program reduced the frequency of sand and dust weather, not only within treated counties but also in downstream and neighboring areas, generating sizable positive spillovers (AIIB, 2023). Despite restrictions on

cropland expansion through policies such as “return cropland to forest,” agricultural value-added did not decline, suggesting that ecological restoration and food production can be jointly sustained when accompanied by complementary policies and productivity improvements.

The Sanbei Program, being a highly relevant ecological restoration project, provides several insights into investing in nature-positive infrastructure that need to be replicated in other contexts. First, long-term commitment and adaptive design are essential: Early reliance on monoculture plantations proved less resilient, prompting a shift toward locally adapted, multi-species restoration that improved survival rates and ecosystem function. Second, local governance and community engagement matter for sustainability. Field evidence shows that programs combining ecological restoration with livelihood opportunities (e.g., buckthorn cultivation, land rehabilitation of abandoned mines) are more durable, though they remain heavily dependent on public subsidies. Third, there is a need to integrate nature as infrastructure with conventional infrastructure and financing systems, notably water management, rural roads, and value-chain development, to move beyond subsidy dependence. Policy recommendations, therefore, emphasize sustained public financing, stronger local institutional capacity, integration of ecological assets into infrastructure planning and appraisal, and gradual development of revenue streams from ecosystem services to improve financial viability and replicability at scale.

Brazil Value-Enhancing Reforms for Development and Ecological Sustainability (VERDES) Climate Policy-Based Finance program (2025-2028):¹ The VERDES program is a USD1 billion policy-based financing operation from AIIB to the Government of Brazil (AIIB, 2025b). A defining feature of the VERDES program is its explicit treatment of forests, mangroves, and restored landscapes as productive infrastructure that delivers climate mitigation, adaptation, and economic services alongside, or in place of grey infrastructure. Through a package of legal, financial, and institutional reforms, the program enables public forests and mangroves to function as carbon sinks, flood buffers, coastal protection systems, and biodiversity reservoirs, while generating revenues through carbon markets and restoration concessions. Measures such as user rights over public forests to traditional communities, eligibility of restoration concessions for Brazilian Emissions Trading

¹ Climate-focused Policy-based Financing (CPBF) is an AIIB instrument that provides upfront budget support linked to climate-related policy and institutional reforms, enabling governments to advance national climate transition priorities while laying the foundations for sustainable infrastructure investment. By offering flexible financing to support reforms that enhance climate resilience, accelerate decarbonization, and improve policy predictability, CPBF bridges upstream policy action with downstream, bankable climate-aligned projects. Its core value lies in fostering a whole-of-government approach—aligning fiscal, economic, and sectoral policies around climate objectives—while mobilizing additional public and private capital for climate-resilient, low-carbon infrastructure consistent with planetary health and Paris Agreement goals.

System credits, and the national ProManguezal program embed ecosystems within fiscal policy and the investment pipeline. This shifts conservation from project-based protection toward a systemic “nature as infrastructure” model integrated into national development planning.

Crucially, VERDES demonstrates globally replicable policy learnings: (i) mandating sectoral adaptation plans through national legislation; (ii) financing nature-based solutions via carbon markets, blended finance, and tax-advantaged instruments; (iii) assigning clear tenure and benefit-sharing rights to communities as ecosystem stewards; and (iv) integrating health, climate, and nature objectives into core macro-fiscal and infrastructure policy rather than treating them as environmental add-ons. Together, these actions provide a scalable blueprint for countries seeking to operationalize nature as infrastructure and infrastructure for planetary health through policy-based reforms that align public health resilience, ecological restoration, and private capital mobilization.

Nature Finance Accelerator Program – Bank of Huzhou: The Nature Finance Accelerator Program with the Bank of Huzhou is a financing initiative through which AIIB provides long-term financing to a regional bank in China to expand lending for nature-positive investments. AIIB’s financing supports the Bank of Huzhou’s on-lending to eligible projects in Zhejiang Province while also strengthening institutional capacity to identify, structure, and monitor nature finance opportunities. Eligible investments include ecosystem restoration, sustainable agriculture and forestry, water and sanitation systems incorporating nature-based solutions, and urban resilience initiatives such as wetland and floodplain restoration. By strengthening project origination, risk assessment, and monitoring capacity, the program aims to make biodiversity-friendly investments more bankable, scalable, and attractive to private capital.

By channeling finance toward projects that restore ecosystems and reduce environmental degradation, the program directly supports planetary health pathways linking nature, climate, and human wellbeing. By mobilizing private capital at scale for nature-positive interventions, the project helps embed planetary health considerations into China’s financial system, aligning economic development with healthier ecosystems and, ultimately, healthier communities.

Key learnings for scaling nature-positive investments include: (i) MDBs and development financial institutions can help with institutional transformation of commercial banks, enabling nature finance to become a routine asset class rather than a niche product as envisioned through this project; (ii) scaling nature finance requires translating ecosystem

services into economic value propositions and integrating them into existing financial risk frameworks, not treating them as concessional or exceptional finance. Embedding nature finance into core financial architecture, through globally accepted taxonomies, supervisory frameworks, and reporting is important to scale nature-positive investments in the future.

Box 2: From Forests to Coastlines: Nature-Based Solutions for Climate Resilience in Liberia

In Liberia, more than half of the population lives within 2.5 kilometers of a tropical forest, underscoring the close interdependence between ecosystem health, livelihoods, and human wellbeing. Tropical forests, which currently cover 43% of the land area, have declined substantially in recent decades, shrinking by an average of 0.7% per year between 2000 and 2015, heightening risks related to climate vulnerability, food security, and economic resilience (World Bank, 2025). Against this backdrop, climate-aligned infrastructure investments in Liberia increasingly combine engineered and nature-based approaches to address climate risks while reinforcing forests and coastal ecosystems as productive infrastructure assets. The Monrovia Metropolitan Climate Resilience Project (2021-2027) integrates coastal defense infrastructure with mangrove restoration and livelihoods support to protect vulnerable urban communities from sea-level rise and storm surges (UNDP, 2021), while the Liberia Forest Sector Project (2016-2023) demonstrates how strengthening community forest governance and benefit-sharing can deliver climate mitigation, watershed protection, and livelihood resilience by treating forests as core development infrastructure (World Bank, 2025).

