MAINSTREAMING NATURE-BASED SOLUTIONS FOR A SUSTAINABLE BENGALURU

Policy Brief 2025

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1.
INTRODUCTION

Urbanization is generally associated with loss of habitat for biodiversity and urban spaces are seen as places in which nature is in rapid and irreversible retreat but we have to change this paradigm. Cities can be a refuge for biodiversity and the spaces that support birds, butterflies, bees and bats to name a few can also generate important ecosystem services for people in the city. One way to foster biodiversity in the city is by adopting Nature-based Solutions (NbS) for solving urban environmental and developmental challenges such as water pollution, heat stress and food and nutritional security. The city of Bengaluru today is a site of rapid urbanization and transformation bringing with it increasing pressures on available resources, loss of biodiversity and concerns about human well-being. **Nature-based solutions (NbS)** offer a promising approach to address the complex challenges faced by rapidly transforming cities like Bengaluru. Increase in the built environment and a growing population combined with effects of climate change, rising urban heat, and increasing water crises necessitate the need to develop solutions for a sustainable Bengaluru. NbS, which leverages the natural environment to deliver sustainable outcomes, can help enhance resilience, improve quality of life, and ensure sustainable growth.

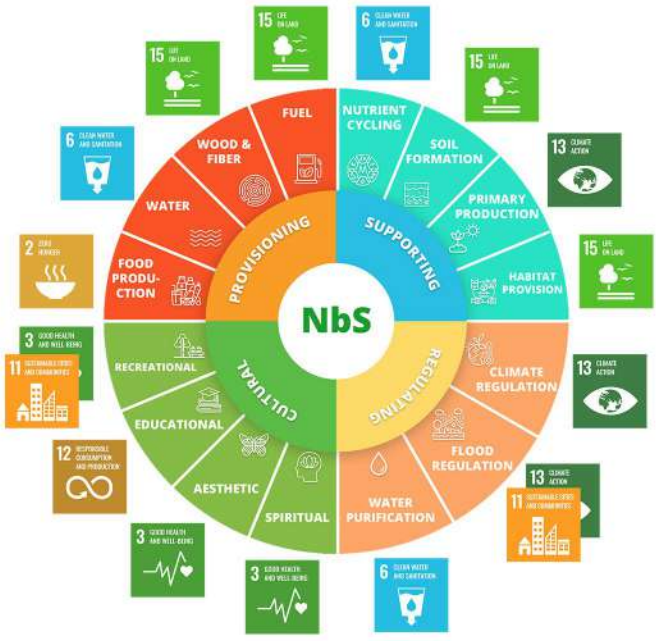
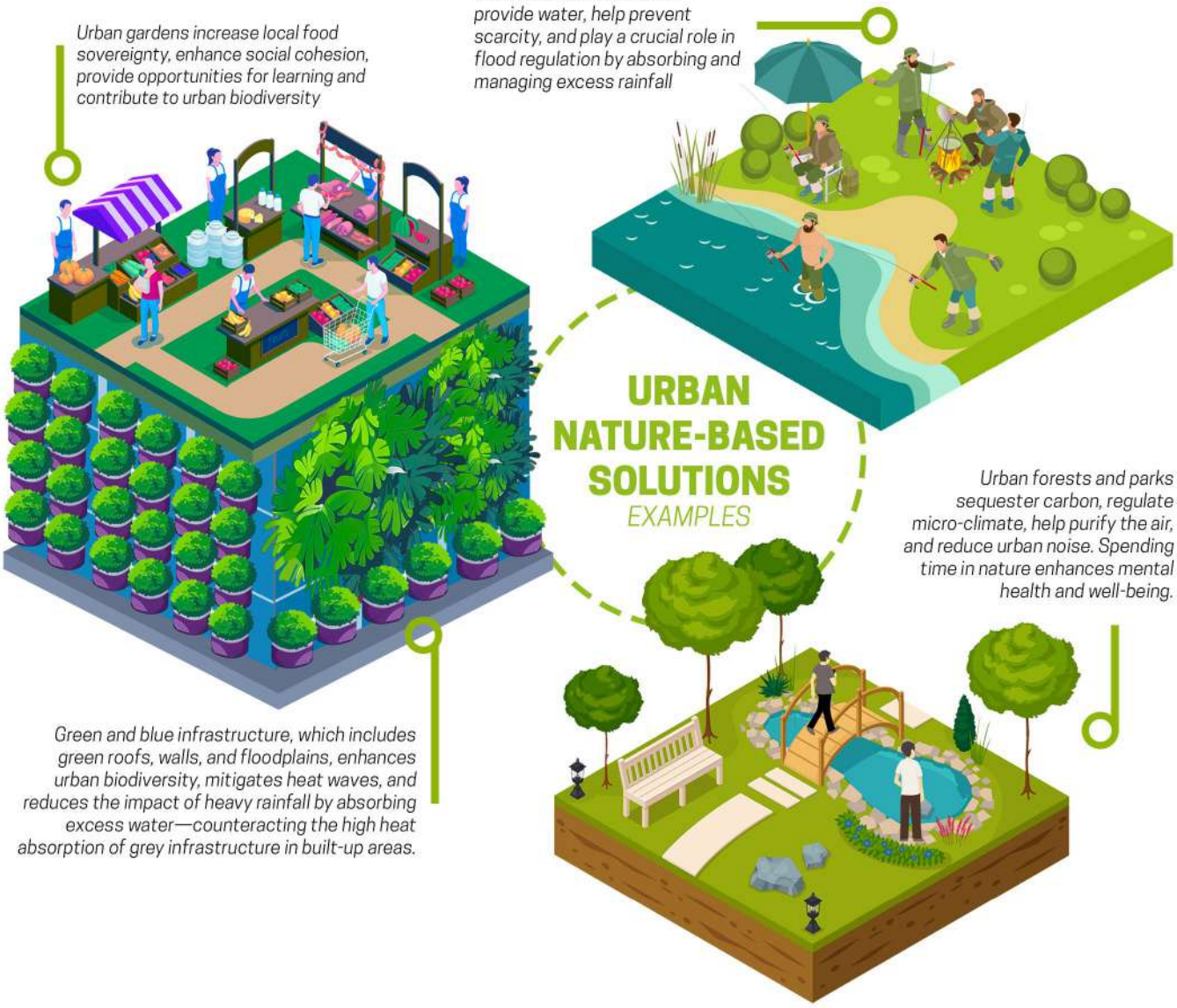


