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Colombo cityscape reflection on Beira Lake. Photo credit: istock.com

Nature-Based Solutions for Climate Resilience in the World Bank Portfolio

Fiscal Years 2012–2021

Introduction

Countries are facing increasingly complex climate-related challenges, which undermine resilience and require integrated and innovative solutions. Nature-based solutions (NBS) have emerged as cost-effective alternatives to conventional gray infrastructure, delivering greater resilience in the longer term and providing a host of additional benefits. NBSs are defined as "actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits."[1] NBSs that are used with the explicit objective of reducing climate and disaster risks are called NBS for climate resilience. Related terms could include eco-DRR (disaster risk reduction), NBS for disaster risk management, or ecosystem-based adaptation. However, NBSs for climate resilience also provide other benefits such as provision of food or drinking water or opportunities for recreation and climate regulation. NBSs for climate resilience are applied across different geographies.

- ***For coastlines at risk:*** Restoring ecosystems such as dunes, mangrove forests, and other coastal wetlands like marshes can support the management of coastal energy from waves and storm surge. While protecting coastal infrastructure and civilians from flooding and erosion, these ecosystems can also enhance fisheries, provide recreational and educational opportunities, restore biodiversity, and increase carbon sequestration.

GWSP GLOBAL WATER SECURITY & SANITATION PARTNERSHIP
GLOBAL PROGRAM ON NATURE-BASED SOLUTIONS FOR CLIMATE RESILIENCE
GFDRR Global Facility for Disaster Reduction and Recovery
Administered by THE WORLD BANK IBRD • IDA | WORLD BANK GROUP

- ***In cities:*** Restoring urban green spaces such as wetlands and forests, daylighting rivers or streams, planting trees on streets, and creating nature-based stormwater systems can reduce flooding that disrupts mobility patterns and damages urban infrastructure, leading to costly recovery and adaptation interventions. Increased urban green space can also improve water and air quality, create ecological corridors that enhance biodiversity, and reduce urban heat island effects that are expected to get worse as global temperatures rise.
- ***In inland areas:*** Restoring and effectively managing watersheds and natural rivers can reduce flooding, sediment load, and erosion, thereby improving the regulation of water flows, water quality, and overall water security. Improved watershed management can also reduce the costs borne by water utilities, charged with ensuring water quality and services are maintained. In hilly terrains, the use of live cuttings and rooted plants embedded in the ground can also stabilize slopes and reduce landslide risks.

Global demand and political interest in NBS for climate resilience is increasing across regions. It opens new opportunities for the World Bank to provide needed support to countries interested in advancing their sustainable development and climate agendas. The World Bank integrated NBS for climate resilience into corporate strategies and priorities, recognizing the importance of NBS as a tool that delivers next generation infrastructure services. Such priorities are included in Climate Change Action Plan 2021–2025,[2] the COVID-19 Recovery Response,[3] and the Green, Resilient and Inclusive Development (GRID).[4] Guided by its goals to end extreme poverty and promote shared prosperity, the World Bank is already financing NBS for climate resilience across its lending portfolio and developing guidance and assistance to governments. Key knowledge products include the joint World Resources–World Bank flagship report "Integrating Green and Gray – Creating Next Generation Infrastructure"[5] and the most recent "A Catalogue of Nature-Based Solutions for Urban Resilience".[6]

In 2021, the Global Program on Nature-Based Solutions for Climate Resilience (GPNBS)[7] was established, hosted at the Global Facility for Disaster Reduction and Recovery (GFDRR) and financed by GFDRR and the Global Water Security and Sanitation Partnership (GWSP). GPNBS is a cross-sectoral effort at the World Bank Group and includes various global practices such as Water; Environment, Natural Resources and the Blue Economy (ENB); Urban, Resilience and Land (URL); and Finance, Competitiveness and Innovation (FCI). The mission of the program is to strengthen the capacity of World Bank teams to prepare, fund, and implement activities that integrate and strengthen natural systems to build climate resilience by providing operational support, developing targeted knowledge and tools, and forging internal and external partnerships. These activities should foster an increase in the use and mainstreaming of NBS across World Bank regions and sectors, while also improving the quality of analytical and lending operations. As part of the work program, GPNBS is tracking the NBS for climate resilience lending portfolio of the World Bank, which will be used to monitor progress and advance mainstreaming NBS.

Objective

As GPNBS scales-up its effort to provide targeted support to World Bank task teams and clients, monitoring and tracking the NBS footprint in the World Bank's portfolio will remain a key tool. This paper aims to inform World Bank and GFDRR leadership, donors, clients, and the global community on the World Bank's progress in mainstreaming NBS for climate resilience, and to inform decisions on targeting capacity building efforts and technical support to operations.

Methodology

The methodology used for this portfolio review relies on the use of the World Bank's Operation Portal Database, which contains all project information for World Bank operations. No specific tags, themes, or databases exist in the system that can be used to find NBS projects efficiently. As such, the review used an algorithm to search through the database and extract projects that were approved from the fiscal years 2012 to 2021 (FY12 to 21) and that used common NBS terms in project documents. The list of projects was then manually screened and reviewed to ensure that the project truly included NBSs. The 10-year time frame was chosen to provide a reasonable timeline to identify trends and patterns. The review exclusively focused on lending operations, rather than on advisory and analytics because of staffing limitations and minimal project documentation on advisory and analytics.

Through close review and analysis, qualitative and quantitative data points were gathered to provide a comprehensive look at the World Bank's NBSs for climate resilience efforts. This includes: (i) the type of NBS used in the project; (ii) the natural hazards addressed by NBS; (iii) the focal thematic type of NBS used; (iv) the measured or stated benefits of the NBS intervention such as project result indicators; and (v) relevant project descriptors such as whether the project was implemented in a coastal or inland location—be it urban or rural. The review also considered whether it was intended to address COVID-19 impacts, whether it was

complemented by gray infrastructure measures like a hybrid approach, and whether it included community engagement and gender components (Appendix A for additional details on the methodology).

Results

The resulting dataset outlines patterns and trends in NBS for climate resilience investments across the World Bank portfolio, offering lessons regarding the utility and effectiveness of NBS as a tool for sustainable development, as well as highlighting potential gaps for further investment.

The review identified 103 projects from FY12 to FY21 that contained NBS components, approximately 37 percent of which were supported by GFDRR grants. Most of these projects are within the URL and ENB global practices and were implemented in Africa and the East Asia and the Pacific (EAP) region. The analysis also found that 25 percent of projects were implemented in countries affected by fragility, conflict, and violence (FCV) countries; and that only eight percent of projects with NBS components occurred in small island developing states (SIDS).

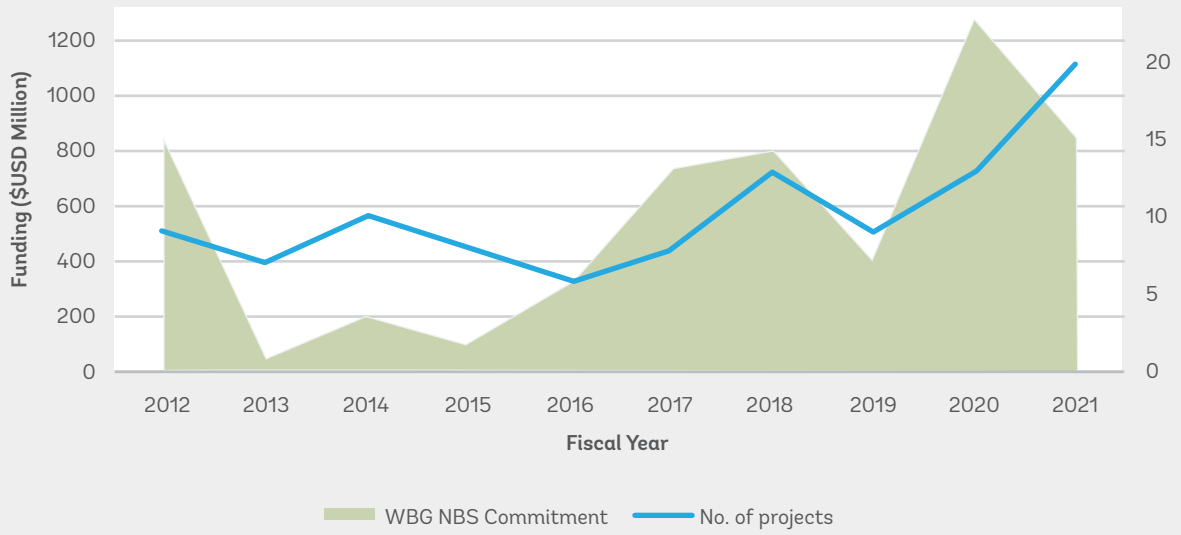
The majority of projects focused on river flooding and erosion, with certain global practices and regions demonstrating various trends, such as a larger focus on coastal risks in Latin America and the Caribbean (LAC). Across the portfolio, the most common types of NBSs employed included enabling or restoring urban green spaces, forests, rivers and floodplains, and vegetation, with a notable focus on community engagement mechanisms and gender dynamics among 65 percent of projects.

For outcomes, projects frequently measured the extent to which activities reduced flood risks, increased capacity, and protected natural areas. For example, closed FY12–21 projects that measured NBSs' efforts restored or made into green spaces more than one million hectares of degraded land; restored or afforested nearly 124,000 hectares of forest or wetlands; and protected 4,600 kilometers of coastal and marine areas. Lastly, this analysis identified that 12 percent of FY20–21 projects used NBSs for climate resilience to address the impacts of the COVID-19 pandemic, such as creating jobs by financing community-based reforestation activities.

Financing for NBS projects

The portfolio review identified a total of 103 projects with project components using NBS for climate resilience from FY12 to FY21 (figure 1). GFDRR supported 38 of these projects, providing 72 grants totaling approximately US$35 million. The total number of approved projects increased 122 percent from FY12 to FY21. Most of the increase has taken place in recent years, jumping from 13 approved projects in FY18 to 20 projects in FY21.

Figure 1. Approved projects with NBS for climate resilience and cumulative approved WBG commitments for NBS from FY12 to FY21.



Source: Author derived.

Box 1: Metro Colombo Urban Development Project

In Sri Lanka's capital city of Colombo, the World Bank has supported the restoration and protection of 20 square kilometers of freshwater lakes, wet woodlands and grasslands, and swamps, which serve as natural protectors for the flood-prone city. The wetlands also help purify and cool the air and absorb up to 90 percent of Colombo's greenhouse gas emissions, while also providing food and supplemental income for Colombo's urban poor. The preservation of wetlands, combined with the installation of pumping stations and tunnels to divert flood water, has benefited the 2.5 million urban residents. It led the government to develop an additional 50 plans for conserving wetlands across Sri Lanka.

Wetlands in Colombo. Photo credit: World Bank

A combination of several elements can explain this positive trend. In addition to improved global evidence of the utility of NBS, more projects are likely considering the use of NBS owing to outreach from internal working groups and programs such as the GPNBS, which was originally created as a working group in FY17. The publication of several high profile reports on the efficacy and cost effectiveness of NBS for climate resilience in recent years, including "Integrating Green and Gray – Creating Next Generation Infrastructure"[5] report in FY19, have also helped increase visibility of the NBS concept, and raise awareness and interest among World Bank Group (WBG) teams and client countries. Moreover, GPNBS provides technical and analytical support to World Bank task teams, including helping teams acquire grant funding from relevant multidonor trust funds, such as GFDRR and GWSP, to finance NBS studies to inform investments. Lastly, the World Bank has scaled up approaches toward climate adaption and resilience in recent years. Climate finance to support developing countries to invest in low carbon, resilient opportunities increased from US$10.9 billion in FY16 to US$26.6 billion in FY21. Since 2012, all World Bank operations have been required to report on climate co-benefits for lending projects, which could potentially have contributed to increased interest among clients and teams to explore the use of NBS.

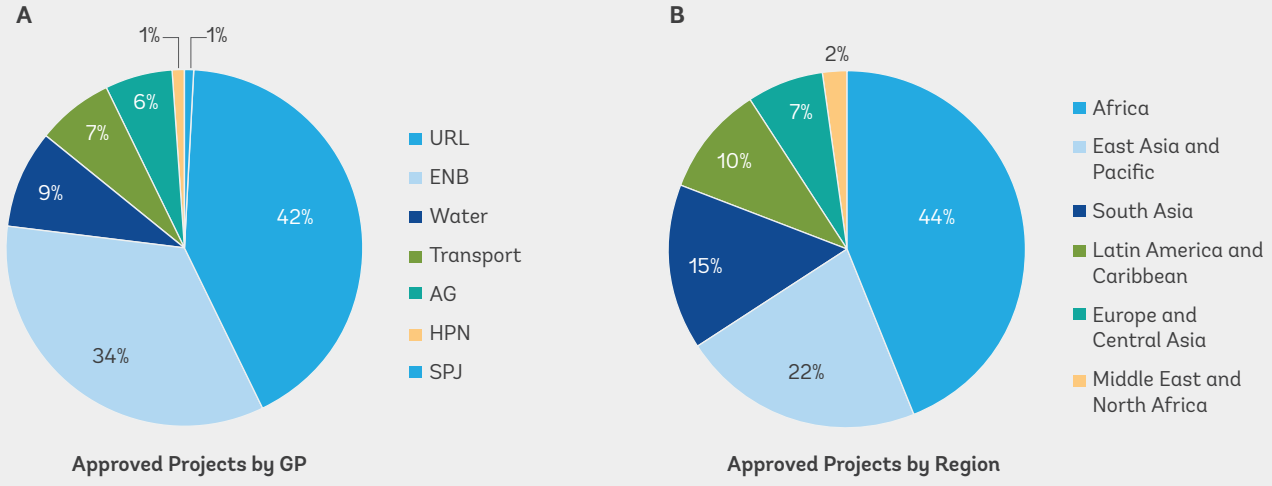
These components are valued at an estimated US$5.53 billion, of which about 64 percent comes from International Development Association (IDA) resources. Total funding for components integrating NBS has steadily risen, with an estimated 317 percent increase in FY21 from total or cumulative funding in FY16. Of the 55 NBS projects approved from FY18-21, 26 percent were supported by 20 GFDRR grants, totally $7.1 million. These grants helped mobilize US$911 million in funding, with 68 percent from IDA's sources. The grants supported prefeasibility studies for the design of NBS or baseline assessments for flood risks, landslides, and other hazards, while others included knowledge exchanges and trainings and the development of innovative tools.[8]

Global practices implementing NBS projects

Most projects, about 75 percent, are implemented by the URL and ENB global practices, which have greater commitment to NBS components (figures 2 and 3). Given that the focus was on NBS for climate resilience, dominance of URL global practice investments in the portfolio review are unsurprising. However, it is also important to note that the Water and ENB global practices also have a significant share of NBS for climate resilience investments. They highlight the use of comprehensive approaches that not only tackle existing sector challenges, but also build resilience and provision of additional benefits that can be achieve by using NBSs.