Integrating Ecosystem Restoration into Irrigation and Water Security Projects (Cambodia and Indonesia): In Indonesia, AIIB and World Bank co-financed the Dam Operational Improvement and Safety Project II (2017-2023) (USD300 million), which combined engineering measures, such as dredging and structural rehabilitation, with ecosystem restoration to address sediment accumulation and its impacts (AIIB, 2017a). The project supported catchment revegetation, restoring over 760 hectares of degraded areas. Local communities were central to this process through a dedicated community participation component. In Aceh Province, for instance, the Water Catchment Forum worked closely with the local community to identify suitable planting sites on private land to complement work on public land and facilitated community input on species selection. Indigenous fruit-bearing trees such as jamblang, rambutan, durian, and jackfruit were chosen for their ecological and economic benefits. Long-term maintenance was formalized through a Memorandum of Understanding between the Water Catchment Forum and River Basin Organizations, representing the Indonesian Ministry of Public Works as the executing agency for the project, ensuring continued co-management beyond the project's completion. Similarly, in Cambodia, AIIB approved a USD4.95 million Project Preparation Special Fund grant in 2024 to support preparation of the proposed Country Climate Resilient Sustainable Irrigation and Water Drought and Flood Mitigation Project, including

feasibility studies, engineering design, and environmental and social assessments. The fund supports feasibility studies for the potential rehabilitation of the Trapaeng Thmor Reservoir, which irrigates about 50,000 hectares and plays a central role in national food security. The reservoir also influences groundwater conditions and the habitat of vulnerable and critically endangered bird species, including the sarus crane and the white-shouldered ibis.

Taken together, the key policy insight from these projects is that infrastructure performance and resilience are strongest when engineered solutions are paired with nature-based approaches and long-term local stewardship. By integrating ecosystem restoration into dam safety, sediment management, and irrigation systems, and embedding community participation and co-management arrangements, AIIB demonstrates that nature-positive investments can simultaneously enhance infrastructure functionality, protect critical ecosystems, and support livelihoods, delivering durable benefits well beyond the project life cycle.

Infrastructure for Climate Adaptation and Mitigation

This subsection highlights primarily AIIB-financed projects and policy-based programs, supplemented by selected examples from AIIB Members and development partners, to illustrate how infrastructure investments can strengthen climate resilience, reduce emissions, and improve health and wellbeing. Collectively, these cases demonstrate how planetary health objectives can be translated into practical investment and policy interventions across sectors including energy, health, urban development, water, and disaster risk management.

India: The Resilient Kerala Program (2021-2026): The Resilient Kerala Program, co-financed by AIIB (USD125 million), World Bank (USD125 million), Agence Française De Développement (USD125 million), and the Government of Kerala (USD155 million), supports the Government of Kerala in a transformational shift toward long-term resilience to climate change, natural disasters, and disease outbreaks, with a particular focus on the climate-vulnerable Pamba river basin (AIIB, 2021). Structured around two results areas, the program combines investments in core infrastructure with systemic reforms to ensure that climate and disaster risks are embedded across planning, financing, and service delivery. Under Results Area 1, the program strengthens transversal resilience systems by enhancing financial protection against disasters and mainstreaming climate- and disaster-risk-informed urban and disaster risk management (DRM) planning. This includes the preparation of coordinated master plans and localized DRM plans for all 263 local self-government institutions, informed by localized climate risk information and supported by technical training and multi-year investment planning. A Disaster-Climate Assessment Tool links climate-informed local investments to performance-based incentives, reinforcing institutional accountability for resilience outcomes at the local level. Results Area 2 embeds climate resilience directly

into priority infrastructure systems including health, water, agriculture, and transport, by strengthening institutions, planning frameworks, and service delivery rather than stand-alone assets. The program advances basin-level water management to reduce flood and drought risks, strengthens climate-responsive public health and disease surveillance systems, promotes agroecological production systems that enhance soil and water resilience, and upgrades climate-resilient road networks through performance-based maintenance contracts.

Overall, the program demonstrates how integrating climate risk management, health objectives, and institutional reforms within a results-based framework can generate meaningful planetary health co-benefits from traditional infrastructure investments. Through the Program for Results (PforR) instrument,² disbursements are tied to the annual achievement of clearly defined disbursement-linked results, independently verified, reinforcing accountability and system-level change.³ A key lesson is that when resilience and health protection are embedded as core design objectives—rather than add-ons—multi-sector infrastructure programs can deliver durable climate adaptation and risk-reduction outcomes for vulnerable populations.

China: Beijing–Tianjin–Hebei Low Carbon Energy Transition and Air Quality Improvement Project (2019–2025): The project, co-financed by AIIB (USD500 million) and New Development Bank (USD500 million), with counterpart financing (USD900 million) from Beijing Municipality and Beijing Gas Group Company Limited, supports a large-scale shift away from coal by expanding reliable access to natural gas across one of China’s most pollution-intensive regions (AIIB, 2019). The project financed the construction of a liquefied natural gas (LNG) receiving, storage, and regasification terminal with a designed capacity of five million tons per annum, together with associated storage infrastructure, enabling sustained coal-to-gas substitution in power, industry, and district heating systems.

² The PforR instrument at AIIB and World Bank provides sovereign financing that disburses funds against the verified achievement of agreed results in government-owned programs, using country systems and focusing on institutional strengthening rather than financing specific project inputs.

³ The Program includes the following Disbursement-Linked Indicators (DLIs): DLI 1: Fiscal sustainability of Government of Kerala to cope with disease outbreaks and natural disasters is strengthened; DLI 2: Disaster-related adaptive safety net system of the Government of Kerala is strengthened; DLI 3: Disaster risk financing and insurance capacity of Government of Kerala and vulnerable households in Kerala are improved; DLI 4: Urban local bodies developed and sanctioned risk-informed urban master plans and priority action plans; DLI 5: Climate risk information integrated into local body DRM plans; DLI 6: Capacity to track and respond to zoonotic disease outbreaks of human importance in a timely manner; DLI 7: Integrated river basin management plan is developed for Pamba basin, and implementation commenced; DLI 8: Farmer producer organizations have increased access to new and organized markets; and DLI 9: Core Road Network is rehabilitated and/or maintained to meet resilient service standards in the Pamba Basin.

