CAMBER COLLECTIVE

How Private Sector Involvement Can Enhance Climate Adaptation within Health Systems

Opportunities and Challenges for Low- and Middle-Income Countries

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About Camber Collective

Camber Collective is a strategy consultancy with offices in Seattle, San Francisco, Washington DC, Lagos, and Paris. We partner globally to address today's most urgent challenges, systemically, sustainably, and equitably. We work with governments, major philanthropies, multilateral institutions, nonprofits, and socially minded corporations to identify systemic and sustainable solutions that enable communities to lead healthy and prosperous lives. Beyond our advisory work, Camber is deeply engaged in field-building, strengthening emerging domains of practice, knowledge, and collaboration across sectors. We convene partners, generate evidence, and develop frameworks that help shape the global agenda and expand collective capacity to achieve lasting impact. Camber Collective's functional expertise spans social and behavioral insights, strategy development, and coalition building, all designed to help organizations identify where and how they can work for the greatest impact.

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Abbreviations and Acronyms

AI	Artificial Intelligence
AfDB	African Development Bank
CHW	Community Health Worker
ESG	Environmental, Social, and Governance
GDP	Gross Domestic Product
IFC	International Finance Corporation
KPI	Key Performance Indicator
LMICs	Low- and Middle-Income Countries
mHealth	Mobile Health
MHU	Mobile Health Unit
PPP	Public-Private Partnership
ROI	Return on Investment
SDGs	Sustainable Development Goals
IFC	International Finance Corporation
WBG	World Bank Group
WHO	World Health Organization
WEF	World Economic Forum

Executive Summary

Public sector efforts, though foundational, are insufficient to meet the scale and urgency of the climate-health challenge.

Mobilizing the private sector is essential to closing persistent gaps in financing, infrastructure, and innovation. While much of this capital and innovation originates in Western or global markets, its application and value must gear towards that of emerging economies, where health systems face the greatest climate risks. Done right, this approach can protect the most vulnerable from climate-health risks while also reinforcing economic stability, reducing long-term costs, and opening new markets for inclusive growth.

Private sector engagement must therefore be framed not only as a corporate social responsibility, but as a return-on-investment opportunity: healthier, more resilient communities reduce supply chain risks, stabilize workforces, and expand consumer markets.

This piece outlines ***four key domains*** where private sector action can strengthen health system resilience:

Despite this potential, private sector engagement remains limited by misaligned incentives, regulatory uncertainty, weak impact measurement frameworks, and structural challenges. This report presents actionable solutions ranging from policy incentives to standardized metrics and inclusive investment models—to unlock meaningful participation.

The report calls for a shift toward more practical, results-driven collaboration between sectors, with equity – especially inclusion of women, youth, and local communities – as a core design principle for health system resilience.

INNOVATIVE FINANCING
such as blended finance, green bonds, and outcome-based mechanisms.

INFRASTRUCTURE & TECHNOLOGY
through renewable energy-powered facilities, and scalable digital platforms and solutions.

RISK MANAGEMENT & INSURANCE
including climate-triggered insurance models; analytics, and protection products.

COLLABORATIVE PARTNERSHIPS
that align commercial expertise with public health priorities and that build capacity to ensure workforce resilience.

Introduction

Health impacts are not just humanitarian concerns – they have direct economic consequences with material risks for markets, insurers, investors, and employers.

Climate change is increasingly recognized not only as an environmental crisis but also as a critical public health emergency. The impacts of rising temperatures, extreme weather events, and shifting disease patterns disproportionately affect vulnerable populations –women, children, the elderly, and those with pre-existing health conditions – particularly in low- and middle-income countries (LMICs). In these regions, climate change exacerbates existing health challenges, including the spread of infectious diseases, malnutrition, water scarcity, and heat-related illnesses, threatening to overwhelm fragile healthcare infrastructures that are often under-resourced and ill-equipped to adapt (Weiler, 2019; Quintana, 2024).

The health sector is particularly sensitive to climate change, as it directly influences the determinants of health, including clean water, food security, and safe living conditions. Vulnerable populations are at a heightened risk, necessitating urgent adaptation measures to protect public health (Weiler, 2019; Quintana, 2024). Climate change is already undermining health and economic systems – projected to cause 250,000 annual deaths, further strain already fragile rural health facilities in sub-Saharan Africa, slash global GDP by 10%, reduce labor productivity by up to 20%, and drive-up healthcare costs for insurers and employers (WHO; Arcaira et.al., 2023; Swiss Re Institute, 2021; WEF, 2021; ILO, 2019).

Rising healthcare costs, reduced worker productivity due to illness, and the erosion of consumer spending power all affect private sector profitability.

While governments and international organizations have been at the forefront of climate adaptation efforts, public resources alone are insufficient to address the growing scale and complexity of these challenges. The private sector can play a transformative role in this context. By leveraging its resources, technical expertise, and innovation capacity, the private sector can significantly enhance the resilience of health systems against climate shocks. For example, investments in sustainable health infrastructure, such as climate-resilient hospitals and telemedicine technologies, can improve healthcare delivery in the face of climate-related disruptions (Pauw, 2014). Moreover, private entities can pioneer new technologies that facilitate climate-resilient healthcare delivery, such as mobile health

Climate Health Impact in Numbers

250,000

projected additional deaths annually between 2030–2050 due to malnutrition, diarrhea, heat stress and climate-sensitive diseases (WHO, 2023; Agrawala et al., 2011)

10-36%

of rural populations in sub-Saharan Africa over 30 minutes to hours from healthcare, amplifying shutdown risks during climate shocks (Arcaira et al, JRC, 2023)

20%

climate-induced labor productivity losses in certain heat-affected industries (GLCF 2023; WEF 2023; IFC 2023)

10%

projected global GDP loss due to climate-induced productivity decline by 2050 (Swiss Re Institute, 2021; WEF, 2021)

138 million

job equivalents will be lost by 2030 due to heat stress – the same as losing 3.8% of global working hours or **$2.4 trillion** in economic losses *(WEF, 2023; ILO, 2019)*

↗ Morbidity & Mortality

from the disruption of healthcare services due to increased frequency and intensity of extreme weather events (Crick et al., 2018)

↗ Employers & Insurers' costs

Increased disease burdens strains health systems, **raising costs for insurers and employers alike** (GLCF 2023; WEF 2023; IFC 2023)

applications that provide real-time data on disease outbreaks influenced by climate change (Adhikari & Chalkasra, 2021).

Leading private actors are increasingly recognizing both the risks and opportunities of climate adaptation. Initiatives like IFC's $3 billion platform for climate-smart health infrastructure, AXA's climate insurance innovations, and MedTech investments in solar-powered clinics signal early momentum. Yet many efforts remain fragmented or fail to scale in low-resource settings.

Unlocking the full potential of private sector engagement faces persistent challenges– profitability concerns, regulatory barriers, and a lack of standardized metrics for impact measurement can hinder effective collaboration between the private sector, governments and international organizations (Djuric et al., 2013). For instance, private companies may hesitate to invest when financial returns are uncertain, or regulatory environments unclear (Lee & Kim, 2018). Still, public-private partnerships hold strong promise, especially in LMICs where the need for climate adaptation is most urgent (Scott et al., 2011; Pauw et al., 2015).

The purpose of this report is to explore how private sector involvement can strengthen climate adaptation within health systems, with a specific focus on low- and middle-income countries.

This report will examine how private sector engagement - through blended finance, data innovation, and strategic partnerships – can support systemic climate adaptation within health systems. Emphasizing strategic alignment between public goals and private capabilities, it explores models and pathways integrating equity, sustainability, and scalability at their core to transform climate-related health risks into opportunities for resilient, investable systems. In particular, this report highlights that while financial vehicles may be structured globally, their success depends on tailoring models to local financing ecosystems, regulatory frameworks, and community ownership. It offers actionable insights to foster cross-sector collaboration and to develop sustainable, adaptive, and inclusive climate-health solutions (Abara et al., 2023; Ortega-Cisneros et al., 2021; England et al., 2018).

Role of the Private Sector in Climate-Health Adaptation

The private sector holds a unique position to accelerate climate adaptation in health systems, especially in LMICs where public resources are often stretched thin. By leveraging their financial capabilities, technological innovations, and strategic partnerships, private entities can address critical gaps in climate-health adaptation. This section explores the ways in which the private sector can contribute to resilient health systems in the face of climate change.

Financial Contributions

Challenge: Climate-health solutions are underfinanced, particularly in underserved regions where risk-return profiles are unattractive to private capital.

Private Sector Value-Add: Institutional investors, funds, and corporations can deploy financing mechanisms to fund adaptation at scale.
One of the most immediate and impactful ways the private sector can support climate-health adaptation is through financing. Unlike public funding, which is often limited by budget constraints and competing priorities, private investments can provide flexible, targeted resources to scale up climate-resilient health interventions. Private entities, including corporations, investment funds, and philanthropic organizations, have the potential to channel resources into projects that improve healthcare infrastructure, enhance emergency response capacities, and support long-term resilience planning (Chersich & Wright, 2019).
Access to financing remains the largest bottleneck in most emerging countries: without de-risking instruments and localized investment vehicles, they struggle to attract private capital.

Blended finance models combining private investment with public funding or grants are especially promising in low-income countries.

Call to action

- **Leverage blended finance aligned with SDG co-benefits** by combining public, philanthropic, and private capital to de-risk and channel investments for climate-resilient health systems in underserved areas.
- **Align returnable capital vehicles with impact** to incentivize private equity in climate-health technologies, prioritizing last-mile delivery and digital access.
- **Create dedicated windows for locally bankable health projects** to ensure financing translates into impact on the ground.