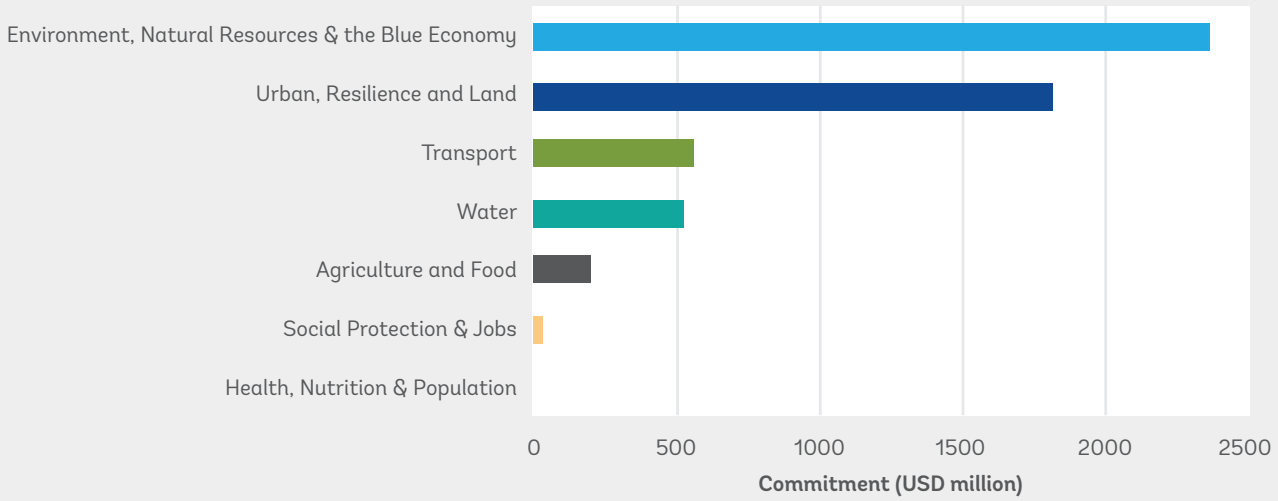
NBS for climate resilience projects are implemented at higher rates in Africa at 44 percent and in EAP at 22 percent (figure 2b). This is also reflected in the commitment amount desegregated by region (figure 4). The dominance of NBS projects in Africa reflects the amount of World Bank funding at 53 percent of overall WBG commitments. The prevalence of NBS projects in Africa is particularly notable in ENB and URL, representing 49 percent and 44 percent of projects, respectively. In the NBS portfolio review, the EAP region ranked second in the number of NBS projects after Africa, which differs from the overall World Bank portfolio, wherein the South Asia region (SAR) comes second. This is owing to EAP's urgent need to build climate resilience, especially in coastal areas that are experiencing high rates of erosion, mangrove deforestation, and storm surge. SAR also represents a large share of the NBS portfolio, where several projects have used best practices and

Figures 2. (a) The breakdown of approved projects with components integrating NBS for climate resilience by global practice. (b) The breakdown of approved projects with components integrating NBS by World Bank regions.



Source: Author derived.

Figure 3. Total World Bank NBS commitment for projects approved in the FY12–21 period desegregated by global practice.

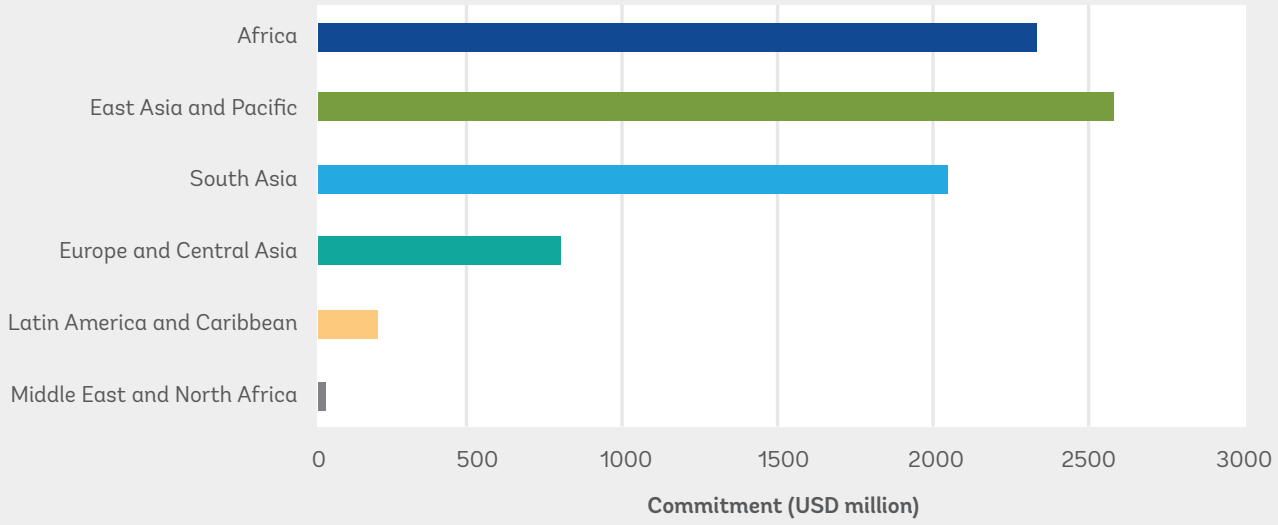


Source: Author derived.

lessons learned to implement climate resilient transport work and reforestation with NBS.

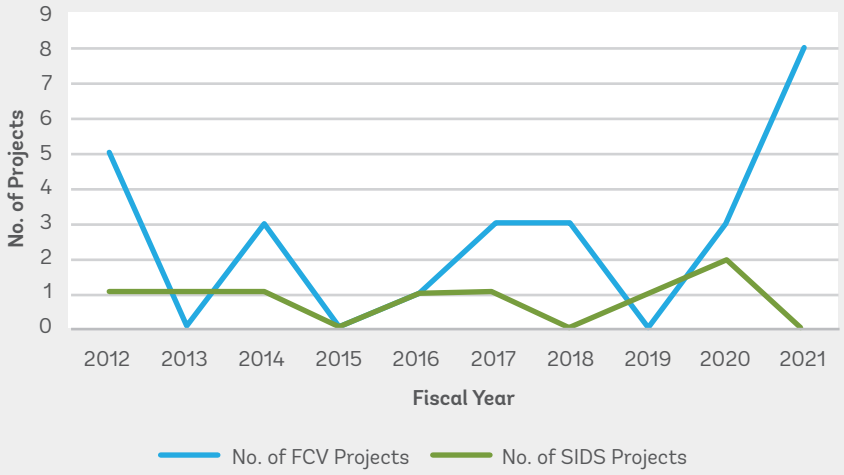
Across these regions, several projects have been implemented in countries with status of interest (figure 5). For instance, since FY12, approximately 25 percent of approved NBS for climate resilience projects have been implemented in countries with FCV status such as Afghanistan, Ethiopia, Guinea, Mozambique, and Yemen. Notably, the number of projects using NBS for climate resilience in FCV nations increased in 2021—eight projects or 40 percent of the total number of NBS in FCV projects. These projects engaged with activities that rehabilitate degraded forests, establish green infrastructure, and use NBS to build coastal resilience, among others. Almost half of the 103 NBS projects, about 47 percent, were implemented or are being implemented in countries

Figure 4. Total World Bank NBS commitment for projects approved in the FY12–21 period desegregated by World Bank Regions.



Source: Author derived.

Figure 5. Number of NBS for climate resilience projects in FCV and SIDS context approved in the FY12–21 period.



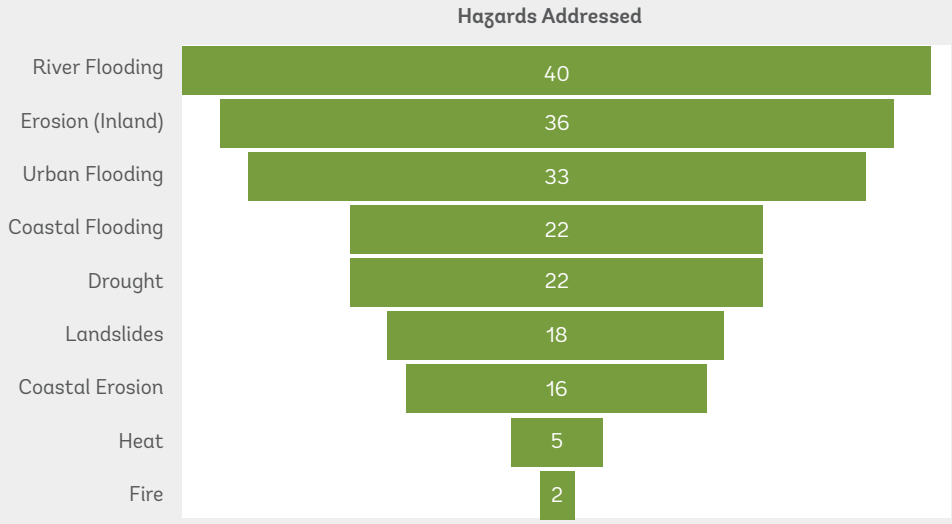
Source: Author derived.

categorized as Least Developed Countries, and 83 percent were implemented in countries considered lower or lower-middle income. Only eight percent of NBS projects were implemented in the SIDS context, which is often attributed to the lack of space, the number of SIDS, and the severity of climate risks faced that may often call for more complex built environments.

Hazards being addressed

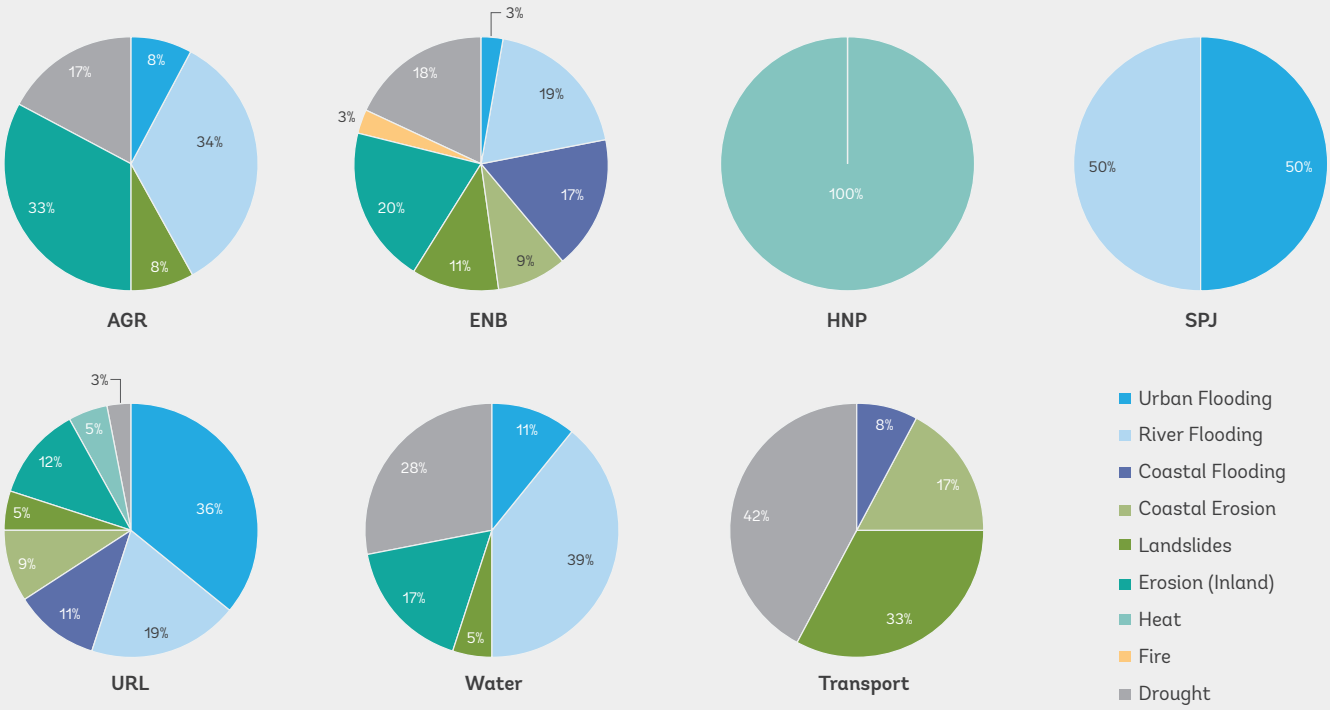
Most projects address river flooding in rural or urban areas and erosion inland (figure 6). These are strong trends that are persistent compared to the FY20 portfolio review. The frequency of erosion and river flooding as hazards addressed can be partly attributed to the cross-global practice attention these hazards receive. Erosion occurring inland also focuses several investments across global practices, including Water, ENB, and Transport, for differing reasons. For instance, erosion can increase sedimentation and burden water utilities, and it can also reduce the resilience of transport corridors. The data desegregated by global practices illustrates how the trend unfolds (figure 7). Transport and Agriculture global practices frequently use NBS to address erosion for climate resilience of

Figure 6. Total number of NBS projects targeting the specific hazard during the FY12–21 period.