At full operation, the project enables the displacement of approximately 11.9 million tons of coal annually, delivering substantial reductions in CO₂, particulate matter, SO₂, and NO_x emissions, with direct benefits for ambient air quality and pollution-related health risks in the Beijing–Tianjin–Hebei region. The completed LNG terminal now serves as a core component of regional energy security, providing seasonal balancing capacity and emergency gas reserves during winter peak demand and climate-related supply shocks. Project completion results show that all 10 LNG storage tanks were commissioned on schedule, construction costs were kept within budget, and the facility achieved full nameplate capacity, supporting long-term operational reliability.

A key policy insight from this project is that investing in advanced, technology-enabled energy infrastructure can generate benefits that extend beyond energy supply to strengthen system resilience, operational performance, and environmental sustainability. Governments, utilities, and development partners should therefore integrate digital solutions such as digital twin systems, real-time monitoring, predictive maintenance, and AI-enabled safety systems into the design and operation of large-scale energy assets. Embedding these technologies within low-carbon energy investments can improve efficiency, reduce operational risks, and enhance resilience to climate and system shocks while simultaneously delivering climate mitigation and air-quality benefits. The project demonstrates that smart, clean energy infrastructure should be viewed not only as a source of reliable power, but also as a strategic investment in planetary health, supporting more sustainable, resilient, and future-ready development pathways.

China: Beijing Air Quality Improvement and Coal Replacement Project (2017-2021): The project, co-financed by AIIB (USD250 million), Beijing Gas Group Co. Ltd. (~USD253 million), Beijing Municipality (~USD228 million), and the China Clean Development Mechanism Fund (USD30 million), aimed to improve planetary health by reducing air pollution and greenhouse gas emissions through the replacement of coal with cleaner energy in rural and peri-urban areas surrounding Beijing (AIIB, 2017b). The project financed the construction of village-level natural gas distribution networks and household connections across 468 villages, reaching approximately 214,000 households and effectively eliminating coal use for heating and cooking in targeted areas.



By displacing approximately 642,000 tons of coal annually, the project delivered substantial and sustained reductions in CO₂, PM_{2.5}, SO₂, and NO_x emissions, contributing to measurable improvements in both ambient and indoor air quality. These reductions lowered exposure to air pollutants associated with respiratory and cardiovascular disease, with particularly strong benefits for children, older adults, and other vulnerable populations. In addition to reduced respiratory symptoms, additional associated improvements in household wellbeing included significant reductions in the time and physical burdens associated with coal use, especially for women and the elderly. The project thus delivered immediate public-health gains while supporting Beijing's broader transition toward a lower-carbon energy system.

The project highlights several lessons with direct relevance for scaling planetary-health-aligned climate mitigation infrastructure. First, the project demonstrates the value of private capital mobilization for environmentally critical infrastructure when implemented by a financially robust and technically capable utility. AIIB's operation enabled rapid delivery at scale while introducing market-based discipline and institutional learning applicable to future energy transition investments. Second, the experience underscores the importance of system-wide energy planning: Downstream household fuel switching must be

matched with adequate upstream supply capacity. Gas shortages during early implementation revealed the risks of fragmented planning and directly informed subsequent AIIB investment in LNG import and storage infrastructure to strengthen system resilience. Third, the project emphasizes that affordability is a prerequisite for sustainability. Municipal grants, connection subsidies, and tariff support were essential to prevent low-income households from reverting to coal, demonstrating that infrastructure alone is insufficient without complementary policy and fiscal measures that lock in behavioral change. Finally, the project highlights the need to strengthen outcome-level results measurement, particularly for air-quality and health impacts, to better capture and demonstrate the full planetary health benefits of climate-mitigating infrastructure.

Indonesia National Slum Upgrading Project (2016-2023): The project, supported through a total financing package of approximately USD1.42 billion, including contributions from the Government of Indonesia (approximately USD987 million), AIIB (USD216.5 million), and the World Bank (USD216.5 million), improved basic infrastructure and services in vulnerable slum areas across 154 cities in central and eastern Indonesia, contributing to more climate-resilient urban development. The project focused on upgrading drainage, sanitation, water supply, solid waste management, roads, and public spaces, directly reducing exposure to flooding, waterborne disease, and climate-related health risks in dense urban settlements. Through integrated planning tools and community-driven investments, the project strengthened local adaptive capacity to manage climate shocks while improving service reliability under increasing climate stress.



The project incorporated a dedicated disaster response component, which was activated to support post-earthquake and tsunami reconstruction in Central Sulawesi, applying “build back better” standards for resilient housing, public facilities, and settlement infrastructure. Climate resilience was embedded through improved drainage networks, flood protection, and climate-resilient housing designs, including earthquake-resistant modular construction. By project completion, over 11,000 hectares of slum areas were upgraded—substantially exceeding original targets—while infrastructure functionality and beneficiary satisfaction rates surpassed 90%.

A key policy insight from this project is that climate-resilient urban development requires integrated investments in basic services, disaster preparedness, and local institutional capacity, particularly in vulnerable informal settlements. Governments and development partners should adopt community-driven upgrading approaches that combine improvements in drainage, sanitation, water supply, waste management, and resilient housing with climate-informed urban planning and strengthened local governance. Embedding disaster-response mechanisms and “build back better” principles within urban infrastructure programs can reduce vulnerability to climate-related and natural hazards while improving long-term service reliability, adaptive capacity, and resilience for low-income communities.

Cambodia: Rapid Immunization Support and Resilient Health Infrastructure Project (2022-2031): The project, co-financed by AIIB (USD50 million), Asian Development Bank (USD95 million), and the Government of Cambodia (USD8.5 million), was originally approved in 2022 to support Cambodia’s COVID-19 response through the procurement and deployment of vaccines and contributed to the vaccination of approximately three million people by early 2023 (AIIB, 2022a). Following the achievement of national vaccination targets, the project was restructured in November 2025 to reallocate undisbursed funds toward strengthening health system resilience. The restructured component supports the upgrading of seven referral hospitals and one national clinic to meet Ministry of Health service standards. Infrastructure investments integrate energy-efficient building design, renewable energy readiness, and climate-resilient features such as flood protection, passive cooling, and resilient wastewater systems. These upgrades aim to reduce greenhouse-gas emissions from hospital operations while safeguarding service continuity under increasing climate risks, including heat stress and flooding. The project also strengthens maternal, child, and emergency care capacity through upgraded facilities, medical equipment, and staff training. Implementation of the infrastructure component is planned over 2026-2031, with outcomes tracked through 2032. A key policy insight is that crisis-response investments can be leveraged to build long-term health system resilience by integrating climate-smart, low-carbon infrastructure into healthcare delivery. By combining resilient facility design, energy efficiency, and strengthened service capacity, health infrastructure investments can simultaneously advance public health, climate adaptation, and emissions reduction objectives.

