

Green Cities, Infrastructure and Energy Programme (GCIEP)

Accelerating the integration and financing of nature-based solutions in green cities and infrastructure

The fifth session of the GCIEP Learning Series brought together a diverse panel of experts to discuss the practicalities, challenges and opportunities in mainstreaming and financing nature-based solutions (NbS) within urban infrastructure. The session focused on sharing hands-on experiences from across GCIEP's portfolio, highlighting both the technical and institutional dimensions of integrating NbS into city planning and project delivery.

Key learning points and recommendations

- **Significant potential benefits:** NbS can deliver major economic, social, and environmental gains and often offers high value for money when delivering ecosystem services, social resilience and cost-effective risk reduction.
- **Context matters:** NbS must match local conditions. In dense urban areas with limited land, pure NbS may not work best. A tailored, 'horses for courses' approach, often combining green and grey infrastructure, may often be the most effective.
- **Address communication and awareness barriers:** Adoption is held back by limited understanding and technical jargon, while success depends on early community engagement, shared understanding and clear evidence for policymakers of NbS' value and the risks of inaction.
- **Prioritise upstream integration into planning:** NbS needs to be considered upstream in national strategies and plans – not just at project design stages. Development partners can help by promoting guidelines, technical standards and regulations that require NbS consideration.
- **Plan for operation and maintenance needs:** Requires more ongoing maintenance than grey infrastructure. Successful asset maintenance depends on building local technical capacity and securing resources, including support for skills training for local authorities.
- **Mobilise private sector financing through innovation:** Private financing is possible but may need innovative models like outcomes-based financing.



The GCIEP annual learning series, in June and July 2025, explored achievements, challenges and learning points across six themes and sectors, with insights from relevant GCIEP work packages, FCDO staff, UK Agency Delivery Partners and external experts.

Setting the scene: GCIEP's journey supporting NbS

John Ward, GCIEP's Technical Expert on International Climate Finance Reporting, opened the discussion by clarifying the distinction between NbS and natural climate solutions, emphasising that NbS address a wider range of objectives – including resilience, biodiversity and human wellbeing – across both natural and modified ecosystems. There are multiple benefits of NbS, such as reducing urban heat islands, improving air quality and supporting economic and social outcomes like job creation and enhanced property values. However, there are often barriers that need to be mitigated, including limited policy direction, fragmented institutional responsibilities, challenges in quantifying benefits and the dominance of public over private finance. John underscored the importance of distinguishing between financing (who provides upfront capital) and funding (who pays over the project's life) and set the stage for the panel by noting GCIEP's early efforts in integrating NbS into business cases and concept notes in countries like Mozambique, Ghana, and Indonesia.

GCIEP is integrating NbS in infrastructure projects in Mozambique

Marcia Oliveira, GCIEP Mozambique's Country Manager, brought a practitioner's perspective to the session, drawing on three months of hands-on experience integrating NbS into urban infrastructure projects. She described how GCIEP has focused on complementing ongoing investments from partners such as the European Investment Bank and Japan International Cooperation Agency by developing concept notes and strategic business cases for integrating NbS into drainage and flood management systems in cities like Pemba, Nacala and Beira. These efforts are not just technical exercises but involve community engagement, training and awareness-raising – particularly around coastal dune protection and reforestation. It is important to note that while ancestral and traditional knowledge of NbS provides a strong foundation, challenges remain in communicating the concept in accessible terms and overcoming institutional and policy barriers, such as the absence of national guidelines. FCDO and other partners should also move beyond preliminary studies to pilot projects and feasibility assessments, which could help attract investment and demonstrate the viability of NbS in the Mozambican context.

Overcoming barriers in Ghana: Understanding flood risk management through NbS

Turning to West Africa, Job Udo, a flood risk management specialist at HKV and part of GCIEP's Ghana team, offered a candid assessment of the difficulties in implementing NbS in urban environments. Drawing on extensive experience in Ghana and beyond, three core barriers were identified: the scarcity of available space in densely populated cities, limited technical knowledge among relevant authorities and the challenge of ensuring NbS are genuinely considered in project tenders and studies. Land ownership complexities – both formal and informal –

often complicate the inclusion of NbS, while resettlement of communities from flood-prone areas remains a sensitive and logistically challenging process. Despite these obstacles, Udo saw opportunities in smart spatial planning, integrating NbS into the renovation of existing infrastructure, and ensuring that terms of reference for new projects explicitly require assessment of green alternatives. He stressed the importance of training local and national authorities not just on technical aspects but also on project management and maintenance, and advocated for hybrid solutions that combine green and grey infrastructure to maximise effectiveness and stakeholder buy-in.