Source: Author derived.

Figure 7. Number of hazards addressed by NBS for climate resilience investments for projects approved in the FY12–21 period desegregated by World Bank global practice.



Source: Author derived.
Note: Acronyms: AGR, Agriculture and Food; HNP, Health, Nutrition, and Population; SPJ, Social Protection and Jobs.

roads and agricultural productivity, respectively. Transport's global practice focuses on transportation infrastructure in mountainous and rural areas—which are prone to landslides—also contributes to the use of NBS to reduce landslide risks. Additionally, Water, Agriculture, and ENB global practices are more likely to use NBS to reduce the risk of drought. This is due to the connection between drought and water availability, water services, and ecosystem health. These global practices frequently use NBS to reduce the risk and impact of river flooding, while URLs focus on urban areas, meaning the global practice often uses NBS to reduce urban flood risks.

A few trends can also be seen when data are desegregated by region (figure 8). In Europe and Central Asia (ECA) and EAP, a high number of projects use NBS to reduce river flooding because many focus on deltaic areas in EAP, and on the rivers and basins in Poland and the Western Balkans in ECA. Both LAC and SAR have numerous projects that address coastal risks, which often involve crucial coastal ecosystems, such as mangrove forests.

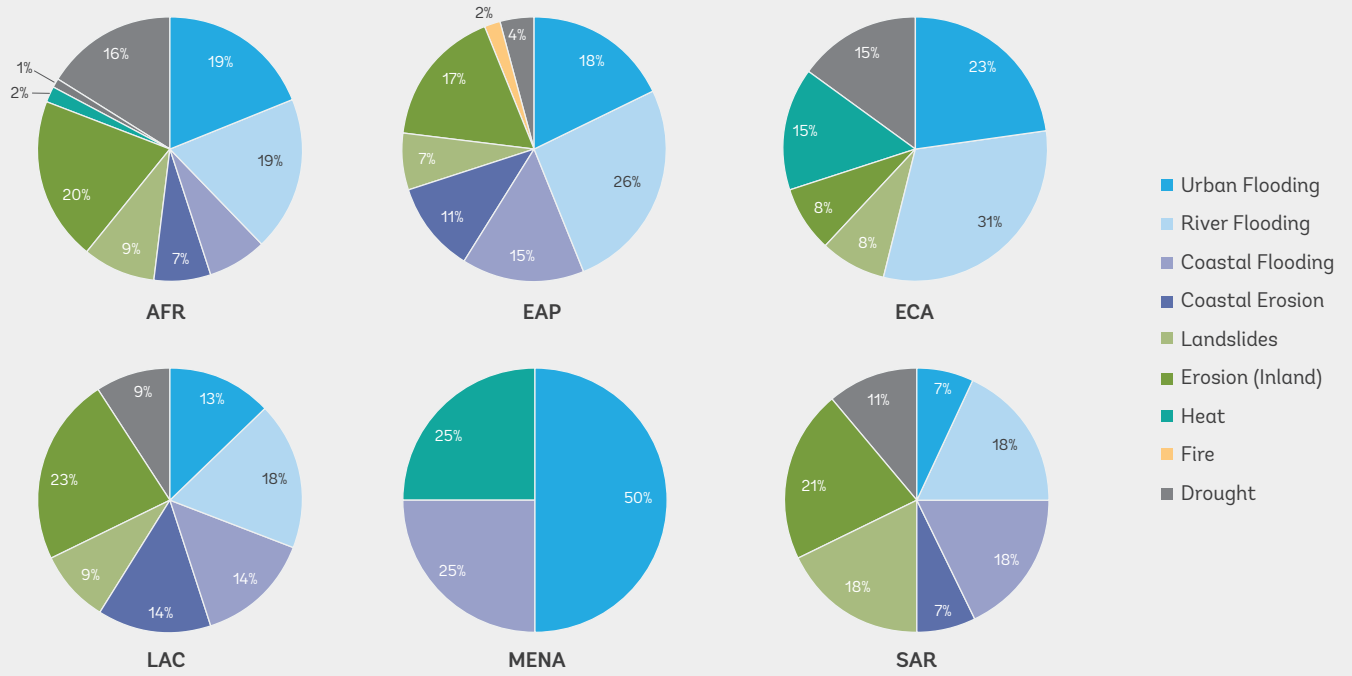
Integration of NBS for heat mitigation has accelerated since 2020 due to rising global temperatures, more frequent heat waves, and worsening heat island effects.

Box 2. Cities and Climate Change Project

In Mozambique, the World Bank has pursued a hybrid approach to mitigating floods in the city of Beira, focusing on community-based mangrove restoration, river clean-ups, and outreach campaigns along the Chiveve River, while also widening the river's tidal basin and implementing other gray interventions. The project created a 17-hectare urban green park along the river, enhancing flood protection for 50,000 people and providing livelihood and recreational benefits.

Mangrove park in Beira. Photo credit: World Bank

Figure 8. Hazards addressed by NBS for climate resilience projects approved during the FY12–21 period desegregated by World Bank region.

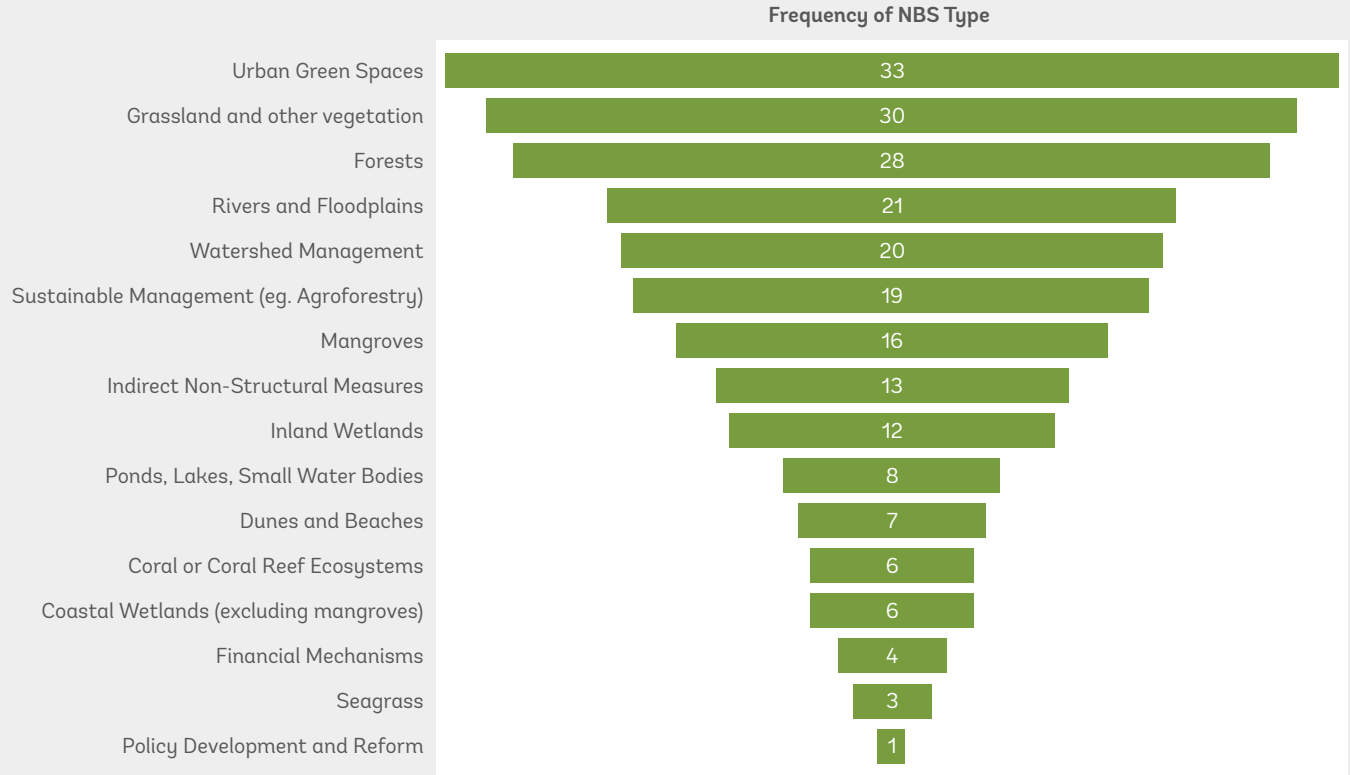


Source: Author derived.
Note: Acronyms: MENA, Middle East and North Africa.

Types of NBS being used

The diversity of NBS is evident across the portfolio; however, urban green spaces, forests, rivers and floodplains, and grassland and vegetation are the most frequently employed solutions (Figure 9). Other NBS types like watershed management, sustainable management or agroforestry, mangroves, or inland wetlands also have a significant presence.

Figure 9. Overall frequency of the use of NBS types across the World Bank portfolio for projects approved between FY12 and FY21.



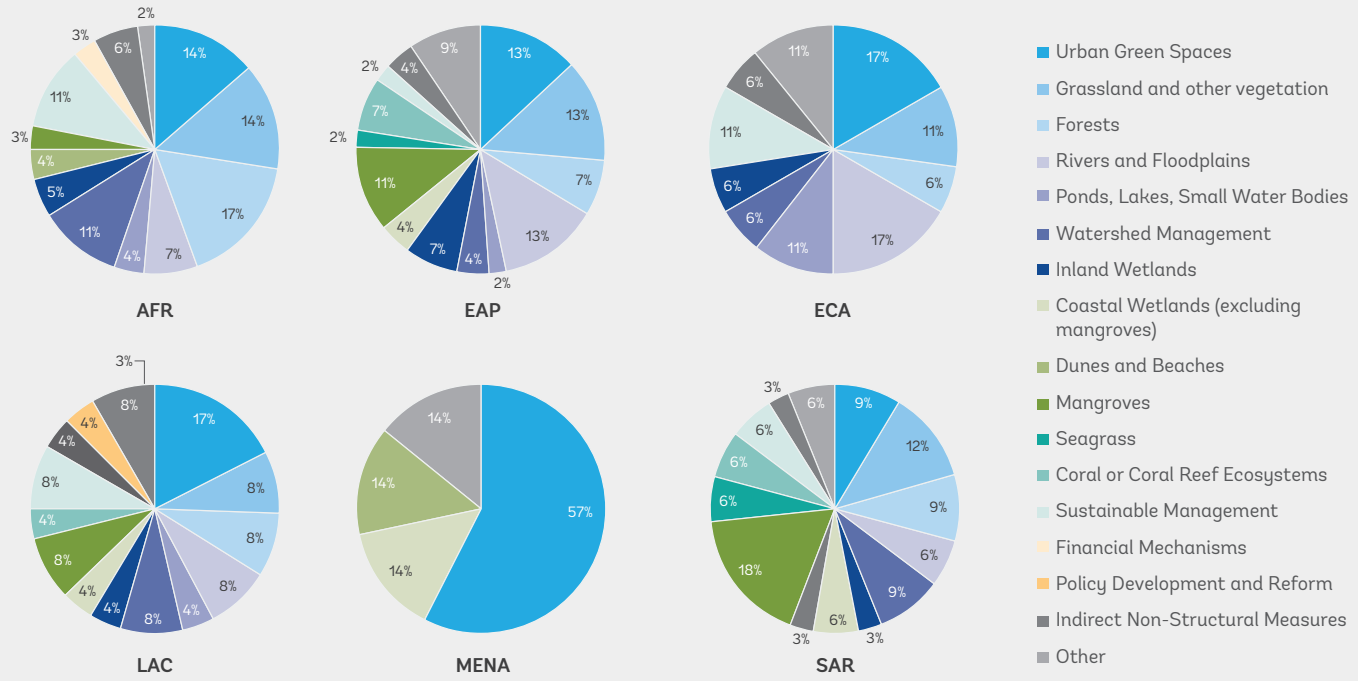
Source: Author derived.

Nearly half or 46 percent of the total number of NBS interventions could be considered green, while the rest were hybrid, employing the use of both green and gray infrastructures. Seventy-seven percent of these interventions were also implemented inland, while 23 percent were implemented in coastal areas. Most of these NBS investments, or 61 percent, were accompanied by non-structural activities to support implementation.

It is possible to draw trends when looking at these data desegregated by region and GP (figures 10 and 11). In SAR, LAC, and EAP, the use of mangrove forests and other coastal wetlands is frequent in NBS investments. This is because of the distribution and availability of these ecosystems in the regions. For instance, SAR is home to the Sundarbans, one of the largest mangrove forests in the world, while Southeast Asia countries supported by the World Bank also contain large stretches of mangroves, including important habitats such as the Mekong River region. ECA has often focused on NBS investments for rivers in Poland and the Western Balkans, explaining the high presence of NBS projects related with the restoration and protection of rivers and floodplains.