Box 3: Sri Lanka: Peri-Urban Wetlands as Natural Infrastructure for Flood Resilience

Pressures on peri-urban wetlands. The Kalu Oya and Mudun Ela basins, located in Sri Lanka's fast-urbanizing Gampaha District, have experienced rapid landscape change. Between 1975 and 2016, the areas lost over 60% of natural vegetation cover and 10% of wetland extent, leaving wetlands at just 14% of the basin area by 2023. Population growth, limited natural drainage, and insufficient engineered drainage have heightened flood risks. Recognizing these pressures, a major flood mitigation master plan developed by the Japan International Cooperation Agency proposed a hybrid approach that combines canal rehabilitation, diversions, pumping stations, and nature-based solutions such as wetland restorations and wetland parks (JICA, 2023).

Valuing ecosystem services for informed planning. To inform integrated basin planning, the International Water Management Institute assessed 13 ecosystem services across provisioning, regulating, supporting, and cultural categories in the two basins (Wickramaratne et al., 2026). The combined value is estimated at USD25–28 million, with major contributions from carbon storage, flood mitigation, and biodiversity. Excluding one-time carbon stock, the annual flow value is roughly USD13–14 million, which is conservative relative to global wetland valuation benchmarks due to data limitations on some services such as thermal regulation. The valuation highlights that wetland restoration can be a cost-effective flood management strategy, alongside grey infrastructure (e.g., flood protection dikes), and soft options including early warning systems and social protection.

Policy implications. Three priorities emerge:

1. Integrate natural capital into development planning to balance land conversion pressures with hydrological and economic benefits.
2. Pair wetland restoration with targeted grey investments to enhance climate-resilient flood management.
3. Strengthen cross-agency coordination so that wetland functions are consistently reflected in land-use, drainage, and environmental decision-making.

Bangladesh: Climate Resilient Inclusive Development Program: Enabling Environment for Climate Action (2024–2026): Component 1 of the program, co-financed by AIIB (USD400 million) and ADB (USD400 million), strengthens the policy, institutional, and financing foundations required to mainstream climate resilience and mitigation across government planning and investment (AIIB, 2024b). It embeds climate objectives into planning, budgeting, and public investment systems through reforms such as climate budget tagging, climate expenditure tracking, climate-informed investment appraisal, and sustainable finance mechanisms, including green bonds and gender-inclusive climate finance.

Component 2 translates these policy frameworks into on-the-ground adaptation measures across agriculture, water, urban systems, and disaster risk management. Key actions include scaling climate-smart agriculture, expanding stress-tolerant crops, improving erosion forecasting and early warning systems, strengthening urban drainage and flood management, and enhancing disaster risk financing, with a focus on vulnerable populations.

A key policy insight is that effective climate resilience requires pairing institutional and financing reforms with sector-specific adaptation investments. Governments should embed climate objectives into planning, budgeting, and public investment systems while simultaneously scaling climate-smart agriculture, resilient urban infrastructure, disaster risk management measures, and nature-based solutions. This integrated approach helps translate national climate commitments into tangible resilience outcomes, mobilize climate finance, and support sustained investment in climate-resilient development.



4. Enhancing Planetary Health Benefits for Traditional Infrastructure Projects: Cross-Cutting Themes and Lessons Learned



The theory of change for planetary health reframes infrastructure not as a narrow technical input, but as a foundational lever for societal welfare. As accelerating climate change, environmental degradation, and biodiversity threaten to reverse decades of global health gains, infrastructure investment becomes a critical pathway for protecting human wellbeing, strengthening resilience, and sustaining long-term development.

In response to changing planetary conditions, traditional infrastructure sectors such as energy, transport, health, and water must move beyond a narrow focus on standalone assets and instead embed a planetary health perspective across all infrastructure investments. Under this approach, outcomes such as clean air, safe water, and thermal comfort are treated as core development objectives rather than secondary benefits. Achieving this shift requires systematically integrating climate risk assessments and health benefit considerations into the earliest stages of project planning and appraisal, ensuring that infrastructure investments are resilient to environmental stressors while actively reducing the drivers of ecosystem degradation and related health risks.

The framing allows the definition of infrastructure to expand beyond physical assets to include a systemic model that recognizes nature as central to planetary health, treating ecosystems such as forests, wetlands, and mangroves as productive asset classes that deliver essential services. This perspective calls for deliberate integration of nature-based and engineered solutions to enhance overall system performance and resilience. Ultimately, infrastructure policy must move beyond fragmented, project by project interventions, toward an approach that embeds environmental services within national development planning and macro fiscal policy.

Achieving this shift requires updated financial instruments (complete with ecosystems services valuations and effective price models) to mobilize investment and unlock bankable projects aligned with planetary health objectives at scale. While the preceding sections highlight project-specific lessons from each case study, this section synthesizes the cross-cutting insights and policy recommendations that emerge across the portfolio, with a view to scaling up infrastructure investments for planetary health. Seven key lessons emerge from this review, offering practical guidance for integrating planetary health considerations into infrastructure planning, financing, implementation, and governance at scale. Together, they

highlight the need for adaptive and long-term approaches to infrastructure development, greater recognition of nature as infrastructure, stronger integration of resilience and health objectives into public policy, expanded use of innovative financing mechanisms, meaningful community stewardship, climate-resilient health systems, and inclusive development strategies.