These models can de-risk health adaptation projects that lack immediate returns but are crucial for long-term health and climate resilience of vulnerable populations. Instruments like green bonds and impact investment funds can align financial incentives with social and environmental outcomes, encouraging private companies to engage in climate-health initiatives (Cabana, 2023). IFC and regional development banks play a critical role in bridging this gap by structuring blended finance, supporting local banks, and ensuring financing reaches low-income countries where climate-health need is most urgent.

In West and other parts of Africa, blended finance structures are beginning to combine public concessional public funds with private capital to support climate-resilient health infrastructure – for example through programs that solarize or climate-proof existing clinics, ensuring operational continuity during extreme weather events (SEforALL, 2023).

Moreover, the private sector can play a pivotal role in financing innovative health solutions that address climate-related health risks. For instance, investments in telehealth services can expand access to healthcare in remote areas, particularly during climate-induced emergencies when traditional healthcare delivery systems may be disrupted (Dasandara et al., 2022). By providing capital for such initiatives, the private sector can help ensure that health systems are better equipped to respond to climate shocks.

98% of climate adaptation finance in Sub-Saharan Africa currently bypasses the health sector (Health Policy Watch, 2023; ENBEL, 2023).

Despite being among the most climate-vulnerable sectors, health receives a small fraction of adaptation finance (~2%). Key barriers include limited project preparation capacity, unclear financial returns, and structural misalignment between investors and health sector plans. Without private sector engagement and upstream structuring support, the health sector risks being left behind in national climate finance strategies – despite being central to human resilience (Health Policy Watch, 2023; ENBEL, 2023).

Mobilizing purpose-built financing vehicles can catalyze private investment and embed health as a core pillar of Africa's adaptation-finance architecture. This financing gap presents a strategic opportunity for actors like IFC and regional development banks to provide upstream advisory and lead in project structuring, de-risking instruments, and blended vehicles that link adaptation co-benefits to long-term health resilience.

SPOTLIGHT ON KEY INNOVATIVE FINANCING MECHANISMS

Region: Asian countries

Financial vehicle: PPP Co-financing

Impact:

Strengthened national health systems' adaptive capacity to climate-sensitive risks

Gap:

Health ministries lacked tools, data systems, and financing to predict and respond to climate-linked outbreaks and service disruptions.

Private Sector Role: Private tech firms and data-analytics companies co-developed digital platforms with governments under UNDP/WHO's Building Resilience of Health Systems in Asian LDCs initiative.

This co-financing and long-term service contracts de-risked public digital investment and created scalable models for health-climate intelligence.

Source: UNDP/WHO, Building Resilience of Health Systems in Asian LDC to Climate Change 2019.

Region: Kenya

Financial vehicle: PPP Service Contracting

Impact:

Increased healthcare access in off-grid Kenyan communities

Gap:

Health facilities in remote areas lacked reliable energy access, and public resources could not finance scalable, decentralized solar infrastructure for outreach and emergency care.

Source: Amref Health Africa, 2023.

Private Sector Role: Amref Health Africa, in partnership with AstraZeneca and the Ministry of Health, deployed solar-powered mobile clinics equipped with cold-chain and diagnostic capacity, linking energy reliability to improved service delivery and operational savings.

This initiative reduced operating costs and de-risked service delivery, presenting a replicable model for health-energy synergies in other low-income settings.

Region: Zimbabwe

Financial vehicle: Blended Finance

Impact:

Improved service continuity of maternal and emergency care in over 1000 health facilities across climate-vulnerable districts

Gap:

Clinics experienced frequent grid outages and fuel shortages, worsened by heatwaves and storms. Public funds were insufficient to cover ongoing operational maintenance or for climate-proofing.

Private Sector Role: Private firms designed, installed, and maintained hybrid solar systems under performance-based agreements, while donor financing (the Global Fund)) de-risked capital costs and ensured long-term reliability. Over 1000 health facilities were solarized, stabilizing cold chains, improving reliability of electricity for vaccine storage, and reducing service disruptions during extreme weather.

This model demonstrated how blending public, and private capital can rapidly scale basic infrastructure in fragile contexts and de-risk climate-health investment for private partners.

Source: Dateline Health Africa, 2024; Reach Alliance, 2020.

Proposed Multi-Countries – Blended Pooled Fund

Impact:

Unlocks investment-ready adaptation projects and expands private sector participation in climate-health financing

Gap:

Fragmented project pipelines and small-scale initiatives limit investor appetite and fail to achieve regional scale. Health adaptation remains severely underfunded due to the lack of structured vehicles that aggregate demand and reduce perceived risk.

Private Sector Role: A pooled climate-health adaptation fund could combine concessional donor capital with private investment, offering guarantees, first-loss buffers, and common underwriting standards. It would fund portfolios of solar-powered clinics, telehealth systems, and insurance-integrated infrastructure across countries – reducing risk through diversification.

This model creates a scalable investment platform tailored to climate-health needs – lowering the bar for private entry and creating a replicable vehicle for blended finance at scale.

Source: Adapted from Convergence Blended Finance Trends, 2024; Cabana, 2023.

Infrastructure and Technological Innovation

Challenge: Health infrastructure and digital systems in low-income settings are often ill-equipped to handle extreme weather events, power loss, or disease outbreaks intensified by climate change. In many low-income regions, fixed healthcare facilities are scarce, and those that exist often lack the resilience to withstand climate-induced events such as floods, heatwaves, and storms – leaving communities without access to essential healthcare services during and after such events.

Private Sector Value-Add: The private sector – especially firms in construction, energy, and technology – is well-positioned to drive innovation by designing, financing, and deploying climate-resilient solutions from solar-powered facilities to mobile health units, and digital tools for remote care and disease forecasting. These innovations not only improve the capacity of health systems to withstand climate shocks but also enhance their efficiency and sustainability (Macassa et al., 2022), while also contributing to broader climate goals.

Reliable energy is the backbone of climate-resilient health systems – and a catalytic entry point for private investment with measurable impact.

Over half of health facilities in Sub-Saharan Africa lack reliable electricity, severely limiting essential services like childbirth, vaccine storage, and emergency response (WHO & World Bank, *Tracking SDG7: The Energy Progress Report*, 2022). Yet investment in renewable energy for health systems remains limited, often due to fragmented project pipelines, limited co-financing mechanisms, and unclear revenue models. Concessional loans and blended finance tied to renewable energy upgrades can reduce risk and lower upfront costs for private investors, while enabling long-term revenue generation through operational savings. This makes energy access not just an infrastructure issue, but a foundational pillar of climate adaptation: without power, there is no resilient health delivery.

Call to action

- **Build climate-resilient health infrastructure** with renewable energy, adaptive design, and sustainable materials insurance —paired with insurance-integrated models to ensure long-term operational continuity.
- **Invest in digital health solutions**—like telemedicine, mobile health apps, and AI-driven predictive analytics—to expand care during climate disruptions.
- **Develop regional proof-of-concept labs with academia and private partners** to field-test, validate, and localize climate-health technologies
- **Scale-up proven innovations** (e.g., solar clinics, mobile units, outbreak apps) to boost resilience and reduce costs.

Private sector-backed solar-powered clinics in sub-Saharan Africa have provided resilient care during power outages during extreme weather events, while cutting operating costs over time ***(WEF, 2024; UNDP/GF, SEforALL, 2023)***

Designing healthcare facilities with climate-resilient features can significantly enhance the adaptability of health systems.

Constructing hospitals with sustainable materials, efficient waste management systems, and energy-efficient technologies can reduce their carbon footprint while improving their resilience to climate impacts (Rubio-Martín et al., 2021). Mobile health units (MHUs) are another critical innovation for climate adaptation, especially where fixed infrastructure is frequently disrupted by extreme weather. Privately co-financed MHUs have delivered maternal and emergency services in hard-to-reach communities, offering a scalable model for rapid response and resilience in fragile health systems.