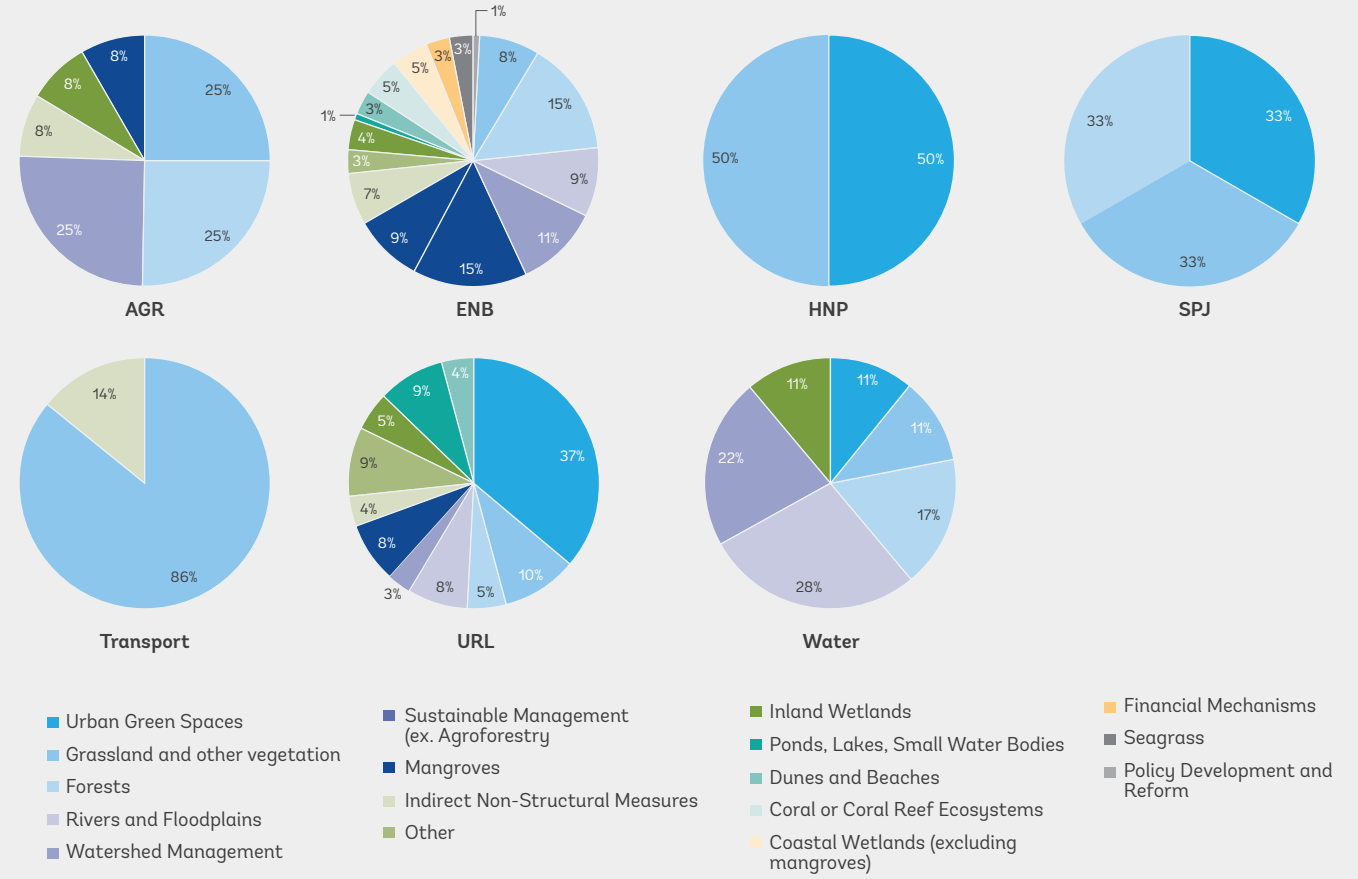
The different NBS types implemented also vary significantly by global practices (figure 11). For example, all seven Transport global practice projects in this portfolio review use strategic revegetation, such as with native grasses and trees, to reduce landslide and erosion risks and increase the climate resilience of roads and transport corridors. This seems to stem from a historical use of bioengineering in the EAP and SAR regions, which account for 86 percent of Transport global practice projects and could be further assessed to draw lessons learned to inform other NBS investments across the World Bank Group portfolio. The Health, Nutrition, and Pollution (HNP) and Social Protection and Jobs (SPJ) global practices, although only represented by two projects, are also

Figure 10. Use of NBS types across World Bank regions for projects approved between FY12 and FY21.



Source: Author derived.

Figure 11. Use of NBS types by World Bank Global Practice for projects approved between FY12 and FY21.



Source: Author derived.

using strategic revegetation to support infrastructure and provide short-term opportunities to communities, respectively. Notably, both projects occurred in Africa. On another note, majority of URL projects create or restore urban green spaces, leading to notable NBS projects in cities, such as the Cities and Climate Change Project in Mozambique; approximately 44 percent of URL projects were implemented in Africa. Several global practices, including Water, Agriculture, and ENB have investments in place that support policy development and reform directly enabling the implementation of NBS. Often, this is to conserve, protect, or improve management of natural resources, such as water and forests (Appendix B).

NBS Approaches

NBS interventions can differ, not only in the type of hazard addressed or natural ecosystem used, but also in the type of action or approach applied. For instance, protecting an existing urban wetland for flood mitigation purposes is a different approach than restoring a degraded ecosystem or even creating a new one. In some cases, an NBS project might not bring back an ecosystem, but instead it can create a feature that uses native vegetation specifically selected for their ability to provide a service, which is often the case in bioengineering transport investments or urban projects that build green roofs or bioswales. Additionally, given that the World Bank often supports national governments to increase climate resilience, many projects will also have NBS investments created through enabling actions, such as the creation of water funds that protect watersheds and water sources or the development of improved management or business plans centered on promoting NBS at the national or regional level.

The FY12-21 Portfolio Review found that NBS projects using enabling and restoring approaches are slightly more common, followed by projects using a creation approach. The protection of natural ecosystems was the less frequent approach applied with 35 projects (figure 12a). It could be possible that nature protection actions are less likely to be considered due to existing challenges with enforcement and potential conflicts with preventing local communities from exploiting specific natural resources.

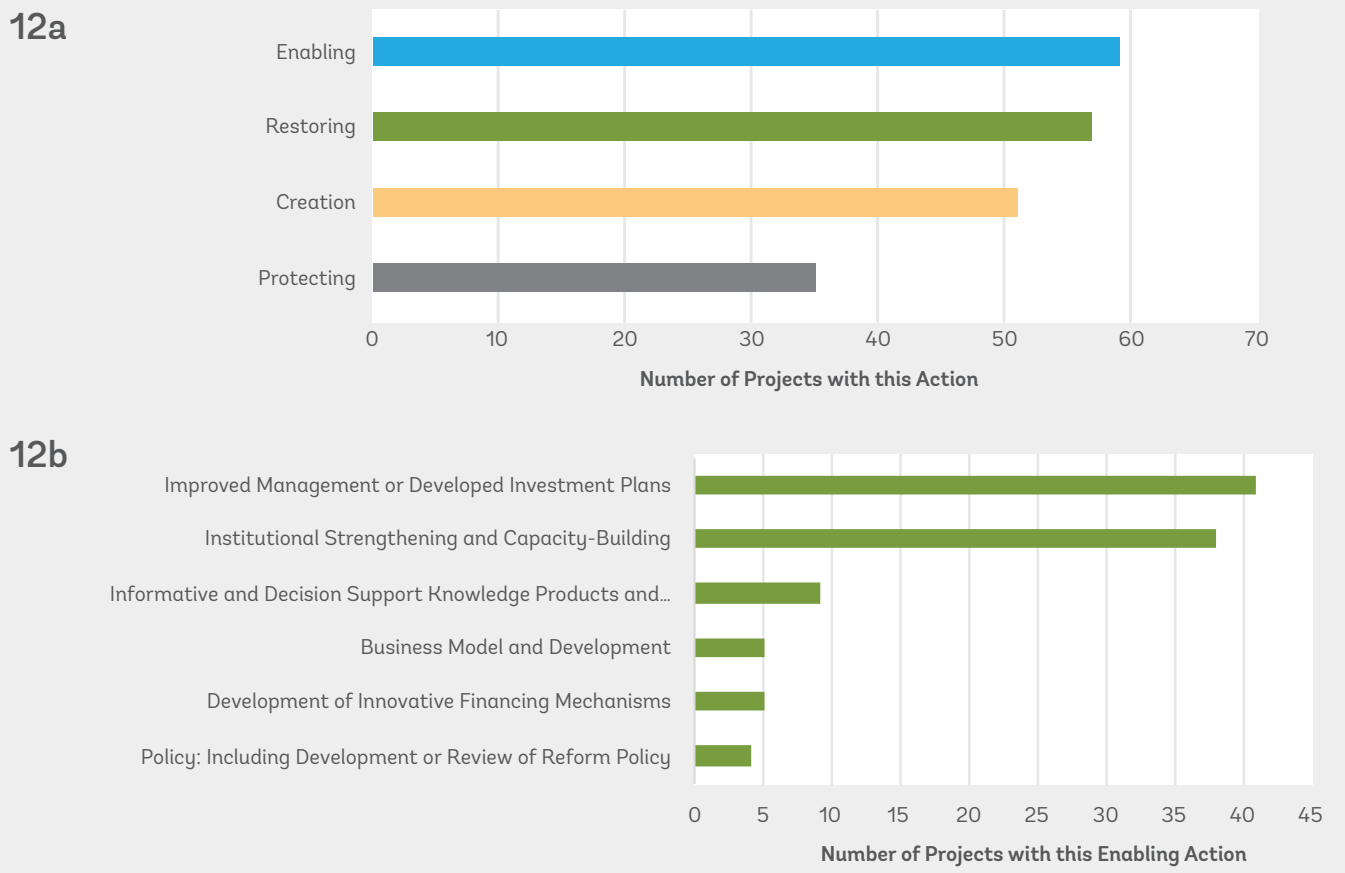
Among enabling actions, the World Bank frequently focuses on improved management or development of investment plans, along with overall institutional strengthening and capacity building (figure 12b). This is well aligned with World Bank strategy among client countries, where capacity building and the development of plans at the macro level are essential activities. Less used are modeling business development activities, but interesting projects that engage and support the private sector to stimulate NBS approaches already exist and have the potential to grow in the coming years.

Box 3. Marine Conservation and Climate Adaption Project

In Belize, the World Bank is enhancing marine conservation and climate adaption by expanding marine protection areas and coral outplants, helping restore the country's reefs, which are essential to prevent coastal erosion and protect from storm surges and hurricanes. To help diversify livelihoods, ease pressures on the ecosystem, and ensure community buy-in, the project supports sustainable agriculture, offers vocational training, and raises awareness of the importance of the reef ecosystem to climate resilience and community welfare.

Belize reef conservation efforts. Photo credit: World Bank

Figure 12. (a) Type of actions taken by the NBS interventions in project investments. (b) Enabling actions of NBS investments desegregated by type of enabling action.



Source: Author derived.

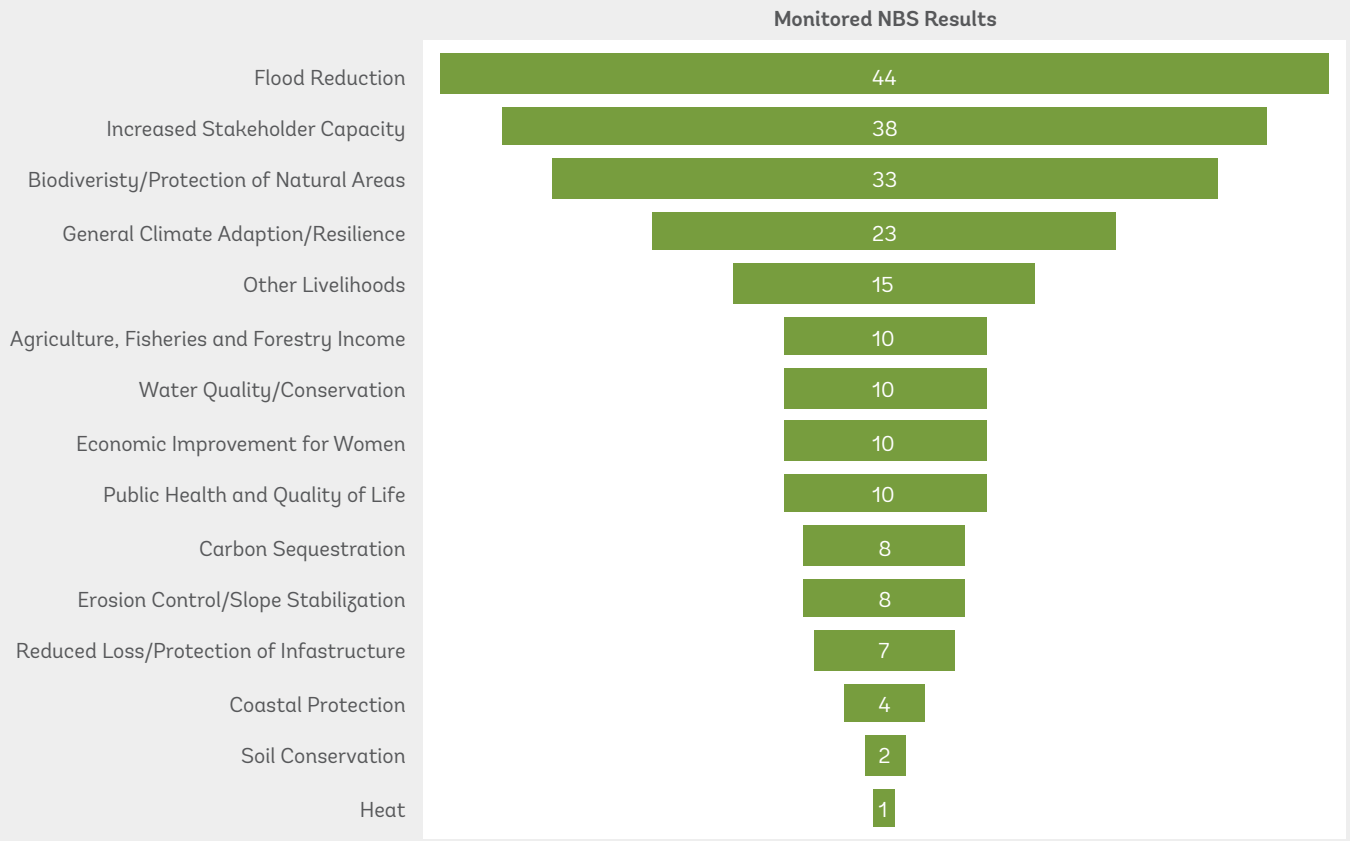
NBS outcomes

Substantive benefits can be achieved through NBS and ensuring that projects integrate proper monitoring allows the World Bank to gather evidence regarding the utility of NBS, particularly how these solutions can contribute to progressing sustainable development goals. The review found that reducing flood risks, increasing capacity, and protecting natural areas were the most tracked outcomes in project result frameworks (figure 13). While NBS can provide a multitude of benefits, many projects did not include indicators that specifically tracked the NBS activity being implemented. Rather, these projects had outcome indicators related to the project development objective to which the NBS was contributing, such as reduced flood risks.