1. **Commit to Long-Term Adaptive Design:** Ecological investments often have a long gestation period. For example, significant forest expansion in China's Sanbei Program only emerged after a decade. Similarly, some of the ecological benefits of green-grey infrastructure, such as the peri-urban wetland restoration planned in Sri Lanka and reservoir-related ecosystem restoration in Cambodia, may take years to materialize, as processes such as soil carbon sequestration and forest maturation occur over longer time horizons.
2. **Treat Nature as a Productive Asset Class:** Across programs like the Sanbei Program, Brazil's VERDES, and Sri Lanka's wetland restoration, there is a clear trend toward treating ecosystems as "green infrastructure" that provides measurable services such as flood mitigation, carbon storage, and biodiversity preservation. Synthesis of these cases shows that moving beyond project-based conservation to a systemic model, where nature is integrated into national development planning, is essential for long-term sustainability. Correctly valuing the benefits of nature restoration can provide the economic justification needed to balance land conversion pressures against the protective benefits of natural capital.
3. **Mainstream Resilience, Shock Preparedness, and Health into Broader Economic Policy:** Evidence from the Resilient Kerala Program, the Bangladesh Climate Resilient Inclusive Development Program, and Cambodia's health infrastructure upgrades demonstrates that resilience is most effective when integrated into core project design, not added on ex post. By embedding climate and pandemic risks into national budgeting, public investment appraisal tools, and service delivery standards, these economies adopt a holistic approach that helps ensure infrastructure can withstand escalating environmental and other systemic stressors. Bangladesh's use of climate budget tagging and Kerala's localized disaster management plans exemplify how institutional reforms can make resilience a transversal priority across all government levels. Further, Malaysia's innovative NPHAP is designed to be integrated within existing national development frameworks, including energy transition and climate resilience strategies, rather than operating as a standalone plan. In doing so, it offers a practical and scalable

approach to mainstreaming planetary health across government policies and investment decisions. AIIB's COVID-19 Crisis Recovery Facilities in Côte d'Ivoire and Fiji are also good examples of budgetary support that allow for the optimal functioning of health systems under stress from the COVID-19 pandemic (AIIB, 2022b; AIIB, 2022c).

4. **Scale Up Public and Private Capital by Expanding Innovative Financial Instruments:** Scaling requires moving from concessional or niche funding to making nature finance a routine asset class in the commercial banking sector. The Nature Finance Accelerator Program and VERDES highlight the importance of translating ecosystem services into economic value propositions that fit within existing financial risk frameworks and global taxonomies. Furthermore, programs in Bangladesh and Brazil show that diversifying revenue through carbon markets, green bonds, and restoration concessions can mobilize the private capital necessary to bridge the massive infrastructure gap. In projects, where the threat of implementation failures exists, MDBs should consider applying results-based financing, such as the PforR used in Kerala, which drives accountability by linking funding disbursements to independently verified climate and health outcomes, ensuring that policy reforms translate into measurable impact. Collectively, these examples demonstrate that scaling requires embedding nature finance into conventional banking and investment frameworks. Where necessary, projects can also use results-based instruments that de-risk implementation and ensure measurable outcomes.
5. **Empower Local Stewardship and Ensure Affordability:** Long-term durability depends on combining ecological goals with livelihood opportunities and social safeguards. Projects in China, Cambodia, and Indonesia show that restoration is most successful when local communities have clear tenure and benefit-sharing rights, such as the ability to harvest fruit-bearing trees or cultivate economic crops. Additionally, Beijing's air quality projects underscore that technical infrastructure is insufficient without affordability mechanisms, such as municipal grants and subsidies, to prevent vulnerable populations from reverting to high-emission practices.

6. **Embedding Resilience into Health Infrastructure Strategy:** Climate-resilient health infrastructure should be planned as a system, combining flood- and heat-resilient facility design, redundant power and water supply, and climate-robust supply chains, to ensure continuity of essential services during pandemics, floods, and droughts. This system's approach to inclusive resilience is especially critical as aging populations increase baseline demand for chronic and emergency care while climate shocks raise the frequency of service disruptions. Investments that integrate adaptable facility standards, decentralized service delivery, digital health infrastructure, and flexible surge capacity can protect health outcomes while avoiding costly post-disaster retrofits. Embedding these features into national health planning, public investment appraisal, and routine maintenance frameworks helps ensure that health systems remain functional under compounding demographic, pandemic, and climate risks, safeguarding both human capital and long-term economic productivity.
7. **Inclusive Planning for Better Outcomes:** Inclusion is a cornerstone for achieving long-term planetary health outcomes, ensuring that all people, particularly women, children, elderly populations, and marginalized communities, benefit from integrated systems. Explicitly addressing inclusion in infrastructure and policy development amplifies the impact of investments and reforms by recognizing and addressing the specific needs and vulnerabilities of these groups. The Beijing Air Quality project shows that attention to gendered patterns of exposure to air pollutants can lead to disproportionately positive health improvements for women and vulnerable groups. The Bangladesh Climate-focused Policy-based Financing also shows that when reforms explicitly consider opportunities for women and vulnerable groups, they can drive broader economic opportunities for women and more sustainable outcomes.

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Annex 1: Emerging Examples of Integrating Ecosystem Services and Nature-Positive Infrastructure into Financial Models

Alongside AIIB-supported initiatives, a growing range of financial innovations developed by governments, multilateral development banks, private financial institutions, and capital markets demonstrates how ecosystem services and nature-positive infrastructure can be incorporated into mainstream financial models. These initiatives are highlighted here for informational purposes only and should not be interpreted as being funded, endorsed, or formally supported by AIIB unless explicitly stated. These approaches illustrate different, but complementary, pathways for translating ecological functions, such as hydrological regulation, carbon sequestration, and biodiversity protection, into measurable financial value propositions that can be priced, managed, and scaled.

Ecosystem-linked parametric insurance and agricultural resilience. In climate-exposed agricultural regions, parametric insurance schemes are increasingly incorporating ecosystem-driven climate variables—such as rainfall patterns influenced by forest-mediated hydrological cycles—into risk pricing and payout triggers. In Brazil, research on the Amazon’s “flying rivers” has documented the central role of forest evapotranspiration in sustaining rainfall across major agricultural zones, including Mato Grosso (Lovejoy & Nobre, 2018; Nobre et al., 2016). Building on this scientific foundation, insurers and reinsurers have developed parametric products that rely on satellite-observed rainfall and vegetation indices rather than traditional loss adjustment, enabling faster payouts and reduced transaction costs (AXA, 2020; Munich Re, 2023). While such instruments do not directly monetize forest ecosystems, they explicitly treat ecosystem stability as a core determinant of agricultural productivity and financial risk, thereby embedding ecosystem services into insurance and agricultural finance frameworks.