Figure 1: *Ecosystem services offered by NbS and their corresponding SDGs*

There are multiple definitions of NbS given its complexity. We define NbS as per the International Union for Conservation of Nature (IUCN) as **"actions to address societal challenges** through protection, sustainable management and restoration of ecosystems, **benefiting both biodiversity and human well-being**." NbS can also be seen as addressing societal challenges through the prism of **Sustainable Development Goals** (SDGs) laid out by the United Nations.

Figure 2: *Nature-based solutions (IUCN). The IUCN Global Standard for Nature-based Solutions identifies eight criteria and their associated indicators, which address the pillars of sustainable development (biodiversity, economy and society) and resilience.*

Urban spaces hold significant scope for NbS. Urban ecology is influenced by urban infrastructure that must be designed to support it. Urban environments also offer unique opportunities to involve diverse stakeholders through adoption of blue-green and grey-green infrastructure projects and initiatives that foster citizen participation and provide educational benefits. The policy brief discusses the need and importance of mainstreaming NbS for a sustainable Bengaluru, and offers policy recommendations and framework for achieving this goal.



BENGALURU IN CRISIS: CAN NATURE BE THE SOLUTION?

Bengaluru is a growing mega-city with an estimated 14 million population growing at a rate of 2.76% according to the UN World Urbanization Prospects. Its unplanned sprawl and expanding urban footprint often has significant ecological trade-offs for surrounding rural and peri-urban areas. Bengaluru has also been ranked the least livable city amongst the 5 Indian cities that figured in the Global Liveability Index 2022 released by the European Intelligence Unit. The urban heat phenomenon and water scarcity are exacerbated by climate change and increasing grey infrastructure in the city. Adverse impacts of these could be addressed through standalone NbS or integrating NbS into urban infrastructure, benefiting varied dimensions of socio-ecological well being such as food security, water security, climate adaptation and community well-being. (Figure 2).

NbS can leverage nature and the benefits of healthy ecosystems to safeguard human well-being, optimise infrastructure and safeguard a stable biodiversity countering many adverse effects highlighted earlier.

For Bengaluru, implementing NbS would contribute to a number of benefits as listed below:

NbS ACTIVITIES	CHALLENGES ADDRESSED	BENEFITS
Urban forests, green roofs, urban wetlands that act as carbon sinks and also reduce the urban heat island effect	Breaking direct impact of unpredictable rainfall, increase water retention, reducing impacts of urban floods, rising temperatures and extreme weather events	Mitigating climate change impacts
Permeable surfaces, rain gardens, and restoration of urban wetlands to manage stormwater and enhance groundwater recharge	Property damage, and health risks caused by waterlogging; groundwater recharge	Adequate wastewater management and water security
Green spaces like parks, green roofs, and community gardens to support wildlife and pollinators	Natural habitats and biodiversity loss due to rapid urbanization	Supporting biodiversity and ecosystem services
Green spaces and restored ecosystems, urban agriculture, ecotourism to support businesses and increase property values	Reduction in costs of infrastructure repairs from flooding/erosion; economic growth due to improved businesses	Improving economy
Urban parks and green corridors to improve air quality, provide recreation, and enhance mental and physical well-being	Reduction in air pollution, light and noise pollution, in social alienation of those with limited access to green spaces, improved mental and physical health	Enhancing public health and well-being
Community gardens, parks, and green spaces for community activities, to encourage resident participation in planning and upkeep and improve social bonds	Access to spaces for social interactions, maintained via community ownership in urban settings, and reestablishing connection with nature	Effective community engagement and social cohesion

It is significant to note however, that implementation of NbS must be adopted in line with locally relevant contexts. For Bengaluru, given that water is becoming scarce,and that temperatures are rising, NbS adopted must be a) climate- and context-specific- for example, plant species chosen for greening should be water-efficient; emphasis should be on native biodiversity, rather than simply "greening" practices; and b) able to ensure resource circularity and non-wastage of freshwater- for example, the use of treated wastewater for urban greening and agriculture; c) cognizant of social differences and sensitive to geographical and wealth inequities- for example, ensuring shade providing trees on roads and pavements, ensuring accessible parks and green spaces across marginalised, lower-income neighbourhoods.