Of the 18 closed projects with implementation completion reports (ICRs) 72 percent had result indicators that demonstrated how NBS contributed to climate resilience outcomes. For instance, in Malawi, the rehabilitation and improved management of the Shire River Basin contributed to 3,155 households being reclassified to a lower risk from flooding, while in Tajikistan, natural resource management activities contributed to more than 50 percent of the beneficiary population reporting an increase in well-being or livelihood assets.

Including result indicators that assess whether NBS are achieving climate resilience goals will inform project teams and clients whether adjustments in approach are needed. Although the rate of inclusion for these indicators over the years was not tracked, several pipeline projects now include indicators affiliated with NBS that go beyond global practice silos—such as climate resilience indicators as part of ENB investments—demonstrating a growing recognition that NBS can produce multiple benefits and an increased effort to capture these benefits in formal project monitoring.

Figure 13. Monitored outcomes of project components that integrate NBS based on the number of projects including an NBS indicator in the results framework.



Source: Author derived.

Community Engagement and Gender in NBS

More than 65 percent of the NBS investments studied use community engagement mechanisms that involve communities directly in project design or implementation, moving beyond simple consultative or feedback mechanisms. This high level of citizen participation fosters project sustainability by ensuring that local needs are being understood and addressed, promoting community support. For instance, the World Bank is employing community-based planning and management strategies for reforesting hilly areas in Bangladesh and mangroves in Nicaragua, reducing the risks from landslides and sea level rises, respectively. Similarly, the World Bank is supporting community flood and land management efforts in Ghana and Senegal, and the development of community-driven mitigation and preparedness plans that include NBSs in Indonesia. A cash-for-trees program in Madagascar is providing incentives to smallholders to reforest their lands and help prevent erosion, thereby mitigating risks and improving livelihoods.

Similarly, 65 percent of the 103 NBS projects received a Gender Tag from the World Bank, which indicates that the project design addresses gender gaps through analysis, action, and result indicators. For example, the Green National Highways Corridor Project in India aims to improve female employment opportunities in the transport sector by incentivizing technical skill training of 2,500 women in specialized areas, including bioengineering solutions for road upgrades and maintenance. Additionally, the Stormwater Management and Climate Change Adaption Project in Senegal aims to address the gender gap in women's access to income opportunities and agency in urban planning flood risk management by: (i) safeguarding women's inclusion in labor-intensive public works, including tree planting near drainage works, and (ii) granting leadership roles to women in local flood management committees.

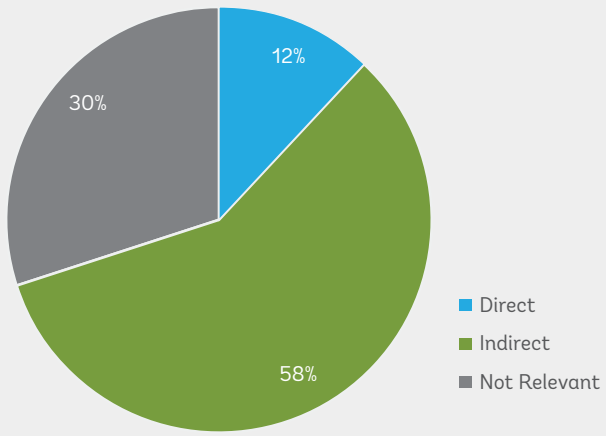
NBS in World Bank's COVID-19 Response

The COVID-19 pandemic had severe economic impacts, with many vulnerable people losing their jobs. As part of the World Bank's COVID-19 response, several global practices, including

ENB and URL, emphasized the importance of financing shovel-ready investments and short-term labor opportunities for communities struggling with unemployment and compounding disasters. As part of this strategy, the use of community-based conservation and restoration, and implementation of NBS was highlighted as a viable opportunity to meet the growing needs of COVID-19 impacted communities. As such, this review also looked at this strategy's implementation in the field, focusing on NBS for climate resilience.

This review found that around 12 percent of projects approved in FY20 and FY21 used NBS for climate resilience to alleviate COVID-19 impacts directly (figure 14). Estimated funding for these project components integrating NBS was US$49.1 million, with 78 percent of funding coming from IDA resources. The majority were grants, while one was a loan. Global practices that led these projects were: Transport, URL, HNP, and Agriculture. The projects only occurred in Africa and South Asia, with 50 percent located in Africa. Additionally, 75 percent of projects were deemed green, and the rest were hybrid, involving the use of both gray and green infrastructure. Furthermore, 50 percent of the projects were in urban settings and all projects were terrestrial, inland-based projects that focused on reducing landslide and erosion risk through community-based interventions such as reforestation.

Figure 14. Breakdown of FY20–21 projects that utilized NBS for climate resilience as part of the World Bank's COVID-19 response.



Source: Author derived.

Projects that indirectly used NBS for COVID-19 impact alleviation—58 percent of them—often determined that NBS could support communities by increasing their climate resilience, ensuring the reduction of compounding hydrometeorological and health disasters. A substantive 30 percent of NBS investments in FY20–21 was irrelevant to the overall COVID-19 response, likely owing to the timeframe in which those projects were approved; projects that were approved before March 2020. It is also possible that active NBS projects approved before FY20 contributed to resilience against the impacts of COVID-19. However, this was not tracked as part of the review.

Three examples illustrate World Bank investments with NBS that directly address and respond to the impact of COVID-19 on local communities. Most of these projects employ the use of community based NBS that help alleviate the economic impact of the pandemic through short term work, while increasing climate resilience in project areas. In one of these projects—namely Nigeria COVID-19 Preparedness and Response Project—HNP uses NBSs implemented through public partnerships to improve the climate resilience of health infrastructure (figure 15).

Figure 15. Three projects that integrate NBS as part of investment packages to alleviate the impact of COVID-19 on local communities.

Resilient Urban Sierra Leone Project

Freetown residents pose with their seedlings. © World Bank.

Lead Global Practice: URL
Estimated NBS Commitment: US$ 11.2 Million

The project finances community-based reforestation, which is tracked through the Tree Tracker App. More than 550 jobs have been created amid the pandemic, which have supported local economies impacted by COVID-19, and especially supported marginalized, vulnerable, and underemployed women and youth.

Stormwater Management and Climate Change Adaptation Project

Beach in Senegal. © World Bank.

Lead Global Practice: URL
Estimated NBS Commitment: US$ 143.9 million

The project will use nature-based solutions (for example, trees and plants) along drainage infrastructure and promote wetland management. Jobs will be created in a short-term including for tree planting. Women will be included and safeguarded in this work, as well as given leadership positions on flood management committees.

Nigeria COVID-19 Preparedness and Response Project

Health clinic in Nigeria. © World Bank.

Lead Global Practice: HNP
Estimated NBS Commitment: US$114.2 million

The project will collaborate with public—private partnerships to build climate-resilient health infrastructure and support creation of green spaces by planting trees around facilities to reduce heat.

Concluding Remarks

This assessment showcases the continued growth of the World Bank's NBS for climate resilience investment portfolio. The portfolio aligns with the global momentum and demand for NBS to comprehensively address complex development challenges. Project documents demonstrate that after FY17, a greater number of projects began to integrate NBS concepts and best practices, with more recently approved projects showcasing greater awareness and knowledge of NBS and more likely to use NBS terms and approaches. These projects are also likely to reference World Bank reports, such as the NBS Community of Practice's flagship report, "Integrating Green and Gray – Creating Next Generation Infrastructure", which was led by the Water GP and supported by URL and ENB. The popularity of integrating NBS coincides with the establishment of the NBS Community of Practice, which later evolved into a global program (GPNBS) to support World Bank teams to: (i) implement NBS in lending and nonlending operations through technical support; (ii) develop knowledge products, tools, and resources; and (iii) strengthen strategic partnerships that advance the global and World Bank's NBS agenda. Indeed, preliminary analyses for FY22 and FY23 suggest that the World Bank will continue the trend of increasing use of NBS for climate resilience in lending operations across global practices. As the investments in NBS for climate resilience increase, GPNBS will be strongly positioned to support the integration of best practices and lessons learned. Such measures are geared to ensure that these projects can achieve the potential NBS has to progress sustainable development goals and the World Bank's twin goals to end extreme poverty and promote shared prosperity.

The review also highlighted several gaps to inform future NBS operations. First, the portfolio reveals a significant increase in NBS for climate resilience among URL projects, but there remain opportunities among other sectors that have benefitted less from technical support from groups like GPNBS. In the future, GPNBS will continue to work with the

Transport and Water sectors to further integrate NBS for climate resilience, while also continuing to support operations in ENB and URL. Second, NBS are typically integrated into multifaceted investment components in project documents, meaning they lack specificity for implementation. More support is needed to help teams employ suggested investments in project appraisal documents (PADs) and incorporate these solutions into feasibility studies, designs, and implementation. Moreover, further work is needed to promote the use of NBS-specific result indicators that fully capture the biodiversity or resilience benefits of the solutions utilized. GPNBS will aim to increase support to teams to operationalize such investments and include NBS-specific indicators in result frameworks. Lastly, although most projects with NBS received a Gender Tag, further guidance would facilitate how to integrate gender considerations into NBS themselves. To fill this gap, GPNBS is engaging operations and developing a gender guidance document to inform project design.

Notes

1. United Nations, *Environment Assembly of the United Nations Environment Programme Fifth Session*, 2022.
2. https://thedocs.worldbank.org/en/doc/d06622e74a388000e2e440438d461b99-0020012021/original/CCAP-2021-25-Highlights.pdf
3. https://www.worldbank.org/en/who-we-are/news/coronavirus-covid19
4. https://www.devcommittee.org/sites/dc/files/download/Documents/2021-03/DC2021-0004%20Green%20Resilient%20final.pdf
5. https://openknowledge.worldbank.org/handle/10986/31430
6. https://openknowledge.worldbank.org/handle/10986/36507#:~:text=The%20catalogue%20of%20Nature%2Dbased,investments%20in%20nature%2Dbased%20solutions.
7. The Program https://naturebasedsolutions.org/
8. A later review of all GFDRR grants from FY18-21 identified an additional 30 World Bank projects supported with 33 GFDRR grants specifically for NBS activities. However, these projects were not identified in our analysis because the grants occurred after the appraisal stage and NBS was not included in the original project documents that we used in our analysis, or because the grants supported advisory and analytics or technical feasibility studies that were outside of the scope of this portfolio review. The 43 GFDRR grants from FY18-21 that specifically supported NBS totaled 22.4 million, of which $14.6 million (65% of total) was informed by NBS activities. Of the 43 grants, 14 grants with a total of US$11.6 million (of which US$7.2 million was informed by NBS activities) helped mobilize US$2.3 billion of funding. Mobilized funding from World Bank resources accounted for US$1.7 billion, with 66% from IDA resources and 34% from IBRD funds. In addition, these grants helped mobilize US$0.56 million from non-World Bank sources, such as the Government of Rwanda, German Development Bank, and Government of France, among others.

Appendix A: Methodology

This section provides a detailed overview of the methodology that was used to deliver this portfolio analysis of NBS for climate resilience. Quality assurance and testing of this methodology demonstrated its effectiveness in capturing the World Bank's financial support of NBS for climate resilience across the sustainable development portfolio.

Project Database

The World Bank's Operation Portal Database was used to search throughout the repository of projects that were approved from FY12 to FY 21. There was no focus on a specific development theme, region, sector, or global practice to ensure the search was comprehensive and inclusive of as many NBS projects as possible across the portfolio. While the focus was on NBSs that were used to deliver climate resilience, the initial database results were broad to ensure sufficient coverage and greater accuracy.

Project Selection

A list of lending projects with documents—project paper, PADs—mentioning the use of NBS was extracted from the Operations Portal Database through an algorithm. The terms used by the algorithm referred to NBS types or represented interchangeable terms that could be used to describe NBS, such as ecosystem-based adaptation. These were chosen due to their common use in describing a nature-based approach that differentiates investments from simple restoration, conservation, or green space creation, which are not intended to provide substantive climate resilience benefits. The terms utilized include:

- 'natural infrastructure'; 'nature-based infrastructure'; 'green infrastructure'
- 'nature-based solutions'; 'nature-based'
- 'natural climate solutions'
- 'bio-engineering'; 'bioengineering'
- 'ecosystem-based'; 'ecosystem-based adaptation'
- 'building with nature'; 'engineering with nature'
- 'green space'

Projects that included these terms in relevant documents were selected for further scanning and assessment. Projects with additional financing were considered the same project despite the internal use of additional project codes. The selected projects were also compared to the Independent Evaluation Group's (IEG) Reducing Disaster Risks from Natural Hazards: An Evaluation of the World Bank's Support, Fiscal Years 2010-2020,[a] and the previous NBS for climate resilience, ENB, and Water Resource Management portfolio reviews to ensure that a comprehensive search covered most, if not all, NBSs for climate resilience projects at the World Bank, while also limiting duplication and reducing the time of analysis.