Tokenization and digital markets for forest ecosystem services. Another emerging model involves the use of digital financial instruments to represent and monitor protected forest assets. Several initiatives are exploring the issuance of tradable tokens linked to defined areas of preserved Amazon rainforest, supported by near-real-time ecological monitoring using satellite data, sensors, and blockchain infrastructure (CAF & O.N.E. Amazon, 2025). These tokens aim to provide investors with continuous information on forest condition, carbon stocks, and ecosystem integrity, positioning conservation outcomes as transparent, trackable assets rather than opaque offsets or donations. While regulatory treatment and long-term governance arrangements remain unresolved, such initiatives illustrate how advances in digital monitoring and market infrastructure could enable ecosystem services to be packaged into investable products accessible to global capital markets (CAF, 2025; Graff, 2025).

Sovereign-scale performance-based finance: The Tropical Forest Forever Facility. At the macro-financial level, the Tropical Forest Forever Facility (TFFF) represents a novel government-led initiative to embed the value of ecosystem services directly into sovereign financing structures. The TFFF is designed as a long-term, performance-based mechanism that rewards countries for maintaining standing tropical forests, using satellite-verified deforestation metrics as the basis for annual payments (World Resources Institute, 2025). Capital is pooled from sponsored countries and invested in financial markets, with investment returns used to provide predictable financial flows as long as forest conservation benchmarks are met. As of late 2025, approximately USD6.7–7 billion has been pledged, below the USD25 billion target required for full scale-up, but sufficient to demonstrate proof of concept and institutional viability (Mongabay, 2025; TFFF Secretariat, 2025). The TFFF approach illustrates how ecosystem services can be internalized into national-level financial incentives, shifting forest conservation from fragmented projects toward rules-based, scalable fiscal mechanisms.

Natural Asset Companies and the integration of ecosystem services into equity markets. A more direct integration of ecosystem services into capital markets is being pursued through the development of Natural Asset Companies (NACs). Developed by the Intrinsic Exchange Group in partnership with the New York Stock Exchange, NACs are structured as corporations that hold the economic rights to ecosystem services generated by natural, working, or hybrid lands, such as carbon sequestration, water regulation, and biodiversity (Intrinsic Exchange Group, 2023). Investors acquire equity exposure to the long-term stewardship and enhancement of these ecosystem services rather than to extractive activities. To support market credibility, NACs combine conventional financial reporting with a dedicated ecological performance reporting framework aligned with the UN System of Environmental-Economic Accounting (WRI, 2026). Early pilots, including sovereign-linked applications, suggest a potential pathway for making ecosystem services legible and investable within existing capital-market architectures.

Implications for scaling nature-positive finance. Taken together, these models illustrate a shift from conceptual innovation toward functional integration of ecosystem services within mainstream financial systems. Across insurance, capital markets, and sovereign finance, the common lesson is that scalability depends on treating ecosystem services as economically relevant variables embedded in standard risk, return, and reporting frameworks, rather than as exceptional or purely concessional finance. The extent to which these approaches can be standardized, governed, and aligned with supervisory and disclosure regimes will be a key determinant of their long-term impact and investability.

Annex 2: Table 2.1-Theory of Change Nature Positive Infrastructure and Infrastructure for Climate Adaptation and Mitigation

Overall Impact Statement: People are safer, healthier, and more secure as infrastructure systems restore nature, reduce pollution and climate risks, and deliver essential services reliably and equitably over the long term, even as environmental stress intensifies.

Impact Pathway & Sub-Theme		Theory of Change Mapping			
Impact Pathway	Sub-Themes	Activities	Outputs	Intermediate Outcomes	Impacts
Impact Pathway 1: Nature-Positive Infrastructure	1.1 Protect and Restore Natural Water Infrastructure	- Restore and rehabilitate wetlands and floodplains (regrading, revegetation) to retain water and buffer floods. - Re-establish riparian buffers with native vegetation, restore floodplains, and soils to improve runoff filtration, organic matter and infiltration capacity. - Remove or retrofit obsolete barriers (small dams, culverts) to restore hydrological connectivity. - Deploy nature-based stormwater systems (bioswales, retention areas, constructed wetlands) integrated with grey drainage. - Apply circular, life cycle design to reduce polluted runoff and resource losses (reduce leaks, reuse stormwater where feasible, and plan for long term maintenance). - Promote landscape-level, climate- and nature-positive agriculture that restores soils, recycles nutrients, reduces runoff, and strengthens water	Hectares of wetlands and floodplains restored or protected. Kilometers of riparian corridors rehabilitated with native vegetation. Number of nature-based water infrastructure systems installed or upgraded (bioswales, constructed wetlands, retention areas). Number of barriers removed or retrofitted to improve hydrological connectivity. Restored soil organic matter, reduced runoff from agriculture, expanded biodiversity corridors. Inclusive community-based monitoring and maintenance arrangements established (including women and marginalized groups).	Cleaner water through filtration of sediments, nutrients, and pollutants. Lower flood peaks and reduced flood exposure through increased natural retention. Improved aquatic and riparian ecosystem health and biodiversity, restoring ecosystem functions. Enhanced groundwater recharge and local dry season water availability, improving long term water security Improved soil, water, and biodiversity outcomes across the landscape. Stronger stewardship, women's participation, and trust in water services, supporting sustained use and maintenance.	Fewer water-related illnesses and disaster losses, improved wellbeing and livelihoods, and thriving ecosystems that strengthen long term resilience under climate stress and deliver positive net impacts for people and nature.