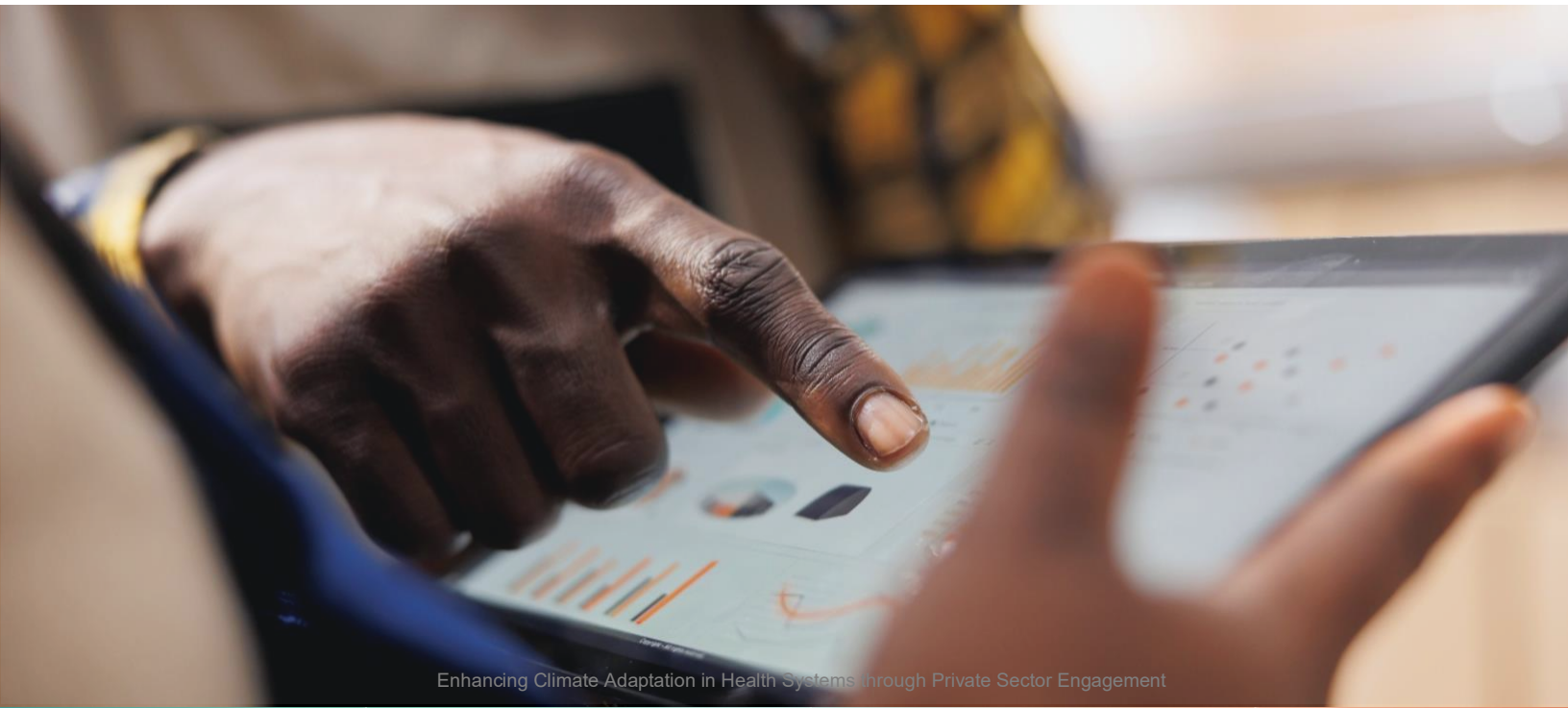
The integration of digital health technologies into climate adaptation efforts can reduce healthcare costs by up to 30% in low-income countries.

Technology companies can provide digital health solutions that increase the reach and accessibility of healthcare services, especially in remote or underserved areas. Tools such as telemedicine platforms, health data analytics, and digital diagnostics can be leveraged to deliver healthcare services even in the aftermath of climate-related disruptions. By investing in scalable technologies, the private sector can ensure that health systems are better prepared to respond to the increasing frequency and intensity of climate events (Wallace et al., 2022).

In Pakistan, the DEWS vector-alert app, co-developed by government, private IT firms, and telecom providers, cut outbreak response times from weeks to days and was associated with a dramatic reduction in reported dengue cases in subsequent seasons ***(PITB, 2014; WHO EMRO, 2014, Andrade et al., 2016)***

Insurance-integrated infrastructure turns one-off projects into resilient, locally sustained health systems.

To enhance long-term functionality and reduce dependency on donor funding, infrastructure investments should embed risk-transfer mechanisms and be designed with built-in mechanisms for operational continuity. Insurance-integrated models can help mitigate common risks – such as equipment failure, theft, and climate-related damage. When paired with mobile-enabled community payment systems and local revolving funds, these models promote operational resilience and support financial inclusion, enabling facilities to remain functional even after donor support ends. Embedding insurance at the infrastructure funding stage reframes these investments from one-time capital projects into sustainable service platforms, allowing communities not just to benefit from services, but to co-manage and sustain them, turning infrastructure into a shared, locally governed asset rather than a one-time delivery.



Risk Management and Insurance

Challenge: Health systems in low-income countries often lack financial buffers to withstand climate-induced shocks. Limited insurance coverage leaves healthcare providers and communities vulnerable to the financial impacts of extreme weather events and disease outbreaks.

Private Sector Value-Add: The private sector – particularly insurers and analytics providers – brings critical expertise in risk management and financial innovation. By developing and deploying tools that anticipate, transfer, and absorb climate-related health risks, they can stabilize health financing, and ensure service continuity (Alcayna, 2023).

Key instruments include:

- ✓ Parametric insurance: offer coverage that triggers rapid payouts based on predefined climate events (e.g., floods, heatwaves) to maintain healthcare services during crises
- ✓ Risk pooling: spreads risk across actors or regions to enhance affordability and resilience
- ✓ Predictive analytics and early warning systems: activate funding and response before crises escalate.

These innovative models reduce financial disruption, accelerate recovery, and build long-term system resilience.

Collaborating with governments and development organizations, the private sector can help design inclusive insurance schemes, such as subsidized premiums or coverage linked to broader climate-health programs that are accessible to low-income communities, thereby reducing their vulnerability to climate-related health risks. (Park & Kim, 2020). Such initiatives can provide a safety net for communities facing the dual challenges of climate change and health crises.

The Philippines has piloted sovereign and city-level parametric catastrophe insurance programs through Government Service Insurance System and support from the World Bank, which released fast liquidity to government agencies after Typhoon Rai in 2021 ***(World Bank, 2022)****. In parallel, community-level parametric microinsurance pilots for small-scale fishers, developed with local insurers, use climate triggers such as hazardous sea conditions to provide immediate financial protection for vulnerable households* ***(Rare & WTW, 2022)****.*

In Africa, the ARC Replica Program enables governments and humanitarian partners to access aligned parametric drought coverage funding early-action food and nutrition responses ***(ARC, 2023)****.*

While not yet applied to rural health facilities, these mechanisms show how private-sector-supported parametric insurance could provide predictable, rapid financing to maintain essential health services during climate shocks.

Despite the potential of innovative insurance models, significant gaps persist in local insurance markets across low- and middle-income countries. Many communities lack access to affordable and tailored products, limiting the reach of protective mechanisms. Awareness of how insurance works, particularly parametric and microinsurance models,

Call to action

- **Co-design and pre-arrange climate-triggered insurance mechanisms with public partners** – embedding climate-health parametric triggers into national insurance pools to ensure pre-disaster liquidity, rapid payouts, and uninterrupted care.
- **Expand scope to include sustainability-linked coverage** (e.g., equipment, cold chains, solar systems maintenance and risk assessment), and transition to community-managed premium models.
- **Invest in integrated climate-health risk analytics** improving risk assessment and pricing, portfolio performance, and public-private coordination while enhancing preparedness, resource allocation, and strategic response.

remains low among both providers and beneficiaries, weakening demand. Outdated or fragmented regulatory frameworks and weak data systems make it different to assess climate-health risks accurately, further hindering the development, pricing, and scaling of new insurance solutions, restricting private sector engagement and broader uptake.

Beyond short-term protection, insurance mechanisms can also strengthen long-term health system resilience. When embedded early – not as an add-on, but as core design elements, they can shift climate-health risk management from a reactive posture to a sustainable, locally embedded strategy – one that protects essential services, strengthens public-private alignment, and unlocks new opportunities for inclusive financial innovation.

Collaborative Partnerships for Climate-Health Resilience

Challenge: Fragmented initiatives and siloed investments reduce impact and sustainability. Additionally, human resource and institution capacity gaps hinder local resilience and climate readiness.

Private Sector Value-Add: Through joint governance and co-investment, private actors can align with national health strategies for climate resilience. Companies can co-invest in training, innovation hubs, and localized R&D to support national systems and frontline adaptation.

Effective climate adaptation in health systems requires collaboration between the public and private sectors. The private sector's operational expertise, supply chain management capabilities, and global networks can complement the strategic objectives of governments and international organizations. By partnering with public entities, private companies can help implement large-scale health adaptation projects, share knowledge, and align on common goals (Stewart-Ibarra et al., 2019). Collaborative models, such as public-private partnerships (PPPs), can serve as platforms for pooling resources and sharing risks. Well-governed PPPs often feature shared performance metrics (KPIs), joint steering committees for project oversight, and clearly defined roles for risk and revenue sharing. These governance structures improve transparency, align timelines across sectors, and create predictable engagement pathways for private actors. Embedding PPPs within national health and climate strategies – and supported by a formal Memorandum of understanding or long-term framework agreement – can institutionalize collaboration beyond project cycles.

These partnerships can be particularly effective in scaling up health interventions in LMICs, where resources are limited, and the need for climate adaptation is most urgent. Additionally, collaborative initiatives can foster knowledge exchange, allowing private sector innovations to be integrated into national health strategies and climate adaptation plans (Weiler, 2019). For instance, successful case studies from various countries illustrate how PPPs have facilitated the development of climate-resilient health infrastructure, improved access to healthcare services, and enhanced community engagement in health adaptation strategies (Abara et al., 2023).

Call to action

- **Engage in public-private partnerships** to scale climate-health adaptation in resource-limited settings.
- **Embed private-sector adaptation goals withing** national health and climate strategies, using joint investment roadmaps, shared KPIs, and health systems diagnostics.
- **Share capabilities and risks** to co-deliver sustainable, resilient health solutions by institutionalizing joint governance boards with shared financial and operational accountability for climate-health PPPs.

By leveraging the strengths of both sectors, these partnerships can create sustainable solutions that address the complex challenges posed by climate change. The private sector has a crucial role to play in strengthening climate adaptation within health systems, particularly in LMICs. Through financial contributions, technological innovations, risk management strategies, and collaborative partnerships, private entities can help build resilient health systems that are better equipped to respond to the challenges of climate change.