Project Review

For the selected projects, documents such as the PADs, implementation completion reports (ICRs), and IEG ICR Reviews were downloaded from the Operations Portal (intranet) for screening. If these were not available, Project Information Documents or Project Concept Notes in combination with Environmental Assessment documentation or other produced reports were collected and assessed.

For projects with NBS for climate resilience interventions, the available project documents were screened in-depth to capture details not reflected in the search terms such as the:

- Type of NBS used
- Natural hazards addressed by NBS
- Focal thematic type of NBS used
- Specifics on the type of action taken by the NBS
- Scale of the NBS, such as local, regional, national effort
- Whether the NBS was hybrid, green, or another type of project
- Whether the NBS focused on land, coastal, or other areas
- Measured and non-measured outcomes expected from the NBS
- Whether there was a focus on community involvement via NBS
- Type of operation (Technical Assistance/Advisory and Analytics/Investment Project Financing Lending)
- Funding sources and lending instruments used
- Estimated commitment to NBS components
- Amount of International Development Association (IDA) funding the project used.

In addition, the project development objective, description of project components with NBS, details on gray or non-structural measures included, and lessons learned (from IEG ICR Reviews) were collected for each project and entered in the master data sheet. Brief summaries of the projects were also written to ensure there was a quick and relevant synopsis of the project available. Projects featured in the previous portfolio review were re-screened. Those found to have not included

NBS in consequent activities were removed from the portfolio review.

Below are key terms or definitions for each of the data and information points mentioned as they appear on the portfolio review master sheet.

Operational Data, Financing Sources, and NBS Commitment

Operational data, such as lead global practice; country; region; product type; FCV status of the country; and total WBG commitment, were generated automatically when the project list was extracted from the database. Collaboration with other global practices was also noted—that is, lead global practice working formally with other global practices on the project. These data were transferred to the portfolio review dataset or a master sheet. Lending instrument, financing sources, IDA and International Bank for Reconstruction and Development (IBRD) contributions, SIDS status of the country, and type of funding—credit, grant, loan— were added to the portfolio review master sheet manually, based on the information in the associated project documents. The main financing source was included; however, co-financers were also added to the notes when possible.

Additionally, total World Bank financial commitments for components integrating NBS were determined for each project. Owing to the lack of specific NBS cost data in the screened project documentation, the lowest possible estimate, typically the cost of the subcomponent(s) containing NBS was used. The cost of larger components that integrated NBS were included if NBS was prevalent and a critical piece of the investment component. Commitment amount was excluded for projects with large investments that integrated NBS, but NBS made up less than 10 percent of the investment to avoid the drastic exaggeration of funding going toward NBS.

Hazards Addressed

Common natural hazards addressed by the projects' NBS were identified for each project. These included the following: coastal flooding, coastal erosion, river flooding, urban flooding, landslides, erosion, urban heat, fire, and drought. Landslides and general erosion were joined in the previous methodology but were separated from each other in this update to ensure a clear division between the movement of masses (landslides) or individual grains (erosion).

Nature-Based Solution Type

The following are NBS types and list of examples identified and used during the portfolio review analysis—comprehensive and inclusive of non-structural measures.

Urban Green Spaces	Sustainable drainage systems (soakways, retention ponds); filter strips, filter and infiltration trenches, green roofs, bioswales, detention or retention; urban parks; greenbelts.
Grassland and Other Vegetation	Increase in grasslands (extensive root network), vegetation cover with balanced ratio of root network or aboveground biomass; slope or hillside revegetation; roadside revegetation.
Forests	Use of forest ecosystems as part of NBS efforts.
Rivers and Floodplains	River, lake embankment protection or reinforcement: re-vegetation, coir matting, coir rolls, stakes, vegetated riprap, gabions, concrete blocks (hybrid); embankment removal; floodplain restoration or creation; eradication of invasive plants; riverbed restoration, desiltation (minor dredging), in-stream riffles; river course restoration, meander creation or restoration.
Ponds, Lakes, Small Water Bodies	Construction, protection, or use of ponds, lakes, and other small water bodies (excluding rivers and meanders).
Watershed Management	The sustainable management of watersheds to protect or restore water supply, quality, or related services.
Inland Wetlands	Wetland restoration, creation, or protection.
Coastal Wetlands (excluding mangroves)	The protection, restoration, or creation of salt marsh, mudflats, lagoons, and other coastal wetland ecosystems.
Mangroves	Mangrove restoration and or protection; planting of native or adapted mangrove species or ecological-based restoration (focusing on reducing causes of degradation).
Dunes and Beaches	Dune restoration or revegetation; shelter belts.
Seagrass and other nearshore ecosystems	Seagrass, kelp bed restoration; oyster or shellfish reefs; other uncommonly used nearshore ecosystems for development projects. This classification excludes wetlands, dunes, and coral reefs.

Coral or Coral Reefs Ecosystems	Protection, restoration, or creation of coral reef habitat, or creation of artificial reef.
Sustainable Management Practices and Techniques	These are improved methods for managing resources such as agroforestry and farmer-managed natural regeneration.
Financial Mechanisms	The development and use of financial mechanisms such as debt-for-nature swap, payment for ecosystem services, and green bonds to establish protection, restoration, or creation of natural or nature-based features.
Policy Development and Reform	The development and use of policies as a measure to enable or catalyze the establish of natural or nature-based features.
Indirect Measures	Other measures that catalyze the establishment of natural or nature-based features, such as coastal management plans, community management plans, capacity building, and awareness raising.

Focus of NBS Action Taken

These descriptors were used to provide further detail on what the NBS approach intended to do in relation to the natural or nature-based feature in focus.

Protecting	Setting aside existing natural or semi-natural areas for protection, or for limited and sustainable use, such as establishing a buffer zone to protect against flooding.
Creating	Creation of ecosystems or nature-based features (i.e., installing or constructing green roofs, urban green parks, lakes).
Restoring	Enhancing or restoring natural ecosystems that were previously there or existing, such as rehabilitating wetlands, forested areas, wetlands, riverbanks, or dunes for climate resilience purposes.
Enabling	Actions that enable the uptake of NBS. This includes, but is not limited, to the creation of policies, financing mechanisms, delivery of technical reports, or building general capacity in areas such as sustainable forest and watershed management.

For projects that had enabling actions that supported the use and implementation of NBS into development investments, additional data was collected to better understand the type of enabling action. Below you will find the various categories used to tease out this information.

Informative and Decision Support Knowledge Products and Tools	The project develops new tools and knowledge to enable NBS.
Improved Management or Developed Investment Plans	Development of management plans that enable or catalyze NBS. This can also refer to investment plans developed (i.e., urban drainage plans, resilience plans).
Institutional Strengthening and Capacity-Building Programming	Strengthening the capacity of institutions, clients, development partners to prepare and implement NBS. This can include the structural reforms, production of knowledge products, trainings, workshops, and knowledge exchanges.
Development of Innovative Financing Mechanisms	Creation, implementation, or design of innovative financing mechanism to support NBS.
Business Model and Development	The project creates or facilitates new business opportunities centered or related to NBS.
Policy: Including Development or Review and Reform Policy	Development or implementation of specific policies to enable NBS at any level of governance.

Main NBS Descriptor and Characteristics

These project descriptors were chosen as they provide insightful categorization on how the overall project chose to address development challenges, such as through a hybrid or solely green approach, and through the inclusion of non-structural measures. Additionally, this section also differentiates between coastal and land based NBSs.

Hybrid vs Green	Projects were classified as hybrid solutions if the project's objectives were achieved by combining standalone nature-based activities and conventional grey infrastructure, or when the objective was to research or pilot such combinations. Purely using NBSs led to the classification of "green". Conversely, projects with non-structural measures, were classified as other.
Coastal vs Inland	Coastal refers to NBS related to the marine and coastal environments (coasts, oceans, seas). Land refers to inland solutions (urban green parks, river restoration). Any activities conducted on land or coastline to solve coastal related issues will also be included in coastal (e.g., NBS for preventing saltwater intrusion into freshwater lens of SIDS).
Urban vs Rural	The goal of this category was to distinguish NBS investments implemented in urban areas, such as cities, or more rural areas such as towns and villages.
COVID-19	Given the recent global public health crisis, WBG teams have adjusted projects to ensure they contribute at some level to the impacts of the COVID-19 pandemic. NBS was considered by the WBG as a possible shovel ready and job-creating option for reducing economic impact in communities affect by COVID-19. Projects that directly included the use of NBSs for these reasons were noted.

Benefit of NBS Intervention

The expected benefits of NBSs were split into two categories: those that were explicitly measured as indicators, and those that were only mentioned in reporting or project information documents as benefits but not included in the results framework. This was done to highlight projects that explicitly included NBS activities in the results framework. Definitions and descriptions classify both explicitly stated and mentioned benefits:

Coastal Protection	Reduction or prevention of coastal inundation through flood and storm surge, tidal surge; attenuation of wave energy; reduction of wave crest height; wave attenuation or dissipation; absorption of wave energy; dampening of wave stress; moderation of wave impact; decreasing wave surge; reduction or prevention of coastal erosion (or e.g., shoreline, dunes); shoreline accretion and seaward land expansion.
Wind Speed Reduction	Reduction of wind speed, force.
Flood Reduction	This classification was used if the project resulted in reduced flooding from any source, including conveyance or drainage or evacuation of flood and storm water; redirection of flood and storm water to nearby natural or nature-based features; temporary on-site storage or retention and filtration of flood water, storm water; infiltration of flood or storm water.
Reduced Loss or Protection of Infrastructure	Reduction of weather-related damages to infrastructure, including transportation, coastal or river protection, housing, and critical urbans service infrastructure, such as medical, energy.
Erosion Control and Slope Stabilization	Reduction or control of soil erosion on slopes and gullies; reduction in the frequency or extent of land failures or mass wasting, such as landslides, mudslides, topples, and flows.
Soil Conservation or Protection	Reduction of topsoil erosion or maintenance of soil profile; reduction of nutrient loss (minerals, organic matter).
Water Quality and or Conservation	Improvements to the degree to which water is clean, or suitable in quality for uses such as drinking or agriculture; conservation of water quantity and availability; increase in water infiltration and percolation leading to the recharge of the aquifer.
Carbon Sequestration	Sequestration and storage of carbon for climate change mitigation.
General Climate Adaptation or Resilience	Progress made towards increasing adaptation to climate change.
Agriculture, Fisheries and Forestry Income or Enhanced Opportunities	Alternative livelihood strategies such as improvement of forestry, fisheries, or agriculture income; improvement of forestry, fisheries, or agriculture production or production methods (e.g., climate-smart agriculture); diversification of forestry, fisheries, or agriculture livelihoods; or income from non-timber forest products (e.g., bee keeping, other non-timer forest products).
Socioeconomic Status Improvement for Women or Vulnerable Groups	Specific improvements to the socioeconomic status of women, such as higher incomes, more opportunities, enhanced livelihoods, empowerment, and social equality.

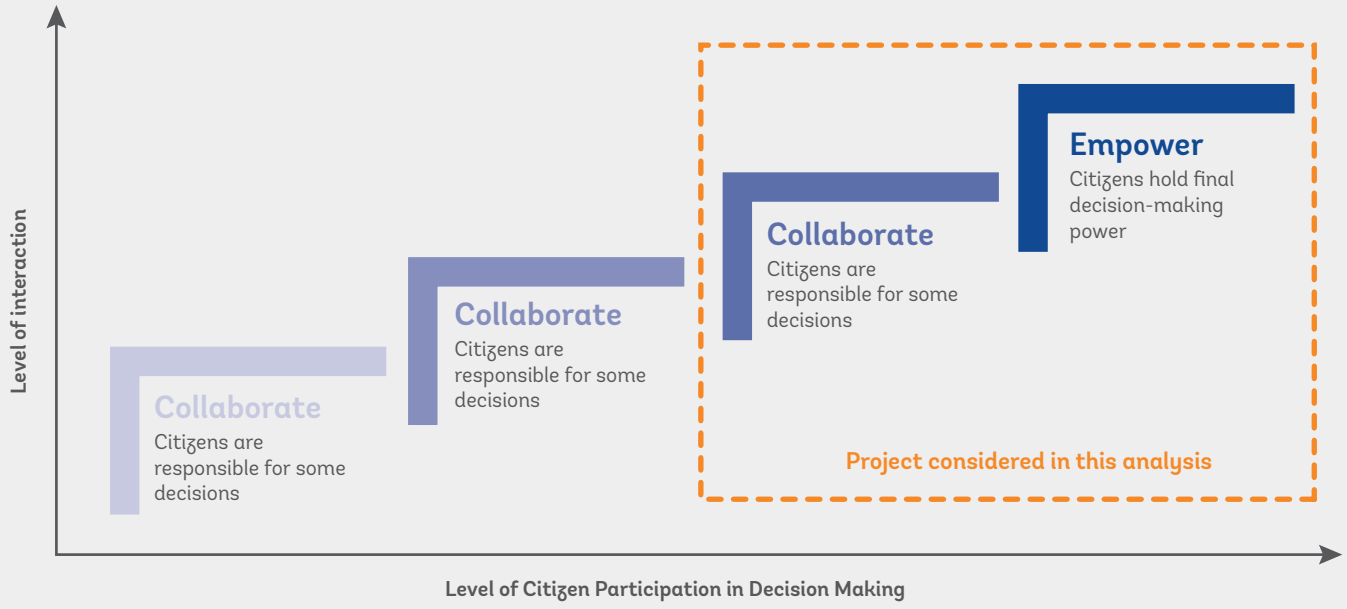
Other Livelihoods, such as Tourism and Recreation	Service sector employment; off-farm wage labor; improvement of market access; sustainable or eco-tourism; increase in recreation-derived incomes.
Public Health and Quality of Live or Livability	Improvements in quality of life such as through improved mental and physical health, including improved opportunities for recreation, exercise, and other leisure activities. This classification also focuses more on the long-term health benefits and quality of life that NBSs scan provide to beneficiaries.
Biodiversity and Protection of Natural Areas	Increase in species diversity and abundance, enhancement of populations of rare or endangered species, and other conservation benefits, such as protection of cultural heritage.
Reduced Heat	Reduction of heat waves, high temperatures, especially in urban setting, and the improvement of general urban microclimates (e.g., through blue infrastructure and urban forests or trees). Includes reduced consumption of energy using nature-based elements that improve infrastructural services (e.g., tree shading and green roofs to reduce air conditioning costs).
Reduced Fires	Reduced risk of uncontrolled wildfires or unnatural fires.
Increased Stakeholder Capacity	Strengthening the ability of communities, governments, World Bank staff, development partners, or others to prepare, implement, or replicate projects that result in better management of resources and hence, greater prosperity.