		management, biodiversity corridors, and floodplain-based livelihoods. • Support inclusive community stewardship, operations and maintenance, and local monitoring of water quality and ecosystem condition, including through civil society and local private actors.			
	1.2 Protect and Restore Terrestrial Ecosystems	• Restore degraded forests and landscapes (assisted natural regeneration, reforestation) to rebuild ecosystem functions. • Promote regenerative and climate smart land and soil management (agroforestry, conservation agriculture, soil restoration). • Establish or strengthen protected areas and community co management to conserve biodiversity. • Reduce land pollution and waste (runoff controls, safer chemical use, improved waste management and circular nutrient cycling where feasible). • Provide policy support, technical assistance, and partnerships to enable adoption and sustained practice. • Enable access to high-integrity carbon and biodiversity markets where appropriate.	Hectares of forests and degraded land restored or reforested Hectares of agricultural land adopting improved soil and land management practices. Protected terrestrial areas established or strengthened (number/area). Measures implemented to reduce chemical runoff and land contamination. Verified ecosystem services translated into market-ready projects with safeguards and equitable benefits sharing mechanisms.	Improved soil fertility and water regulations supporting more resilient farm production. Reduced smoke, dust, and land-based pollution exposure. Enhanced carbon sequestration and ecosystem functions (nutrient cycling, habitat). More stable rural livelihoods and food systems, acknowledging tradeoffs (yields, land use, affordability). Greater community support, inclusive participation, and trust in land and environmental governance.	Better health, food security, and livelihoods through low-carbon growth, regenerated landscapes that reduce pollution, restore nature, and strengthened long term climate resilience with positive net impacts.

	1.3 Green-Grey Infrastructure for Planetary Health	- Integrate green and grey solutions in urban development (green roofs, permeable pavements, bioswales, constructed wetlands alongside drainage). - Expand urban nature (trees, parks, river buffers) to reduce heat and filter pollution. - Capture, treat, and where feasible reuse stormwater and urban runoff to reduce water pollution and flooding. - Apply circular, life cycle design in materials and maintenance so assets retain value and minimize waste over time. - Strengthen maintenance, community use, and monitoring, with partnerships (civil society, utilities, private operators) so green and grey assets continue to deliver services.	Area of green-grey infrastructure installed or retrofitted (e.g., green roofs, permeable surfaces, urban forests). Hybrid natural-engineered water management systems implemented (number/length). Urban waterways and land areas protected or restored using nature-based solutions. Stormwater quality and flood performance monitoring systems established.	Lower urban heat exposure and improved thermal comfort, especially for vulnerable groups. Cleaner air through increased vegetation cover and pollutant filtration. Cleaner water and reduced runoff pollution through filtration, retention, and reuse. Reduced flood nuisance and improved reliability of urban services during heavy rainfall. Improved trust, use, and stewardship of public spaces and services.	Healthier, safer, and more livable cities through reduced heat and pollution exposure, equitable access to nature, and water systems that build long-term resilience and reduce waste.
Impact Pathway 2: Infrastructure for Climate Adaptation and Mitigation	2.1 Air Systems: Reduces GHG emissions and population exposure to air pollution	- Deploy low-carbon energy and transport infrastructure (renewables, grid modernization, storage, low-emission mobility). - Retire or repurpose high-emitting assets (e.g., coal-fired power plants). - Strengthen emissions standards, pollution controls, and cross-border electricity trading. - Provide policy support and technical assistance to align energy, transport, health, and environment objectives and incentives across ministries.	Renewable generation and grid flexibility capacity added. High-emitting assets retired/repurposed or avoided. Cleaner transport and energy services operational (e.g., fleets, charging, public transit improvements). Air quality and emissions standards updated, and implementation capacity strengthened.	Reduced greenhouse gas emissions and local air pollutant emissions. People breathe cleaner air, with lower exposure to PM2.5 and other harmful pollutants, especially in high burden areas. Improved compliance and cross ministry coordination on air and climate policies. Early health benefits realized through cleaner air (fewer respiratory and cardiovascular risks).	Lower pollution related disease burden and a sustained low carbon development pathway consistent with planetary boundaries, supported by circular value chains that reduce waste and strengthen long term resilience.

		• Embed emissions and air quality monitoring and public reporting (dashboards) as feedback loops to guide policy and investment. • Promote circular supply chains for clean technologies (resource efficiency, repair, reuse, and end of life management) through partnerships with the private sector.	Institutional systems for emissions/air quality monitoring and reporting embedded.	Greater system efficiency and reduced waste across the life cycle of energy and transport investments.	
	2.2: Reduces health risks associated with extreme weather and climate variability	• Adopt and apply resilient, regenerative, and circular design standards for critical infrastructure (transport, water, energy, health). • Invest in redundancy and backup systems to keep essential services running during shocks (power, communications, logistics). • Integrate climate risk screening, contingency planning, and maintenance financing into project cycles and sector plans. • Support community engagement, women's participation, and risk communication through clear, accessible information on risks, responses, and protective behaviors, so protective measures are trusted, used, and maintained. • Provide policy support, technical assistance, and monitoring to address political economy constraints and make tradeoffs transparent.	Critical infrastructure upgraded to withstand floods, heatwaves, storms, and droughts, with life cycle design that reduces waste and emissions. Service continuity plans and backup systems in place for essential services. Climate risk screening and resilience, regenerative economy criteria embedded in planning and budgeting cycles. Local preparedness, partnership, and communication arrangements established.	Reduced service disruption and faster recovery during extreme events. Lower exposure of households and assets to climate hazards. Reduced disaster-related illness, injury, and economic losses, especially for vulnerable groups.	Stronger societal resilience and protection of development gains as climate shocks become more frequent and severe, with essential services that remain reliable and inclusive and systems that adapt over time.
	2.3: Increases ability of healthcare infrastructure to provide consistent care during disasters	• Upgrade health facilities with resilient utilities (backup power, safe water, wastewater, waste management) using circular and regenerative approaches to reduce waste and pollution and improve reliability.	Climate resilient health facilities operational, including backup energy and water. Reduced waste and pollution in health facilities through circular procurement, segregation, and safe treatment.	Continuity of essential care during extreme weather events and disruptions. Reduced health-system vulnerability to climate shocks and power outages. Improved preparedness and response for climate-sensitive diseases.	Fewer avoidable deaths and more equitable access to care during shocks, with a health system that stays operational while reducing waste and emissions over its life cycle.