In Rwanda, the Ministry of Health and partners scaled a national digital community health worker (CHW) program that equips more than 45,000 CHWs with mobile phones and SMS tools (e.g., RapidSMS) to register pregnancies, track maternal and child health, and send real-time alerts to health facilities. By operating over nationwide mobile networks in collaboration with telecom providers, this system supports continuity of care and community-level disease surveillance even when access is disrupted, such as during floods or other climate-related shocks ***(Nsanzimana et al., 2018; Ngabo et al., 2012; RapidSMS Rwanda case documentation).***

In India, municipal agencies, private climate-data partners, and local health centers co-developed Heat Action Plans (HAP) linking heat forecasts to health vulnerability data. Early warnings enable clinics to activate preparedness protocols, stock supplies and schedule surge staffing. The model reduced heat-related mortality by over 1,000 deaths annually ***(Azhar et al., 2014; Weinberger et al., 2018)***

Public-Private Partnership Governance Models for Climate-Health Adaptation

PPP MODEL	DESCRIPTION	EXAMPLE & IMPACT
Co-Steering and Joint KPIs	Public and private partners co-manage implementation via shared steering committees and aligned KPIs. Roles and decision rights are jointly defined.	*India Heat Action Plans (Azhar et al., 2014; Weinberger et al., 2018)* for coordinated public-private climate-health preparedness. Enabled coordinated heatwave preparedness across clinics and hospitals, improving readiness and reducing heat-related mortality under joint KPIs and shared governance. **Partners:** Municipal/State Governments; Private/Public Health Facilities; Technical NGOs; India Meteorological Department.
Framework-Based PPPs	Formal agreements (e.g., MoUs, national PPP frameworks) anchor private sector roles in national health/climate strategies and budgets.	*Rwanda Health PPP Law* for structured private engagement in primary care delivery (WHO, 2022). Enabled scale-up of privately delivered health services under government contracts; ensured accountability via performance contracts. **Partners:** Ministry of Health; Ministry of Finance; Rwanda Development Board; Private Health Service Providers.
Local Co-ownership and Risk Sharing	Local governments and/or communities share ownership of assets or risk-pooling schemes with private actors; often supported by revolving funds.	*Kenya Solar Health PPPs* (Adhikari & Chalkasra, 2021) Community ownership improved maintenance and longevity of energy infrastructures; including reported reductions in system downtime. **Partners:** Implementing NGOs; Counties; Private solar firms; Public Health Facilities.

When governments and private partners co-create solutions, adaptation becomes locally led, financially viable, and globally relevant.

Opportunities for Scaling Climate-Health Solutions

Climate-driven disruptions to supply chains, particularly for pharmaceutical and medical goods, can result in financial losses. Analysis by industry and climate-risk groups suggest that extreme-weather-related disruptions impose multi-billion-dollar in annual losses on healthcare and pharmaceutical supply chains globally (WEF *Health Impacts of Climate Change* Report, 2024). Failing to invest in resilience also risks reputational damage, as consumers increasingly demand corporate accountability in climate action. Additionally, women's participation in supply chain management can improve efficiency and resilience by incorporating diverse perspectives and prioritizing community needs.

In LMICs, where healthcare systems often face resource constraints, the private sector's involvement can unlock new pathways for scaling climate-health adaptation. Leveraging private sector expertise, technology, and funding can accelerate the implementation of resilient solutions that protect vulnerable populations from climate-related health impacts. This section explores several strategic opportunities for scaling climate-health interventions through private sector engagement.

Efforts and initiatives to engage the private sector in climate-health adaptation already exist across financing, technology, insurance, partnerships, and supply chains. The examples below provide an overview of proven, emerging, and frontier investment models that demonstrate how private actors are contributing to health system resilience. Each of these areas is explored in greater detail in the sections that follow.

Summary of Opportunities for Scaling Climate-Health Solutions

DOMAIN	PROVEN	EMERGING	FRONTIERS
Financing	Blended financing pooling 1,000+ clinic solarization projects into de-risked portfolio for public, donor and private capital (Zimbabwe; UNDP/Global Fund Solar for Health). Service-contract PPPs for solar-powered mobile clinics delivering last-mile vaccination and diagnostics (Kenya; Amref-AstraZeneca-Ministry of Health).	Gender-smart micro-insurance pilots for women-led SMEs improving access to finance and resilience returns. Labelled green and sustainability bonds with explicit health adaptation uses (Chile, Indonesia, Ethiopia draft health adaptation plans).	Pooled multi-country adaptation funds with first-loss guarantees, aggregating risk across health infrastructure portfolios.
Infrastructure & Technology	Solarized primary facilities linking energy reliability to health outcomes (Kenya, Amref; Multi-country Solar for health, including Zimbabwe). Digital early-warning platforms using SMS and apps for vector-borne disease surveillance and rapid response (Pakistan DEWS)	Telemedicine-enabled outreach for service continuity during climate shocks (Kenya, Pakistan). Private-public co-developed digital platforms for improved outbreaks and service disruptions preparedness (Asian LICs, WHO/UNDP)	AI-powered disease forecasting and analytics platforms – predicting outbreaks in climate-sensitive zones. Community-based renewable health hubs integrating solar clinics, telemedicine and solar telemedicine (Archetype inspired by Solar for Heath and regional digital health pilots).
Supply Chains	Climate-resilient vaccine and medical supply logistics networks – strengthening cold chains and delivery during extreme weather	Use of private 3PL and digital inventory/visibility tools (e.g. drones like Zipline) to maintain continuity during floods/roads washouts. Commodities-linked vaccine and workforce health investments (Gavi-Commodities industry model).	AI-enabled supply chain risk analytics for essential health commodities – anticipating disruption from climate shocks.
Risk & Insurance	Sovereign parametric drought & O&E insurance providing early, rules-based financing for climate sensitive shocks (ARC Replica). Sovereign/city-level parametric catastrophe covers for rapid payouts to governments after extreme events (Philippines; World Bank-supported schemes).	Insurance-integrated health infrastructure bundling equipment cover, performance guarantees and long-term maintenance contracts to protect energy access and equipment for clinics.	Blockchain-enabled micro-premium pooling for rural health. Adaptation of existing parametric models: Facility-linked parametric add-ons earmarked specifically for health-facility O&M, surge staffing and emergency procurement when climate triggers are hit. Adaptation of community-level parametric microinsurance for small-scale fishers to rural facilities (ADB pilots)
Partnerships	National CHW digital health program enabling continuity of maternal, child health, and disease surveillance during climate-related disruptions (Rwanda; MoH-UNICEF-MNO) Heat Action Plans co-designed by municipalities climate-data partners and health services linking forecasts to clinic preparedness and reducing heat-related mortality (India including Ahmedabad)	Health-sector PPP explicitly integrating climate-resilient infrastructure and service contracts into national strategies and budgets (Rwanda health PPP law). Cross-sector co-investment platforms blending public and private capital for climate-health infrastructure.	Regional innovation hubs co-owned by local ministries, academia, and private sector – pooling country projects into a joint pipeline with common KPIs, safeguard standards and co-financing terms for MDBs, DFIs, and private investors to accelerate R&D and deployment of adaptation technologies

Innovative Financing Mechanisms

Access to finance remains a significant barrier to scaling climate-health solutions in LMICs. The private sector can bridge this gap by introducing innovative financing models that align commercial interests with social impact.

- *Blended Finance and Impact Investing*: Blended finance, which combines public and private capital, can de-risk investments in climate-health projects that may have lower immediate returns. Impact investors focused on social and environmental outcomes can provide patient capital to fund projects that enhance health resilience. This approach allows for the mobilization of resources that might otherwise remain untapped, fostering the development of critical health infrastructure (Santos et al., 2019).
- *Green Bonds and Health Resilience Funds*: Issuing green bonds dedicated to climate-health initiatives can attract investments from sustainability-focused investors. Similarly, health resilience funds can be established to pool resources from multiple stakeholders, including private companies, to finance adaptation projects. These financial instruments can provide the necessary capital to implement innovative health solutions that address climate-related risks (Rocque et al., 2020).

Recent sustainability and Sustainable Development Goals (SDG) bonds in countries such as Chile and Indonesia have directed together over US$ 800 million to support health-related and resilience investments and Ethiopia's draft health adaptation plans explicitly explore the use of green bonds and "green purchasing" to finance climate-resilient health infrastructure ***(Climate Bonds Initiative, 2024; UNDP/UNEP FI, 2022; Watts et al., 2023)***.

Call to action

- **Issue health-linked green bonds and resilience bonds** to finance infrastructure and services.
- **Establish health resilience funds with blended capital** to de-risk early-stage adaptation investments.
- **Promote social impact bonds** for performance-based climate-health outcomes.

- *Microfinancing for Community-Level Adaptation*: Private microfinance institutions can support small-scale, community-driven health adaptation projects by providing loans or grants to local entrepreneurs. This approach empowers communities to implement localized solutions, such as water purification systems or climate-resilient health infrastructure. By facilitating access to finance at the grassroots level, the private sector can enhance community resilience and promote sustainable health practices (Mousavi et al., 2020).

Leveraging Technology and Digital Health Innovations

Technology plays a crucial role in enhancing the resilience of health systems. Private sector entities, especially in the tech and digital health industries, can drive innovations that improve healthcare delivery and enable rapid responses to climate-induced health threats.