Emphasis on Community Engagement and Gender

The World Bank employs various citizen engagement mechanisms in lending projects and aims to increase the degree in which implementation involves community participation. As such, this classification was used to describe how closely the projects examined involved communities, given that NBSs are often highly dependent on local ownership for continued success. In this analysis, only projects that moved beyond inform and consult citizen engagement mechanisms were considered as having an emphasis on community involvement. This includes projects that involve local communities in the planning and monitoring of afforestation efforts, implement participatory alternative livelihood activities, and build local capacity for marine conservation, among others (figure A.1).

Additionally, this portfolio review compared the list of NBS projects to the World Bank's Gender Tag Portal to identify projects that meaningfully integrate gender considerations in the project design. A project only receives a Gender Tag if the project document: (i) identifies a gender gap that activities can address; (ii) defines specific interventions to mitigate the issue(s) as part of the main components with lasting results beyond the project period; and (iii) includes an indicator in

Figure A.1. Level of citizen participation in engagement.



Source: Author derived.

the results framework defining the outcomes expected from the planned intervention. As such, activities related to citizen engagement, due diligence, and social safeguard requirements, as well as indicators that only report the number or percentage of female beneficiaries are not sufficient to receive a Gender Tag.

Limitations

Various aspects limit this methodology and should be acknowledged when interpreting the data and results. These limitations and how they were addressed are summarized:

- ***Limits with appraisal-stage documents:*** The review was conducted primarily using project documents created at the appraisal stage. As such, many projects had not yet conducted technical studies to determine feasibility. While few projects that include NBS in PADs will later forgo the use of NBS as the project continues, projects should be rechecked as activities are completed to ensure that those projects did indeed implement NBSs. For active projects, the interpretation of funding figures and trends in this brief is based on approved commitments and components at the World Bank Board approval stage, while closed projects report the final funding figures included in ICRs.
- ***Limits to tracking NBS projects:*** No institutional-wide NBS tag or sole theme exists to easily track projects with NBS, so it cannot be assured that projects found through this established methodology represent all the World Bank projects with NBS for climate resilience investments. Despite this limitation, quality checking has shown that this method is effective in capturing most, if not all projects.
- ***Limitations with term searches and definitions:*** Terminology limits the number of projects to review, but too many terms can produce irrelevant projects that burdens the review process. The terms used in this review were decided based on the high likelihood that NBS projects had used these terms within project documents. While this is a limitation, it is unlikely that projects with NBSs would not include these terms. Additionally, the focus and definition of NBS also narrows the search. NBS definition can vary by global practice and institutions. Here we use a specific definition based on the focus on NBS for climate resilience.
- ***Limitations with financial commitment amounts:*** NBSs do not often have their own earmarked budget, which means they are included as part of larger components. In many cases, the funding solely toward NBSs cannot be determined. Therefore, the lowest possible estimate, typically the cost of the subcomponent(s) containing the NBS, is used as the NBS commitment. The costs of larger components that integrate NBS are also included if NBS were prevalent and critical elements. Commitments are excluded for projects with large investments that integrated NBS, but NBSs made up less than 10 percent of the investment to avoid the drastic exaggeration of funding going toward NBSs. In this portfolio review, the most accurate interpretation of financing toward NBSs is the "amount of financing for components integrating NBS".

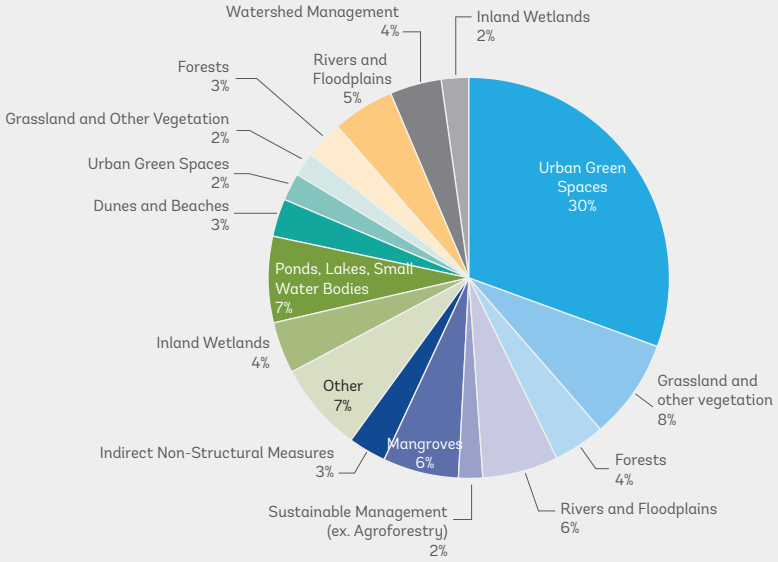
Notes

a. https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/Reducing_Disaster_Risks_v2.pdf

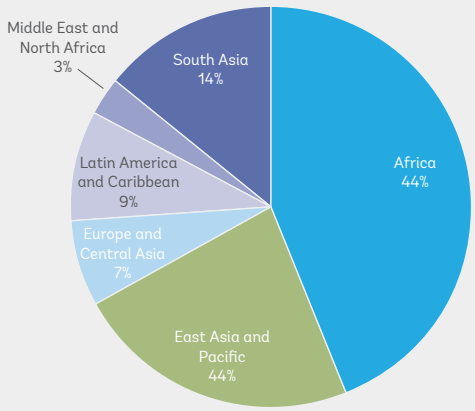
Appendix B: Additional Details on NBS Type and Region by Global Practice

This appendix is intended to provide additional information on which types of investments each global practice is implementing in the various regions.

1. Urban, Resilience and Land (URL)

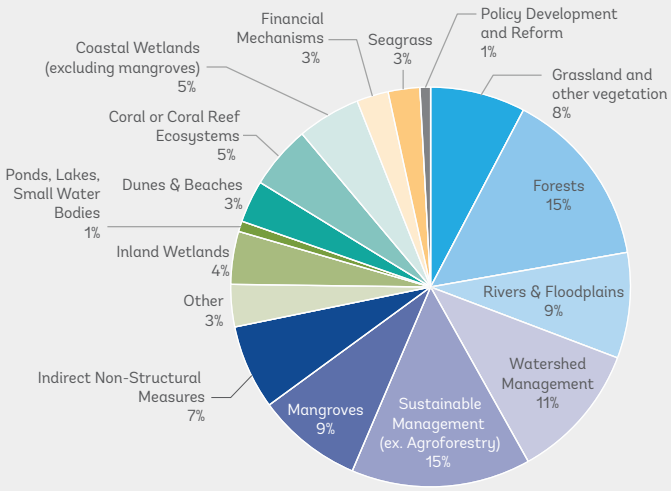


URL Projects by NBS Type

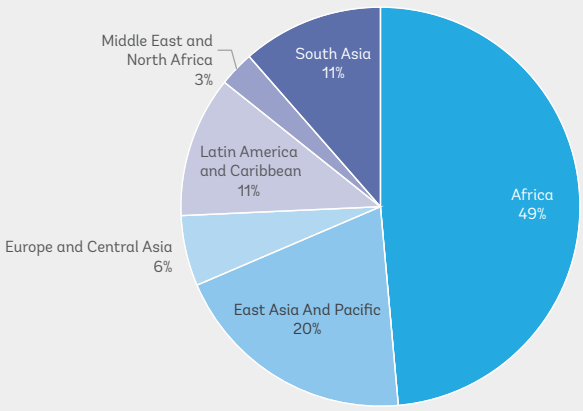


URL Projects by Region

2. Environment, Natural Resources, and the Blue Economy (ENB)

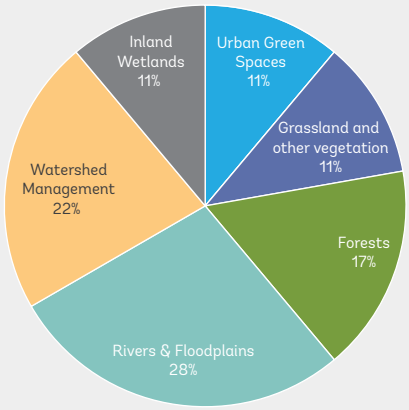


ENB Projects by NBS Type

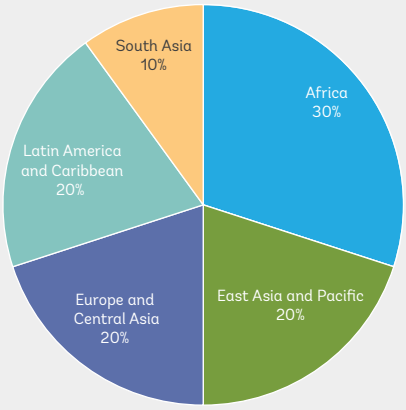


ENB Projects by Region

3. Water

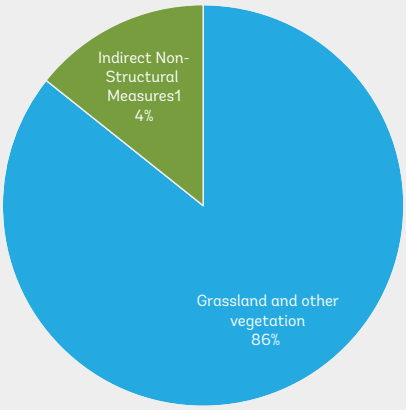


Water Projects by NBS Type

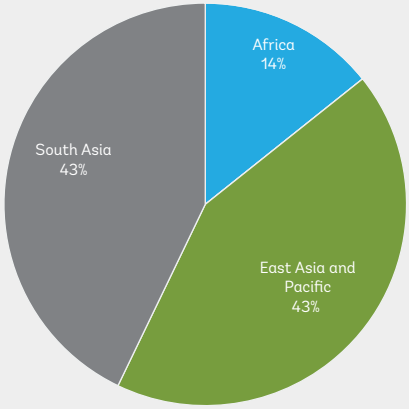


Water Projects by Region

4. Transport

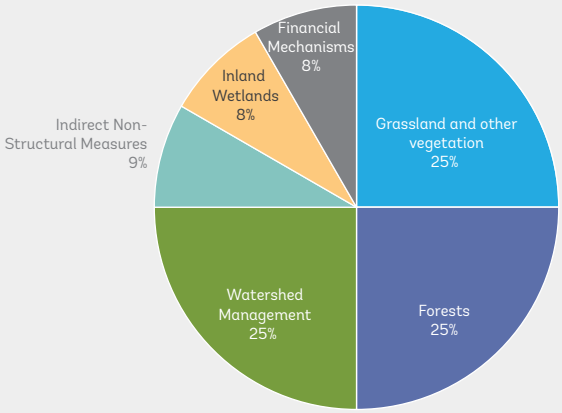


Transport Projects by NBS Type

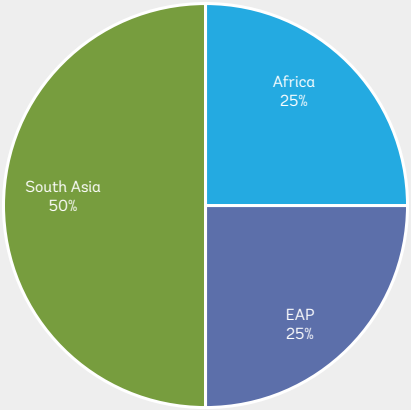


Transport Projects by Region

5. Agriculture and Food

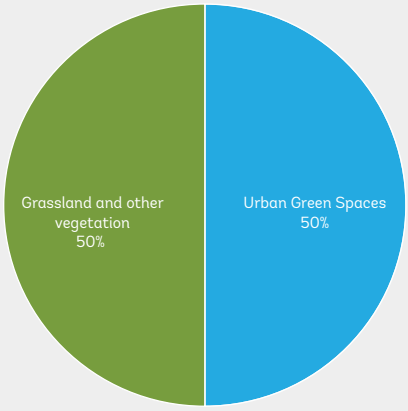


Agriculture Projects by NBS Type

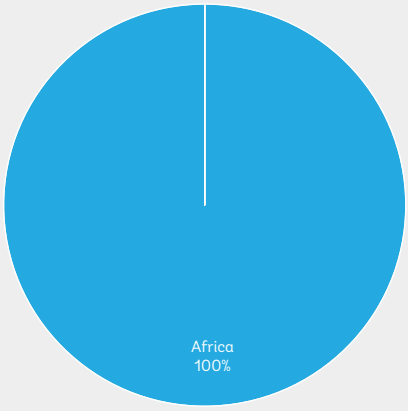


Agriculture Projects by Region

6. Health, Nutrition, and Population (HNP)

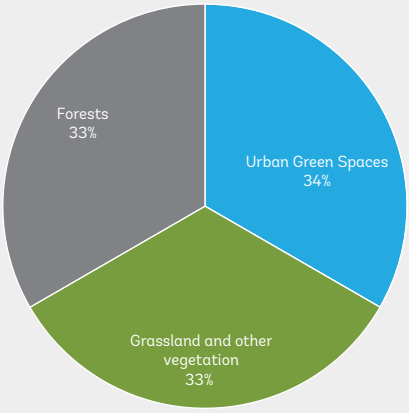


HNP Projects by NBS Type

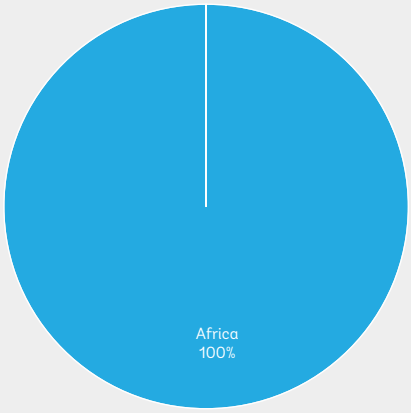


HNP Projects by Region

7. Social Protection and Jobs (SPJ)



SPJ Projects by NBS Type



SPJ Projects by Region

Appendix C: List of NBS Projects

This appendix provides the list of identified World Bank projects with NBS components from FY12–21 chronologically.