		• Protect and modernize cold chains and medical logistics through partnerships (telecom towers, private storage, suppliers). • Adapt service delivery for climate and environment driven disease patterns (surveillance, outreach, referral pathways). • Provide technical assistance and training to strengthen preparedness, inclusion, and continuity of care for vulnerable groups, building trust in services.	Reliable cold chain and medical supply arrangements in place (public private and supply chain partnerships). Health emergency preparedness and continuity protocols established and practiced. Improved access to care for vulnerable populations during shocks.		
	2.4: Climate-aligned land infrastructure reduces health risks and strengthens livelihoods	• Invest in climate smart agriculture, irrigation, and resilient rural infrastructure that supports safe, nutritious food systems. • Restore degraded land, forests, peatlands, and wetlands, and reduce fire risk and smoke exposure where relevant. • Strengthen land governance and land use planning (tenure security, enforcement, community participation). • Enable women's and marginalized groups' participation and address local political economy constraints that shape adoption and benefits. • Promote circular and regenerative rural economies (resource efficient inputs, waste reduction, and nutrient and biomass loops) through policy support, technical assistance, and partnerships.	Climate aligned agricultural and rural infrastructure operational (irrigation, storage, access, extension). Land and ecosystem restoration implemented (hectares) and fire and smoke risk management measures adopted. Land governance and ecosystem management practices strengthened (plans, institutions, incentives). Participation mechanisms established to ensure inclusive decision-making (including women). Partnership and implementation arrangements strengthened (civil society, private sector, supply chains).	Reduced land degradation and lower exposure to dust and smoke. Improved soil, air, and water quality supporting healthier living environments. More stable livelihoods and food security, acknowledging tradeoffs (yields, land use, affordability). Reduced flood and drought risks through ecosystem regulation. Greater local trust and uptake of practices that sustain benefits over time.	Lower health risks for all members of society linked to environmental degradation, more resilient land-dependent communities, and mitigation co-benefits (carbon sequestration and avoided land-use emissions).

	2.5: Climate-resilient water infrastructure safeguards health under climate stress	• Invest in climate resilient water supply, sanitation, drainage, and flood management systems. • Deploy nature based solutions (wetlands, floodplains, watershed restoration) to restore ecosystem functions. • Apply circular approaches in water and wastewater systems (reduce non-revenue water, improve energy efficiency, reuse treated water where feasible, and recover resources from wastewater). • Engage communities and local institutions, including women and youth, so solutions are trusted, used, and maintained, and conservation behaviors improve. • Use policy support, technical assistance, partnerships, and monitoring as feedback loops to improve performance and align incentives across agencies.	Flood resilient and climate robust water and sanitation infrastructure Reduced water losses and improved water quality. Integrated water, energy, and ecosystem management systems. Reuse and resource recovery systems established where feasible (treated water, energy, nutrients). Inclusive community engagement and monitoring arrangements in place.	Reduced exposure to waterborne and vector-borne diseases. Improved reliability of water services during floods and droughts. Lower emissions and environmental damage from the water sector through efficiency and circularity. Improved trust, adoption of safe behaviors, and sustained operation and maintenance.	Improved public health and dignity, particularly in climate vulnerable communities, and safeguarded ecological foundations of water security under climate change through restored watersheds and circular, resource efficient service delivery.
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Annex 3: List of Participants

This annex provides the list of invited participants for AIIB @ Bellagio 2026, grouped by participant category.

I. Global Thought Leaders

Sandro Demaio, Director and Head, Asia Pacific Centre for Environment and Health, World Health Organization (WHO)

Jemilah Mahmood, Executive Director, Sunway Centre for Planetary Health,

Maria Neira, Commissioner and Former Director, Department of Public Health, Environment and Social Determinants of Health, Our Common Air and World Health Organization (WHO)

Dias Nunes Paulo Augusto Lourenço, Environmental Economist, Office of the Director for Africa, Center for International Forestry Research (CIFOR-ICRAF)

Milica Begoviz, Head of Strategic Innovation, Digital & AI, United Nations Development Program (UNDP)

II. Country-Level Representatives

Pratyaya Amrit, Chief Secretary, Government of Bihar

Praveen Pardeshi, CEO, Maharashtra Institution for Transformation, Government of Maharashtra

Vijaylakshmi Bidari, Divisional Commissioner of Nagpur, Government of Maharashtra

Kunta Wibawa Dasa Nugraha, Secretary General, Ministry of Health, Government of Indonesia

Okta Iskandaria, Grant and Loan Management 2 Team Leader, Bureau of Planning and Budget, Ministry of Health, Government of Indonesia

Ronald Law, Director, Health and Climate Change Office, Department of Health, Government of the Philippines

Masuma Akter, Additional Secretary, Economic Relations Division, Ministry of Finance, Government of Bangladesh

Nanny Santana Leal de Figueiredo, Advisor for International Affairs, Ministry of Health, Government of Brazil

I.M.S. Bandara, Additional Secretary (Engineering), Ministry of Health, Government of Sri Lanka

Poonam Singh, Head of Strategic Planning, Ministry of Strategic Planning, National Development & Statistics, Government of Fiji

Alipate Kete, Chief Economic Planning Officer, Ministry of Strategic Planning, National Development & Statistics, Government of Fiji

III. Asian Infrastructure Investment Bank Participants

Erik Berglof, Former Chief Economist, Economics Department, AIIB

Rajat Misra, Director General, Public Sector Clients Department, Region 1, AIIB

Vanshica Kant, Investment Associate, Public Sector Clients Department, Region 1, AIIB

Vera Siesjö, Head of Ecosystem and Social Development, Economics Department, AIIB

Theresa Beltramo, Head of Research and Development Impact, Economics Department, AIIB

Mohd Sharib Khan, Investment Officer, Public Sector Clients Department, Region 1, AIIB



INFRASTRUCTURE FOR PLANETARY HEALTH

TRANSLATING THEORY INTO PRACTICE

This review investigates how infrastructure investment can contribute to planetary health by strengthening the links between ecosystem integrity, climate resilience, and human wellbeing. It develops a practical theory of change centered on two impact pathways: nature-positive infrastructure and infrastructure for climate adaptation and mitigation. Drawing on project case studies from Asia and beyond, the review identifies policy, institutional, and financing mechanisms through which infrastructure investments can generate environmental, health, and development co-benefits. The evidence highlights the roles of ecosystem restoration, climate-resilient service delivery, results-based financing, policy reform, and nature finance in translating planetary health objectives into operational practice. The review concludes that achieving planetary health outcomes at scale requires integrating climate, nature, and health considerations into infrastructure planning, appraisal, financing, and implementation, while strengthening institutions capable of managing long-term environmental risks and opportunities.



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