- *Telemedicine and Remote Diagnostics*: Telemedicine platforms can extend healthcare access to remote and underserved communities, particularly during extreme weather events or natural disasters that disrupt physical access to health facilities. For instance, during the COVID-19 pandemic, telemedicine proved invaluable in maintaining healthcare access while minimizing the risk of virus transmission (Austin et al., 2016). Remote diagnostic tools can also be deployed to monitor climate-sensitive diseases, such as malaria and dengue, allowing for early detection and intervention. Studies have shown that integrating telehealth services can significantly improve health outcomes in rural areas by providing timely medical consultations and follow-ups (Mosadeghrad, 2023).
- *Data Analytics for Early Warning Systems*: Private technology firms can collaborate with governments to develop data analytics platforms that monitor climate patterns and predict potential health impacts. Early warning systems, powered by AI and big data, can provide real-time alerts to healthcare providers, enabling proactive responses to climate-related health crises. For example, predictive analytics can help forecast outbreaks of vector-borne diseases by analyzing environmental data, thus allowing health systems to mobilize resources effectively (Buse & Patrick, 2020). The integration of such technologies can enhance the preparedness of health systems in the face of climate variability.
- *Mobile Health Solutions*: Mobile health (mHealth) solutions, such as apps for disease tracking, health education, and supply chain management, can be scaled to reach large populations quickly. By leveraging the widespread use of mobile phones in LMICs, the private sector can support health systems in adapting to climate challenges more effectively. For instance, mHealth applications can facilitate health education on climate-related risks, enabling communities to take preventive measures (Mosadeghrad, 2023). Additionally, these platforms can streamline the distribution of medical supplies, ensuring that essential resources are available when needed most.

Call to action

- **Expand access to digital tools and data platforms by partnering with tech providers and telecoms** to reach remote areas, support disease forecasting, and enable remote care during climate shocks.

In Pakistan, the Sehat Kahani telemedicine platform helped maintain access to care for flood-affected communities while over 1,000 health facilities were reported damaged ***(Kangan, 2024; UNICEF Pakistan, 2022)***

Mainstreaming Risk Management and Insurance into Climate-Health Financing Architectures

Scaling climate-health adaptation will require embedding risk management and insurance solutions into broader financing frameworks and health investment strategies. While innovative instruments—such as parametric insurance and risk pooling—have demonstrated success at the project level, their full potential lies in integration within national adaptation plans, blended finance platforms, and climate-health policy frameworks.

- *System-Level Integration:* Embedding insurance mechanisms in national climate and health strategies can institutionalize resilience financing. The *African Risk Capacity (ARC) Replica* mechanism demonstrates how pre-arranged contingency funds can flow directly to public agencies for faster response to climate-sensitive disease outbreaks (ARC, 2023). Similar integration within health sector budgets can help governments secure predictable post-disaster liquidity without diverting essential service funds.
- *Blended Finance for Health Resilience:* Development finance institutions and private insurers can co-develop blended instruments that link risk coverage with performance-based climate-health outcomes. In the Philippines, the *Asian Development Bank's (ADB)* is supporting a city-level parametric disaster insurance pool backed by sovereign lending and private reinsurance, illustrating how concessional public finance can help make climate risk coverage more affordable and scalable for vulnerable communities (ADB, 2023).
- *Enabling Policy and Data Ecosystems:* Scaling requires regulatory reform and robust data systems for risk modeling.

Call to action

- **Anchor insurance in climate finance and ESG portfolios,** positioning resilience as an investable asset class.
- **Partner with DFIs and governments** to scale affordable coverage through blended capital and outcome-based models.
- **Demonstrate market value** by piloting scalable, climate-health insurance solutions in high-risk regions.

- Establishing *climate-health risk observatories* or shared analytics platforms could improve pricing accuracy and expand access to affordable insurance products. Public-private collaboration in data infrastructure will be critical to assess exposure, monitor outcomes, and attract institutional investors.

ARC's Outbreak & Epidemic parametric insurance piloted in Guinea and Uganda and first adopted as a sovereign policy by Senegal, links risk modelling with contingency plans to trigger rapid, rules-based payouts for climate-sensitive disease response ***(ARC, 2022)****.*

By moving from isolated pilots to integrated financial architecture, risk management and insurance mechanisms can transition from reactive instruments to core enablers of system-wide resilience in climate-vulnerable health sector.

Strengthening Supply Chain Resilience

The resilience of health supply chains is critical for ensuring the availability of essential medicines, vaccines, and medical supplies during climate-induced disruptions. Private sector expertise in logistics, distribution, and inventory management can be instrumental in fortifying these supply chains.

- *Climate-Resilient Logistics*: Companies with advanced logistics capabilities can optimize supply chains to withstand climate-related shocks, such as floods, storms, or heatwaves. This includes implementing adaptive warehousing solutions, diversifying transportation routes, and using cold chain technologies to protect temperature-sensitive health products. For example, logistics firms can develop contingency plans that account for potential climate impacts, ensuring that critical supplies remain accessible during emergencies (Macassa et al., 2022).

- *Sustainable Procurement Practices*: The private sector can support the procurement of sustainable and resilient medical supplies, such as eco-friendly packaging or equipment that is less vulnerable to climate impacts. By integrating sustainability into procurement processes, companies can help health systems reduce their environmental footprint while enhancing resilience. This approach not only addresses immediate health needs but also contributes to broader climate goals by minimizing waste and promoting environmentally friendly practices (Buse, 2018).

- *Health-linked Supply Chain Investments:* The private sector can strengthen supply chain continuity and workforce productivity by investing in vaccines, preventive health, and community programs across sectors vulnerable to climate and health shocks. Partnerships such as Gavi's collaboration with the commodity industry (cocoa) demonstrate how improving worker and community health reduces absenteeism, stabilizes production during climate-related disruptions, and safeguards long-term sourcing. This approach transforms health spending into a strategic investment that delivers both social impact and measurable business return.

Call to action

- **Climate-proof supply chains** by embedding health adaptation measures such as vaccines, mobile health units, and resilient logistics.
- **Adopt risk-based logistics frameworks** using climate-adjusted models to protect pharmaceutical and vaccine supply chains.
- **Partner with logistics firms** for rapid pharmaceutical distribution.
- **Leverage cross-sector models** that align ROI with resilience

Building Capacity through Public-Private Partnerships

Public-private partnerships (PPPs) offer a strategic avenue for scaling climate adaptation in health systems. By pooling resources and sharing expertise, these collaborations can enhance the effectiveness of climate-health interventions.

- *Capacity Building and Knowledge Transfer*: Private companies can play a vital role in building the capacity of healthcare providers to respond to climate-related health challenges. This includes training on the use of new technologies, data-driven decision-making, and resilient healthcare practices. By investing in capacity building, the private sector can ensure that health workers are equipped to address the complexities of climate change (Carrasco-Torrontegui et al., 2021).

In West Africa, IFC's Energy2Equal program supported ElleSolaire, a women-led social entreprise that trains women as solar distributors and technicians and installs solar systems in off-grid facilities. The initiative has developed the skills of over 80 women and youth, electrified 27 rural health clinics in Senegal, and enabled more than 1,500 women to earn income from solar entrepreneurship, improving both energy access for essential health services and women's economic empowerment. (This case study was included to illustrate the dual benefits of such capacity-building initiatives on health system resilience and women's economic empowerment.)

- *Joint Research and Development Initiatives*: Collaborating with governments and academic institutions, private sector entities can co-invest in research to develop innovative solutions for climate-health adaptation. Joint R&D efforts can accelerate the creation of new technologies, treatments, and interventions tailored to the needs of LMICs. Such collaborations can lead to the development of context-specific solutions that effectively address local health challenges exacerbated by climate change (Hayes & Poland, 2018).

Connecting the Dots: The private sector has a critical role to play in scaling climate-health adaptation in LMICs. By leveraging technology, strengthening supply chains, introducing innovative financing mechanisms, and building capacity through public-private partnerships, private entities can significantly enhance the resilience of health systems. These strategic opportunities not only address immediate health needs but also contribute to long-term sustainability and climate resilience, ultimately protecting vulnerable populations from the adverse effects of climate change.

- Training and scaling a local climate-health workforce, particularly women – to deploy and maintain adaptation technologies.
- Co-developing local innovation hubs where private partners collaborate with public institutions to test, adapt, and scale climate-health interventions.

Call to action

- **Training and scaling a workforce of local climate-health professionals,** particularly women, to deploy and maintain adaptation technologies.
- **Co-developing local innovation hubs** where private partners collaborate with public institutions to test, adapt, and scale climate health interventions.

PARTNERS' ROLE IN SCALING CLIMATE x HEALTH ADAPTATION

PARTNER TYPE	OPPORTUNITY AREA	PRIMARY ROLE
Technology firms & Startups	• *Digital health innovation* • *Mobile health platforms*	Develop telemedicine, diagnostics, data tools; support health AI & disease modeling
Telecom & Digital Platforms	• *Remote care* • *Payment systems*	Enable connectivity, SMS alerts, and mobile payment infrastructure for adaptation
Logistics & Supply Chain Firms	• *Climate-resilient distribution* • *Cold chains*	Adapt delivery routes, optimize stock management, deploy mobile units
Financial Institutions & Investors	• *Blended Finance* • *Risk-sharing*	Mobilize capital, structure financing instruments, derisk early-stage investments
Insurers & Risk Analytics Providers	• *Risk management* • *Infrastructure sustainability*	Design parametric and asset-based insurance; support risk pooling, early payout, and data modeling
Public Sector & Health Ministries	• *Integration & scale-up* • *Strategy alignment*	Ensure national alignment, regulate, co-implement PPPs; set equity criteria
Foundations & Development Partners	• *Pilot funding* • *Policy & regulatory enablement* • *Risk-sharing* • *Community engagement* • *Capacity building*	Co-finance early-stage projects (e.g., concessional loans, guarantees); support technical assistance and innovation scale-up, fund data platforms and tracking tools; invest in public-private capacity building and innovation hubs
Academic & Research institutions	• *R&D* • *Climate-health surveillance*	Generate localized data, co-develop tools, lead evaluation
NGOs, Cooperatives, Local CSOs, Communities	• *Community adaptation* • *Health system delivery* • *Community engagement* • *Capacity building*	Broker trust with communities; manage outreach, implement microinsurance or mobile clinics, ensure inclusiveness
Energy & Infrastructure Providers	• *Renewable health facilities* • *Resilient design*	Build solar clinics, retrofit facilities, embed risk-transfer (e.g. insurance)

Challenges and Barriers to Private Sector Engagement

Despite the undeniable potential for private sector contributions to climate-health adaptation, numerous barriers hinder their full involvement, particularly in LMICs where the stakes are highest. The core challenge lies in aligning the commercial objectives of private companies with the public good nature of climate adaptation, a misalignment that often manifests in various financial, regulatory, and structural difficulties. Development actors – including multilateral banks, philanthropic foundations, and donor agencies – can play a pivotal role in bridging this gap by de-risking early-stage investment, co-financing innovations, and fostering enabling environments that attract and sustain private sector engagement.