Project ID Number	Name	Country	Global Practice Area (Lead)	Approval FY
P112615 (AF: P163153)	Kiribati Adaptation Program - Phase III Project (KAP III)	Kiribati	Urban, Resilience and Land	2012
P116398	Medium Cities Development Project	Vietnam	Urban, Resilience and Land	2012
P117617 (AF: P127866)	Malawi: Shire River Basin Management Program (Phase-I) Project	Malawi	Environment, Natural Resources, and the Blue Economy	2012
P122735	Metro Colombo Urban Development Project	Sri Lanka	Urban, Resilience and Land	2012
P122841 (AF: P152150, P158415)	Stormwater Mgmt. and Climate Change Adaptation Project	Senegal	Urban, Resilience and Land	2012
P123201 (AF: P146059)	Cities and Climate Change	Mozambique	Urban, Resilience and Land	2012
P123922 (AF: P124198)	Integrated Disaster and Land Management Project	Togo	Environment, Natural Resources and the Blue Economy	2012
P124905 (AF: P126549, P145212, P164082)	Nigeria Erosion and Watershed Management Project	Nigeria	Environment, Natural Resources and the Blue Economy	2012
P125669 (AF: P165397)	Niger Community Action Project for Climate Resilience	Niger	Environment, Natural Resources and the Blue Economy	2012
P121271	Integrated Coastal Zone Management	Morocco	Environment, Natural Resources and the Blue Economy	2013
P122694 (AF: P153709)	Environmental Land Management and Rural Livelihoods Project	Tajikistan	Environment, Natural Resources and the Blue Economy	2013
P126504	Enhancing the Climate Resilience of the West Coast Road	Samoa	Transport	2013
P126856	CN-Jiangxi Poyang Lake Basin and Ecological Economic Zone Small Town Development Project	China	Agriculture and Food	2013
P127015	Climate Resilient Participatory Afforestation and Reforestation Project	Bangladesh	Environment, Natural Resources and the Blue Economy	2013
P128276	Coastal Embankment Improvement Project - Phase I (CEIP-I)	Bangladesh	Urban, Resilience and Land	2013
P127088	Adaptation of Nicaragua's Water Supplies to Climate Change	Nicaragua	Environment, Natural Resources and the Blue Economy	2013
P123933	Capturing Coral Reef and Related Ecosystem Services (CCRES)	Philippines	Environment, Natural Resources and the Blue Economy	2014
P126596	Enhancing the Climate Resilience of Coastal Resources and Communities Project	Samoa	Environment, Natural Resources and the Blue Economy	2014

Project ID Number	Name	Country	Global Practice Area (Lead)	Approval FY
P129156 (AF: P169003, P161304)	Sudan Sustainable Natural Resources Management Project	Sudan	Environment, Natural Resources and the Blue Economy	2014
P129516	Natural Resources Management in a Changing Climate in Mali	Mali	Environment, Natural Resources and the Blue Economy	2014
P131235	Uttarakhand Decentralized Watershed Development II Project	India	Agriculture and Food	2014
P130682	BR Espirito Santo Integrated Sustainable Water Management Project	Brazil	Water	2014
P132100 (Parent: P098538)	Sustainable Land and Water Management	Ghana	Environment, Natural Resources and the Blue Economy	2014
P133133 (AF: P133410)	Sustainable Land Management Project	Ethiopia	Environment, Natural Resources and the Blue Economy	2014
P145268 (AF: P145932, P167352)	Niger Disaster Risk Management and Urban Development Project	Niger	Urban, Resilience and Land	2014
P147514	Madagascar Emergency Food Security and Social Protection Project	Madagascar	Agriculture and Food	2014
P123134	Dar es Salaam Metropolitan Development Project	Tanzania	Urban, Resilience and Land	2015
P131408	BZ Marine Conservation and Climate Adaptation	Belize	Environment, Natural Resources and the Blue Economy	2015
P129640	Bolivia Climate Resilience - Integrated Basin Management	Bolivia	Environment, Natural Resources, and the Blue Economy	2015
P131464	Landscape Approach to Forest Restoration and Conservation	Rwanda	Environment, Natural Resources and the Blue Economy	2015
P143492	BR DGM for Indigenous People and Traditional Communities	Brazil	Environment, Natural Resources and the Blue Economy	2015
P145559 (AF: P176704)	Coastal Region Water Security and Climate Resilience Project	Kenya	Water	2015
P153301	Climate Change Adaptation Project	Maldives	Environment, Natural Resources and the Blue Economy	2015
P154847	Andhra Pradesh Disaster Recovery Project	India	Urban, Resilience and Land	2015
P147460	Odra-Vistula Flood Management Project	Poland	Water	2016
P149620 (AF: P168940)	Moz Agriculture and Natural Resources Landscape Management Project	Mozambique	Agriculture and Food	2016
P152851	Can Tho Urban Development and Resilience	Vietnam	Urban, Resilience and Land	2016
P153544 (AF: P159976)	Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods Project	Vietnam	Environment, Natural Resources and the Blue Economy	2016
P155350 (AF: P173087)	Sindh Resilience Project	Pakistan	Urban, Resilience and Land	2016

Project ID Number	Name	Country	Global Practice Area (Lead)	Approval FY
P146965	Jamaica Disaster Vulnerability Reduction Project	Jamaica	Urban, Resilience and Land	2016
P149485	Ningbo Sustainable Urbanization Project	China	Urban, Resilience and Land	2017
P156210	Cameroon: Inclusive and Resilient Cities Development Project	Cameroon	Urban, Resilience and Land	2017
P157127	Forest Sector Modernization and Coastal Resilience Enhancement Project	Vietnam	Environment, Natural Resources and the Blue Economy	2017
P158194	Myanmar Flood and Landslide Emergency Recovery Project	Myanmar	Urban, Resilience and Land	2017
P159397	Vietnam Scaling up Urban Upgrading Project	Vietnam	Urban, Resilience and Land	2017
P160096 (AF: P172014)	Pacific Resilience Project II under the Pacific Resilience Program	Marshall Islands	Environment, Natural Resources and the Blue Economy	2017
P160929	Cambodia Southeast Asia Disaster Risk Management Project	Cambodia	Urban, Resilience and Land	2017
P161392 (AF: P171877)	Malawi Resilience and Disaster Risk Management Project	Malawi	Urban, Resilience and Land	2017
P150523	Tanzania: Resilient Natural Resource Management for Tourism and Growth	Tanzania	Environment, Natural Resources and the Blue Economy	2018
P153814	Metro Manila Flood Management Project	Philippines	Water	2018
P158622	Hezhou Urban Water Infrastructure and Environment Improvement Project	China	Water	2018
P158805	Lower Shire Valley Landscape Project	Malawi	Water	2018
P159756	Integrated Urban Development and Resilience Project for Greater Antananarivo	Madagascar	Urban, Resilience and Land	2018
P159870	Zhejiang Qiandao Lake and Xin'an River Basin Water Resources and Ecological Environment Protection Project	China	Environment, Natural Resources and the Blue Economy	2018
P160613 (AF: P171745)	Burundi Landscape Restoration and Resilience Project	Burundi	Environment, Natural Resources and the Blue Economy	2018
P160930 (AF: P170945)	Lao PDR Southeast Asia Disaster Risk Management Project	Lao People's Democratic Republic	Urban, Resilience and Land	2018
P162337 (AF: P168908, P176313)	West Africa Coastal Areas Resilience Investment Project AF BN-TG	Western Africa	Environment, Natural Resources and the Blue Economy	2018
P163452	Ethiopia Urban Institutional and Infrastructure Development Program	Ethiopia	Urban, Resilience and Land	2018
P163782	Integrated Water Management and Development Project	Uganda	Water	2018
P163924	Pakistan Hydromet and Climate Services Project (PHCSP)	Pakistan	Urban, Resilience and Land	2018

Project ID Number	Name	Country	Global Practice Area (Lead)	Approval FY
P166538 (AF: P170954)	Senegal - Saint-Louis Emergency Recovery and Resilience Project	Senegal	Urban, Resilience and Land	2018
P161568	Bangladesh Sustainable Coastal and Marine Fisheries	Bangladesh	Environment, Natural Resources and the Blue Economy	2019
P161842	Sao Tome e Principe Transport Sector Development and Coastal Protection Project	Sao Tome e Principe	Transport	2019
P163383 (AF: P172462)	Ethiopia Resilient Landscapes and Livelihoods Project	Ethiopia	Environment, Natural Resources and the Blue Economy	2019
P164330	Greater Accra Resilient and Integrated Development Project	Ghana	Urban, Resilience and Land	2019
P164764	Transforming Landscapes for Resilience and Development in Zambia	Zambia	Environment, Natural Resources and the Blue Economy	2019
P165344 (AF: 172351)	Cambodia Sustainable Landscape and Ecotourism Project	Cambodia	Environment, Natural Resources and the Blue Economy	2019
P167359	Benin - Stormwater Management and Urban Resilience Project	Benin	Urban, Resilience and Land	2019
P170612 (Parent: P161915)	Sustainable Cities Project 2 - Additional Financing	Turkey	Urban, Resilience and Land	2019
P165973	Saramacca Canal System Rehabilitation Project	Suriname	Urban, Resilience and Land	2019
P165861	Bolivia Urban Resilience	Bolivia	Urban, Resilience and Land	2020
P155203	Timor-Leste Branch Roads Project	Timor-Leste	Transport	2020
P163328	Himachal Pradesh State Roads Transformation Project	India	Transport	2020
P168951	Cap Haitien Urban Development Project	Haiti	Urban, Resilience and Land	2020
P166865	Sri Lanka Integrated Watershed and Water Resources Management Project	Sri Lanka	Water	2020
P167350	Green National Highways Corridor Project	India	Transport	2020
P167804	Enhancing Coastal and Ocean Resource Efficiency	India	Environment, Natural Resources and the Blue Economy	2020
P168097	Meghalaya Integrated Transport Project	India	Transport	2020
P168308	Urban Resilience and Solid Waste Management Project	Cote d'Ivoire	Urban, Resilience and Land	2020
P168862 (AF: P175192)	Sava and Drina Rivers Corridors Integrated Development Program	Western Balkans	Water	2020
P170874	Indonesia Disaster Resilience Initiatives Project (IDRIP)	Indonesia	Urban, Resilience and Land	2020
P171361	Comoros Post-Kenneth Recovery and Resilience Project	Comoros	Urban, Resilience and Land	2020
P171700 (AF: P177314)	Vinh Long Urban Development and Climate Resilience Project	Vietnam	Urban, Resilience and Land	2020

Project ID Number	Name	Country	Global Practice Area (Lead)	Approval FY
P171778	Water Supply and Wastewater Services Improvement Project	Dominican Republic	Water	2021
P165017	Second Rwanda Urban Development Project	Rwanda	Urban, Resilience and Land	2021
P166020	West Bengal Inland Water Transport, Logistics and Spatial Development Project	India	Urban, Resilience and Land	2021
P168608 (AF: P173676)	Resilient Urban Sierra Leone Project	Sierra Leone	Urban, Resilience and Land	2021
P168613	Guinea Natural Resources, Mining and Environmental Management Project	Guinea	Environment, Natural Resources and the Blue Economy	2021
P169930	Cambodia Road Connectivity Improvement	Cambodia	Transport	2021
P171141	Kinshasa Multisector Development and Urban Resilience Project	Congo, Democratic Republic of	Urban, Resilience and Land	2021
P172153	Rwanda NDC Deep Dive: Advancing Financial Innovation to scale up Climate Action	Rwanda	Environment, Natural Resources and the Blue Economy	2021
P172562	Turkey Resilient Landscape Integration Project (TULIP)	Turkey	Environment, Natural Resources and the Blue Economy	2021
P173259 (Parent: P162929)	Medium-size Cities Integrated Urban Development Project Additional Financing	Uzbekistan	Urban, Resilience and Land	2021
P173980 (AF: P177076)	Nigeria COVID-19 Preparedness and Response Project	Nigeria	Health, Nutrition, and Population	2021
P174294 (Parent: P171040)	COVID-19 Response Additional Financing	Mozambique	Urban, Resilience and Land	2021
P174348 (AF: P176888)	Emergency Agriculture and Food Supply Project	Afghanistan	Agriculture and Food	2021
P174385	Second Ethiopia Resilient Landscapes and Livelihoods Project	Ethiopia	Environment, Natural Resources and the Blue Economy	2021
P174546	Emergency Locust Response Project	Eastern Africa	Agriculture and Food	2021
P175588	Ghana Productive Safety Net Project 2	Ghana	Social Protection and Jobs	2021
P175791 (AF: P178270)	Integrated Urban Services Emergency Project II	Yemen, Republic of	Urban, Resilience and Land	2021
P175830	Stormwater Management and Climate Change Adaptation Project 2	Senegal	Urban, Resilience and Land	2021
P175894	Seismic Resilience and Energy Efficiency in Public Buildings Project	Turkey	Urban, Resilience and Land	2021
P171449	Maputo Urban Transformation Project	Mozambique	Urban, Resilience and Land	2021