Sequencing and adaptation pathways: GCIEP delivery partners' expertise in NbS

Dr. Andreas Payo Garcia, a coastal geomorphologist and system modeller at the British Geological Survey (BGS), one of the UK Agency Delivery Partners in the UK Centre of Expertise for Green Cities, Infrastructure and Energy, shifted the focus to the importance of sequencing and adaptation pathways in the successful deployment of NbS. Drawing on UK and international experience, Andreas explained that the complexity of adaptation planning often lies not in the technical process itself, but in the context – such as London's Thames 2100.. adaptation pathway, where long-term infrastructure planning must account for deep uncertainty. The British Standard on adaptation pathways was highlighted as a tool now being adopted by local authorities across the UK, enabling decision-makers to consider multiple future scenarios and avoid locking cities into costly or inflexible solutions. Sequencing interventions and involving stakeholders in the planning process can help identify co-benefits and open up new avenues for funding, making NbS a more attractive and resilient option in the face of climate uncertainty.



Financing and institutionalising NbS: How to make NbS bankable

Looking into the financing of NbS projects, Boris van Zanten, Disaster Risk Specialist at the World Bank's Global Facility for Disaster Risk Reduction, provided a global perspective on integrating NbS into lending operations for climate resilience. He shared that since 2012, the World Bank has committed financing to hundreds of projects with NbS components, particularly in urban development. The importance of supporting projects across the full cycle is critical, from identification and opportunity mapping, through technical and financial preparation, to hands-on support during implementation. He emphasised the need for robust feasibility studies, clear terms of reference, and capacity building for project implementation units, pointing out that successful projects often hinge on strong institutional frameworks and ongoing management beyond the point of project signing.

Financial viability for NbS in Ghana: Exploring outcome-based models

Adding another perspective on the challenges and opportunities of investing NbS, David Uzsoki, the Sustainable Finance Lead at the International Institute for Sustainable Development (IISD) explained that while NbS can be highly cost-effective – often delivering greater benefits than grey infrastructure alternatives – financial viability is harder to establish for standalone NbS compared to hybrid projects. David advocated for outcome-based financing models, where payments are linked to the achievement of specific environmental or social outcomes and stressed the importance of identifying clear beneficiaries who are willing to pay for ecosystem services. He argued that holistic cost-benefit assessments, which capture the full range of economic, social and environmental benefits, are crucial for convincing both public and private investors of the value of NbS.

Insights from the audience discussion

- A common area of interest from participants was on integrating NbS as early as possible into a project. GCIEP is doing this in Mozambique by embedding NbS in flood planning through early concept notes and local engagement.
- There can often be gaps between technical NbS language and local understanding. In Mozambique and Ghana, GCIEP is linking formal planning with traditional and community knowledge to make concepts and practical actions more relatable.
- It can be hard to make the case for NbS if there are urgent grey infrastructure needs. However, in Ghana GCIEP combines both approaches to address flooding more effectively near informal settlements.
- On the topic of financing NbS and proving returns, GCIEP is testing outcome-based models and cost-benefit frameworks in Mozambique and Indonesia to strengthen the investment case.

The UK Government's Centre of Expertise in Green Cities, Infrastructure and Energy responds to the impacts of climate change and poverty by accelerating the delivery of sustainable cities and resilient infrastructure

GCIEP is a demand-driven initiative supporting sustainable green cities and climate-resilient infrastructure in lower-income countries. As the flagship programme of the UK's Green Cities, Infrastructure and Energy Centre of Expertise, GCIEP supports the UK Government's mission to accelerate investment in infrastructure and urban development that is responsible, reliable, inclusive, low-carbon and climate-resilient.

GCIEP is implemented by an alliance of private sector delivery partners led by PwC and including Adam Smith International, Mott MacDonald, MDY Legal and Engineers Against Poverty.

Further expertise is provided by eight delivery partners: British Geological Survey, BSI, Connected Places Catapult, Crossrail International, Ofgem, Ordnance Survey, National Infrastructure and Service Transformation Authority, and Transport for London.