Summary of key challenges and barriers to Private Sector engagement

CHALLENGE	DESCRIPTION	ROLE FOR DEVELOPMENT ACTORS
Profitability misalignment & Perceived Risk	Climate-health investments often have long payback periods and uncertain ROI, especially in high-risk or low-income markets.	Provide risk-sharing instruments (e.g., first-loss capital, guarantees); fund viability gap assessments; support long-term investment strategies.
Regulatory & Policy Uncertainty	Inconsistent or weak policy frameworks discourage private investment due to unpredictable rules and lack of incentives	Support regulatory reform, adaptive policy frameworks, and sandbox models; fund policy labs and cross-sector coordination.
Limited Access to Capital & Complex Finance	High capital costs, limited concessional options, and complex application processes prevent firms from accessing needed finance.	Simplify access to blended finance; offer concessional lending and technical assistance; co-create private sector–friendly funding windows.
Data Gaps & Measurement Challenges	Lack of reliable data and standardized impact metrics hinders investment decisions and ESG-aligned reporting.	Invest in interoperable and open-access data systems, real-time risk dashboards, and standardized metrics aligned with SDGs and climate goals.
Infrastructure & Structural Constraints	Poor infrastructure and health system capacity raise costs and complicate delivery of climate-health solutions.	Co-finance facility upgrades, resilient infrastructure, and supply chain investments through concessional or results-based finance.
Sociocultural & Community Engagement Barriers	Distrust of private actors and lack of inclusive design can lead to community resistance and project failure.	Fund co-design processes, community engagement platforms, and social license–building mechanisms; act as neutral conveners.
Knowledge & Capacity Gaps	Firms often lack expertise in health systems and climate adaptation, limiting their ability to develop viable solutions.	Provide technical assistance, executive training, innovation hubs, and in-company placement of climate-health experts.

Misalignment of Profitability with Social Impact Goals

A significant barrier is the fundamental misalignment between the private sector's focus on profitability and the often long-term, uncertain returns associated with climate-health projects. Many companies operate on short-term planning cycles, driven by the need to deliver quarterly profits to shareholders. In contrast, investments in climate-health adaptation typically require patient capital and a longer horizon to see tangible returns. This mismatch can deter companies from making substantial commitments, particularly in low-income regions where the business case may not be immediately apparent. The perceived high risk of investing in health adaptation –whether due to political instability, economic volatility, or unpredictable regulatory environments – only compounds these challenges. The private sector is generally cautious about deploying capital in markets that lack the stability needed for consistent returns. This risk aversion is especially pronounced in fragile economies where climate impacts can rapidly destabilize entire sectors (Chersich & Wright 2019; Gooley & Gunasekera, 2021).

Despite opportunities, the private sector faces challenges including:

- Perceived high risks, limited pipelines, and unclear revenue models for climate-health investments, dampening investor confidence and slowing capital mobilization (CPI, 2023; UCSF, 2023).
- Debt stress, fiscal constraints, and policy uncertainty deterring private health-sector investment in climate resilience (WHO AFRO, 2025; Oxfam, 2024).

Regulatory and Policy Barriers

Regulatory and policy barriers further complicate the landscape. Many LMICs lack coherent, stable policy frameworks that could incentivize private investment in climate-health initiatives. Without clear guidelines, companies are often hesitant to commit resources, fearing sudden policy shifts or inconsistent enforcement. For instance, changes in health sector regulations or environmental standards can increase operational costs unexpectedly, making it difficult for companies to plan and execute long-term projects (Berry et al., 2018). Additionally, the absence of supportive policies such as tax incentives, subsidies, or special financing arrangements means there are few mechanisms to offset the risks and costs associated with investing in climate adaptation projects. In regions where governments are unable to provide these incentives, the private sector may simply look elsewhere for more predictable opportunities (Agrawala et al., 2011).

Development actors can also support regulatory reform by funding policy advisory services, supporting cross-sectoral coordination, and facilitating policy experimentation through adaptive regulatory frameworks or sandbox models. In Kenya, for instance, donor-funded policy labs have enabled piloting of climate-health insurance products within a controlled regulatory environment, easing the pathway for private insurers to test new solutions (UNDP, 2022).

Bridging the climate-health financing gap requires reimagining risk – not just redistributing it.

Financial Barriers and Access to Capital

Access to capital remains a persistent challenge, even for companies that are willing to invest in climate-health adaptation. While blended finance models and impact investment funds offer promising solutions, the process of accessing these resources can be cumbersome. Companies often encounter complex application processes, stringent reporting requirements, and a lack of clarity around eligibility criteria, all of which can deter them from pursuing these funding avenues (Lahariya & Raman, 2022). For businesses operating in volatile markets, the cost of capital can be prohibitively high, further reducing the feasibility of long-term investments. The challenge is particularly acute in regions where financial

institutions are reluctant to provide loans or where high interest rates make borrowing costly (Andrade & Oliveira, 2014).

Development partners and multilateral institutions can play a catalytic role in de-risking private capital flow into climate-health adaptation. By offering first-loss capital, credit guarantees, and concessional lending facilities, they help improve the risk-return profile of investments in high-need geographies. For example, the Green Climate Fund's Private Sector Facility has used blended finance tools to mobilize over $3 billion in private capital toward adaptation in vulnerable regions (GCF, 2023). Structured partnerships like these not only unlock financing but also build investor confidence in low-income settings by absorbing early-stage risks that the private sector alone is unwilling to take.

Limited Data Availability and Impact Measurement

By investing in data and measurement systems, development actors don't just fund research – they de-risk decisions and accelerate private capital flow.

The issue of data availability and impact measurement also poses a significant hurdle. Private sector decision-making is often data-driven, relying on clear metrics to evaluate risks, returns, and impacts. However, the data needed to assess climate-health vulnerabilities, particularly in low-income countries, is frequently fragmented, outdated, or unreliable. Without access to robust datasets, companies struggle to perform the necessary due diligence to justify their investments. Moreover, the lack of standardized metrics to quantify the impact of climate adaptation on health outcomes makes it difficult for businesses to assess the social returns of their projects, thereby limiting their willingness to invest (Stewart-Ibarra et al., 2019). The absence of clear benchmarks also complicates efforts to measure progress, monitor performance, and report on outcomes, which are critical components of private sector engagement (Pauw, 2017).

Development actors can indirectly de-risk this early due diligence phase by investing in national climate-health vulnerability assessments, sponsoring interoperable health data platforms, and support real-time risk dashboards that are accessible to both public and private users.

Complexity of Quantifying Climate and Health Adaptation Investments

Without standardized, transparent frameworks, MDBs and funders assess and report climate–health adaptation finance inconsistently.

For the private sector, robust tracking of climate and health finance investments is essential to assess impact, measure ROI, and align with global sustainability goals like the SDGs and Paris Agreement. Transparent reporting enhances accountability, supports compliance with ESG standards, and demonstrates progress to stakeholders. This ability to report measurable outcomes builds trust with investors, partners, and consumers, positioning companies as leaders in climate adaptation and health resilience.

Conversely the absence of tracking systems risks reputational damage, as stakeholders increasingly demand transparency and evidence of progress. Without clear metrics, companies may struggle to showcase their contributions, undermining stakeholder confidence and missing opportunities to scale effective solutions. Aligning investments with standardized frameworks, such as those in the Development Banks' Joint Roadmap for Climate Health Finance, can mitigate these risks while maximizing impact (Ebi & Hess, 2020; World Bank, 2024).

Development actors have a direct role to play by funding the creation of standardized metrics, ESG-aligned taxonomies, and open-access impact

tracking platforms. These tools reduce early market friction and signal investment-readiness to private actors.

Structural and Infrastructure Limitations

Structural limitations in LMICs present another set of challenges that can deter private sector involvement. Many of these regions lack the necessary infrastructure to support large-scale climate-health interventions. Health facilities, especially in rural areas, often operate with limited resources and are not designed to withstand the increased frequency and intensity of climate-related events such as floods or heatwaves. For companies considering investments in resilient healthcare infrastructure or adaptation technologies, the costs of overcoming these structural deficits can be prohibitively high (Morrow & Bowen, 2014). Furthermore, weak and inefficient supply chains compound the problem, making it difficult to ensure the consistent delivery of essential medicines, vaccines, and medical supplies. Companies that depend on reliable logistics and distribution networks may find these environments too challenging, leading them to deprioritize investments in these markets (Brito et al., 2019).

To reduce these infrastructure-related risks, development finance institutions can co-finance upgrades through concessional capital or results-based grants, de-risking early investments in energy, logistics, and facility retrofits.

Sociocultural and Community Engagement Challenges

In addition to financial, regulatory, and structural barriers, there are sociocultural and community engagement challenges that the private sector must navigate. Successful climate-health adaptation requires not just technical solutions but also a deep understanding of the local context. In many regions, communities may be wary of private sector involvement, particularly if past experiences

have led to perceptions of profit-driven motives overshadowing public good. Gaining the trust of local populations and demonstrating a genuine commitment to improving health outcomes is essential but can be a lengthy and resource-intensive process (Clarke, 2023). Companies that do not invest in building strong relationships with communities may face resistance, ultimately jeopardizing the success of their interventions.

Development actors can act as conveners and brokers of trust, funding community-based planning processes and creating frameworks for co-design that reduce reputation and operational risk for private partners.

Knowledge Gaps and Capacity Constraints

Lastly, knowledge gaps in climate adaptation strategies and a lack of capacity within the private sector to navigate the complexities of health systems in LMICs can be a significant barrier. Many private firms, especially those that have traditionally focused on sectors outside of healthcare or environmental sustainability, lack the necessary expertise to design and implement effective climate adaptation strategies. The complexity of navigating health systems in LMICs, combined with the technical demands of climate resilience, requires specialized knowledge that may not be readily available within these organizations. Without investing in capacity-building efforts, including training and partnerships with experts, companies may struggle to develop and implement effective adaptation initiatives (Russo et al., 2020).

Summary

Resilient climate-health systems are built not only through infrastructure and finance but through the exchange of knowledge, the strengthening of local capability, and the alignment of purpose across sectors.

While the private sector has the potential to play a transformative role in climate-health adaptation, numerous barriers must be addressed to unlock this potential. Misalignments between profitability and social impact, regulatory uncertainties, data limitations, structural deficiencies, sociocultural challenges, financial barriers, and knowledge gaps all contribute to the hesitance of private companies to engage fully in climate-health initiatives. Addressing these challenges through targeted policies, capacity-building efforts, and collaborative partnerships will be essential for fostering a more robust private sector engagement in climate-health adaptation, particularly in LMICs where the need is most urgent.

Targeted technical assistance from multilateral agencies and philanthropic funders can help build private sector capacity early on — through executive training programs, cross-sector innovation hubs, and the placement of climate-health specialists inside companies or ministries.

Policy & Strategic Recommendations

Call to action – Governments & Multilateral Development Banks

- Provide tax relief and subsidies for gender-smart climate-health investments, tied to local returns.
- Enact stable regulatory frameworks aligned with Paris Agreement and SDG goals.
- Launch blended finance vehicles targeting adaptation co-benefits in health.
- Mandate ESG-compliant health adaptation impact reporting for private investors.
- Build gender-disaggregated, open data systems for monitoring climate-health progress.
- Extend development banks' catalytic role beyond structuring global funds to support locally owned solutions.

Given the significant barriers to private sector engagement in climate-health adaptation, targeted policies and strategic initiatives are essential to create an enabling environment for private sector participation. By addressing financial constraints, reducing regulatory risks, and building collaborative frameworks, governments, international organizations, and development agencies can foster an ecosystem where private sector efforts in climate-health adaptation can thrive. This section outlines key recommendations to support private sector engagement, with a focus on creating sustainable, scalable, and inclusive climate-health solutions for LMICs. For emerging countries, this means creating not only national-level incentives, but also locally accessible financing windows that allow small and mid-sized enterprises, cooperatives, and local investors to participate.

Developing Incentive Structures for Private Investment

To bridge the profitability gap that often deters private sector investment in climate-health adaptation, governments and international bodies can introduce financial incentives that make these projects more attractive. Tax incentives, subsidies, and concessional financing can encourage private entities to commit capital to long-term adaptation initiatives that may otherwise be perceived as financially risky or offering low returns.

- *Tax Breaks and Subsidies*: Governments can introduce tax relief or subsidies for private sector investments in climate-resilient health infrastructure, sustainable supply chains, and green technologies. Such measures would reduce the cost burden on companies, enabling them to pursue adaptation projects without compromising profitability. For instance, subsidies for renewable energy solutions in health facilities or tax deductions for investments in early warning systems could drive private involvement in critical adaptation areas (Kabwama et al., 2022).
- *Public-Private Risk Sharing*: Developing concessional loans or guarantee schemes, supported by development finance institutions, can help mitigate the financial risks associated with climate-health investments. By providing a partial financial safety net, these mechanisms encourage private entities to invest in adaptation projects that may not deliver immediate profits. Risk-sharing models, such as guarantee funds or climate-health resilience bonds, could unlock private financing by absorbing a portion of the risk associated with volatile markets or uncertain returns (Agrawala et al., 2011).

Establishing Clear and Stable Policy Frameworks

Policy consistency and clarity are fundamental to fostering long-term private sector engagement in climate-health adaptation. To overcome the regulatory uncertainty that often deters private investment, governments must work towards creating stable, transparent, and supportive policy environments. Regulatory frameworks that align with international climate adaptation and health resilience standards can provide the consistency needed to attract private investment.

- *Regulatory Certainty*: Governments can foster private sector confidence by committing to long-term, stable policies around climate-health adaptation. Clear guidelines on environmental standards, health sector investments, and climate-related incentives can reduce investment risks, enabling private companies to plan and execute projects with greater assurance. Policymakers might consider codifying these guidelines into law, creating long-term commitments that transcend political cycles and minimize abrupt policy reversals (Haigh et al., 2018).
- *Streamlined Approval Processes*: In many LMICs, lengthy and complex regulatory processes can discourage private sector investment in climate-health initiatives. Streamlining the approval processes for projects related to climate adaptation and health could significantly reduce bureaucratic barriers, enabling faster implementation of private sector-led projects. Governments could establish “fast-track” approvals for climate adaptation projects that meet specific criteria, thereby reducing time lags and costs associated with regulatory compliance (Pauw, 2017).

Enhancing Access to Blended Finance and Impact Investing

Given the high cost of capital and the risk profile of climate-health adaptation in LMICs, blended finance and impact investing can be powerful tools to mobilize private sector resources. Blended finance models, which combine concessional funding with private investment, can

mitigate risk and attract private companies to climate-health projects.

- *Blended Finance Models*: Governments and development organizations can establish blended finance facilities specifically tailored for climate-health adaptation projects. By pooling concessional funds from international agencies or development banks with private capital, blended finance structures can de-risk investments, making climate-health projects more financially viable. These facilities could prioritize investments in high-impact areas such as climate-resilient healthcare infrastructure, sustainable supply chains, and disease surveillance systems (Boag et al., 2018). Blended finance models that prioritize women-led enterprises have tended to outperform benchmarks, suggesting commercial upside alongside social impact (IFC, 2023)."
- *Impact Investing and Social Impact Bonds*: Creating platforms for impact investors to participate in climate-health adaptation projects can channel resources from individuals and organizations committed to social and environmental impact. Social impact bonds, where investors receive returns based on the success of a project in meeting pre-defined outcomes, offer a promising avenue for climate-health financing. Governments and NGOs can collaborate to design bonds that target specific adaptation goals, such as reducing climate-sensitive disease outbreaks or increasing healthcare access in climate-affected regions (Stewart-Ibarra et al., 2019).

Building Capacity and Knowledge for Climate-Health Adaptation

Capacity building is essential for both public and private stakeholders to effectively engage in climate-health adaptation. To address knowledge gaps and strengthen the implementation of adaptation strategies, governments, international agencies, and private companies can invest in training programs, research, and technical support.

- *Training and Skill Development*: To equip local private sector actors with the expertise needed for climate-health adaptation, governments and development organizations can offer training on areas like climate risk assessment, resilient health infrastructure design, and data-driven adaptation strategies. Training programs could also target healthcare workers, helping them understand climate risks and adapt health services accordingly. This capacity-building approach would help local companies develop specialized skills, reducing dependence on international expertise (Grunseit et al., 2021).
- *Collaborative Research Initiatives*: Governments and development partners can establish research collaborations with private sector actors to advance understanding of climate-health challenges and solutions. By funding joint research initiatives, particularly with local universities and research institutions, these collaborations can produce evidence-based insights and practical tools for adaptation. Such research partnerships could focus on developing new technologies for disease tracking, improving climate-resilient medical supply chains, or designing climate-proof healthcare facilities (Leitold et al., 2020).

Promoting Collaborative Public-Private Partnerships

To overcome challenges around community engagement, financing, and risk management, governments and international organizations can foster collaborative frameworks that enable the public and private sectors to work together on climate-health adaptation. Public-private partnerships (PPPs) can leverage the strengths of each sector, facilitating resource-sharing, knowledge exchange, and joint accountability.

- *Incentivizing PPPs in Climate-Health*: Governments can create dedicated programs to encourage public-private

partnerships focused on climate adaptation within health systems. This may include offering matching funds for projects that involve both private capital and public resources, thereby aligning financial incentives with social impact goals. By designing PPPs with clear objectives, such as building climate-resilient healthcare infrastructure or establishing disease surveillance systems, these partnerships can accelerate progress towards adaptation targets (Abara et al., 2023).

- *Establishing Multi-Stakeholder Platforms*: International organizations can support the creation of platforms that bring together government bodies, private companies, NGOs, and community representatives. These multi-stakeholder platforms can serve as forums for discussing challenges, sharing best practices, and developing coordinated approaches to climate-health adaptation. Through regular engagement, these platforms can align private sector efforts with national adaptation goals and ensure that solutions are culturally relevant and community-driven (Lorenz et al., 2019).

Creating a Standardized Framework for Data Collection and Impact Measurement

Standardized metrics are essential for evaluating the impact of private sector investments in climate-health adaptation. To facilitate informed decision-making and build confidence among private investors, governments and international agencies can work towards developing a common framework for data collection, impact measurement, and reporting.

- *Developing Climate-Health Impact Metrics*: Establishing a set of standardized metrics for assessing the impact of climate-health adaptation projects would allow private companies to track their contributions effectively. This could include metrics such as healthcare access rates during climate events, disease outbreak frequency, and the resilience of healthcare facilities. A clear, consistent measurement framework would also help companies report on social and environmental outcomes, providing transparency for stakeholders (Doherty et al., 2023).

- *Encouraging Data Sharing and Open-Access Platforms*: Governments and international organizations can promote data-sharing partnerships between the public and private sectors, creating open-access platforms where climate and health data are readily available. Such platforms improve transparency, enable continuous monitoring, and allow private companies to make informed investment decisions. These data-sharing initiatives are particularly valuable in areas like disease surveillance, climate forecasting, and health system vulnerability assessments (Casado-Asensio et al., 2021).

The *Quantification of Climate × Health Adaptation Investments 2025 Report* (Gavi & AIIB, Camber Collective) offers one of the first structured methodologies — the Camber Approach — to quantify and classify health adaptation investments across funders.

Long-Term Vision for Sustainable Private Sector Engagement

A sustainable climate-health future will depend on shared data, shared accountability, and a shared vision, where impact is measured not just by profit or policy, but by the resilience it leaves behind.

Finally, achieving sustainable private sector involvement in climate-health adaptation requires a shared long-term vision that aligns private interests with public health goals. Governments and international agencies should work to foster a culture of responsible investment, where companies are encouraged to adopt social and environmentally sustainable practices as part of their business models. By promoting corporate responsibility and sustainability, policymakers can create an environment where private sector engagement in climate-health adaptation is not only feasible but also integral to long-term development strategies (Klein et al., 2016).

Fostering private sector engagement in climate-health adaptation is crucial for creating resilient health systems, particularly in LMICs. By implementing targeted policies, establishing clear frameworks, enhancing access to finance, and promoting collaboration, stakeholders can create an enabling environment that supports private sector contributions. These efforts will not only address immediate health needs but also contribute to long-term sustainability and climate resilience, ultimately safeguarding vulnerable populations from the adverse effects of climate change.

To guide action, the table below identifies which strategic recommendations are currently most actionable for private sector funders. It also highlights where enabling support from governments or development actors is still needed to unlock investment readiness.

SPOTLIGHT ON KEY RECOMMENDATIONS

RECOMMENDATION AREA	ACTIONABILITY FOR PRIVATE SECTOR FUNDERS	TYPE OF READINESS	NOTES & EXAMPLES
Public-private risk-sharing models	High	Financial	*Concessional instruments already used in health & climate (e.g. GCF, IFC structures).*
Blended finance facilities	High	Financial	*Numerous models exist (e.g. Multi-country Solar for Health).*
Impact bonds for climate-health	Medium	Financial/Metrics	*Innovative model; needs impact data pipelines and outcome validation capacity.*
Fast-track incentives for women-led firms	High	Financial/Equity	*Impact investing shows high ROI; scalable with gender-lens investment vehicles.*
Tax breaks & subsidies	Medium	Policy	*Depends on local regulatory reform, existing energy and health tax incentives could be adapted to climate-health projects.*
Streamlined regulatory approvals	Medium	Policy	*Needs government action; examples in Rwanda (fast-track for adaptation projects); still uneven.*
Regulatory certainty for long-term engagement	Medium	Policy	*Critical for planning cycles; requires government buy-in.*
Joint PPP platforms & stakeholder coalitions	High	Governance	*Multi-actor models PPP and coalition models proven in India, and Rwanda; explicit climate-health focused platform nascent; IFC/Gavi-led initiatives illustrate how it can scale via convening power.*
Training & capacity building	High	Operational /Technical	*Private partners can fund training programs for local actors now; alignment with national needs key.*
Collaborative research initiatives	Medium	Technical /Institutional	*Strong potential depending on local R&D capacity and coordination.*
Climate-health data platforms	Medium	Technical / Policy	*Needs donor seed funding; private sector can scale on top of open-access tools.*
Standardized impact metrics	Medium	Policy / Metrics	*Development of sectoral metrics ongoing (e.g. WHO, WB, GCF); good co-creation entry point to align with ESG and reporting needs.*

Vision for Future Collaborative Models in Climate-Health Adaptation

Actionability to Scale Climate Adaptation for Health Systems

The future of climate-health adaptation will hinge on leveraging these partnerships to build resilient health systems, particularly in LMICs where the impacts of climate change are most severe. One of the most promising shifts needed is a move away from viewing private sector engagement solely through the lens of philanthropy. Instead, companies should embrace a shared value model where investments in health resilience are seen as strategic opportunities that align business interests with societal impact. For governments, the challenge lies in creating enabling environments that incentivize long-term private sector investments while ensuring these efforts are inclusive and equitable.

Future models should build on successful cross-sector collaborations *such as the Gavi–commodities industry initiative, where private firms recognize health as an investment in business continuity and long-term market stability. Applying this logic to climate-health adaptation can mobilize new classes of investors and anchor resilience in sectors central to emerging economies.*

Addressing the intertwined challenges of climate change and health requires innovative and coordinated collaborations bringing together the strengths of the public sector, private enterprises, international organizations, and local communities.

A successful, equitable vision for climate-health adaptation will require collaboration along 3 key components: scalable technology, sustainable financing and bottom-up project design.

Scalable technology: A critical element of future collaboration is the use of technology to scale climate-health solutions. The private sector's expertise in developing digital tools can be harnessed to improve healthcare access, strengthen early warning systems, and enhance data-driven disease surveillance, but only if paired with strong local partnerships and community engagement. For instance, deploying telemedicine platforms can extend healthcare reach to remote communities during extreme weather events, while predictive analytics can help identify and respond to outbreaks of climate-sensitive diseases.

Sustainable financing: The future of climate adaptation in health systems also depends on mobilizing sustainable financing. Blended finance models, combining concessional funding with private capital, can help bridge the gap in funding climate-health initiatives. Establishing dedicated resilience funds, supported by both public institutions and private investors, can drive scalable impact in regions that are most at risk. Beyond securing additional funds; it's about using these resources strategically to maximize both social and financial returns.

Bottom-up-project design: Local communities, including community leaders, healthcare providers, and local entrepreneurs must be embedded in project design and implementation to ensure relevance and sustainability. Future collaboration must also shift focus from global pilots to locally owned scale: Development banks, Global Health Initiatives, and corporate partners can replicate the commodities-sector model to align ROI with resilience in emerging markets. To sustain these efforts, building trust and fostering transparency among partners is essential. Transparent open data-sharing, continuous feedback loops, and collaborative platforms are necessary to support adaptive implementation and align efforts across sectors.

Looking forward, the vision for climate-health adaptation should focus on building systems that can anticipate and absorb future shocks, not just respond to current ones. Aligning corporate strategies with global frameworks like the Sustainable Development Goals and the Paris Agreement can ensure that private sector efforts contribute to both local adaptation needs and broader climate goals.

Conclusion

Climate change presents one of the most pressing public health challenges of our time, particularly in LMICs where health systems are already overstretched. The intersection of climate and health is not just a theoretical concern but a lived reality affecting the livelihoods, well-being, and resilience of billions of people worldwide. Climate-related shocks are disrupting service delivery, altering disease patterns, and exposing systemic weaknesses across infrastructure, supply chains, health planning, and emergency response.

The private sector has a unique and indispensable role to play in driving climate-health adaptation. With financial resources, technological expertise, and operational efficiency, private companies can help bridge the gap where public resources fall short. Private investment thus serves as a strategic response to growing operational risks and rising demand for climate-resilient health systems. As climate-related disruptions intensify, the cost of inaction is growing for business, investors, and governments alike: health system instability can lead to broader economic losses, supply chain breakdowns, and market volatility. Investing in resilient health systems safeguards both public health and support economic stability.

Private engagement is particularly relevant across four key pathways:

- **Innovative financing** to de-risk and scale adaptation investments;
- **Resilient infrastructure** and technology innovation to maintain service continuity;
- **Risk management and insurance** to protect assets and stabilize funding; and
- **Collaborative partnerships** that align public and private goals and drive results.

Yet, key enablers remain underdeveloped: misaligned incentives, regulatory barriers, weak data systems, and unclear return models continue to stall progress. Unlocking private engagement investment requires clear incentive structures, stable policy frameworks, greater access to blended finance and impact investing, strengthened capacity and knowledge for climate-health adaptation, and well-governed public private partnerships. Standardized data frameworks and innovative risk management tools are also essential to stabilize health financing and effective and viable investments.

Ultimately, adaptation efforts must be grounded in the realities of the communities most exposed to climate risk. This means financing mechanisms must channel global private capital into local systems – through IFC, AfDB, and other intermediaries – and empower ministries, local entrepreneurs, and community cooperatives to design and own solutions. Inclusive design, local ownership, and mutual accountability are critical to building health systems that are both resilient and responsive. No single actor can address the complexity of climate-health adaptation alone. Coordinated, cross-sector action – rooted in context, equity, and long-term thinking is essential to ensure health systems can withstand the pressures of a rapidly changing climate. Aligning capital, innovation, and equity at the climate- health nexus is the foundation of resilient systems and sustainable development.

Appendices

Appendix: Work Cited

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