BRIGHT SPOT

Wetland Restoration for Water Security, Bengaluru

Bengaluru's original network of more than 1000 interconnected and managed wetlands built over several centuries for water security, fisheries and livestock rearing, was rapidly lost to pollution and land use conversion.

In recent years, NbS have played a crucial role in the revival of several water bodies through wastewater treatment and improved lake management. This has led to improving water quality and replenishing of aquifers for marginalised communities reliant on wells, improved habitats for birds, and heat stress mitigation in hot summers, accompanied by aesthetic and recreational opportunities for citizens and increased biodiversity.

Restoration has been possible through partnerships amongst government agencies, research institutes, corporate social responsibility teams and the civil society. Activities have included investment in sewage treatment plants, desilting of polluted lakes, and use of treated wastewater for irrigation in surrounding areas and rejuvenation of groundwater reserves.

These efforts can be scaled up. The chain of actions to do so can be conceptualised as NbS that can be adopted easily by policy makers and implementing agencies.

2. POLICY ENVIRONMENT FOR URBAN NbS FOR BENGALURU

Table 1: *National Policies and Frameworks for NbS*

National Action Plan for Climate Change (NAPCC) & State Action Plan for Climate Change (SAPCC)	National and state climate strategies enabling NbS for urban resilience and sustainability
National Disaster Management Authority (NDMA)	Funds disaster resilience projects, supporting NbS for flood management in cities
Green Credit Programme	Incentivizes tree plantation and water management (in its current form, it works only for degraded forest lands)
Climate Smart Cities Assessment Framework (CSCAF)	Assesses Bengaluru's climate readiness, encouraging NbS adoption in urban planning
Climate Centre for Cities (C-Cube) & Climate Alliance	Builds capacity for urban climate action, facilitating NbS implementation in Bengaluru
Van Nagar Scheme	Promotes urban forestry, supporting Bengaluru's green space expansion efforts
National Mission for a Green India (GIM)	Boosts afforestation to mitigate heat islands and enhance biodiversity in urban areas
The National Mission on Sustainable Habitat (NMSH)	Aims to reduce GHG emissions and build urban resilience
National Biodiversity Action Plan (NBAP)	Conserves biodiversity, supporting Bengaluru's urban wetlands and wildlife habitats
Jal Shakti Abhiyan (JSA)	Promotes rainwater harvesting and water body rejuvenation to address Bengaluru's water issues
National Clean Air Programme (NCAP)	Targets air pollution in Bengaluru via NbS like urban forests and green roofs
National Plan for Conservation of Aquatic Ecosystems (NPCA), 2013	Addresses restoration and conservation of water bodies and wetlands degraded by pollution and attempts to follow an integrated ecosystem approach
Policy on Promotion of City Compost, 2016	Promotes production and consumption through subsidies of compost made out of city waste

Table 2: *Bengaluru-Specific Policies and Initiatives for NbS*

Bengaluru Climate Action and Resilience Plan (BCAP), 2023	City-specific plan integrating NbS like urban forests and wetlands for climate resilience
Karnataka State Water Policy, 2022	Promotes water body conservation and sustainable use, critical for Bengaluru's lakes and groundwater recharge

Table 3: *Urban Development Initiatives for NbS*

Smart Cities Mission	Funds green infrastructure like parks and water systems for sustainable urban growth
Swachh Bharat Mission-Urban	Enhances waste and water management, supporting NbS like wetland restoration
AMRUT (Atal Mission for Rejuvenation and Urban Transformation)	Supports restoration of urban water bodies and green spaces in cities like Bengaluru
PMAY-Urban (Pradhan Mantri Awas Yojana – Urban)	Integrates sustainable urban planning, enabling NbS in housing projects

These existing policies at national and state levels can be leveraged to implement NbS in cities like Bengaluru, tapping into policy guidelines and existing fund allocations for the same. The initiatives by the government also align with the fulfilment of Sustainable Development Goals set by the United Nations. The policy context can act as an enabler for implementing NbS in urban areas, however operationalizing these often requires engagement with on-ground players and diverse stakeholders, particularly through local governance bodies and institutions

BRIGHT SPOT

Climate adaptation focus in local-level policy

The BBMP and the Karnataka Government have created the The Bengaluru Climate Action and Resilience Plan (BCAP) which focusses on human well-being in relation to climate change along with a transition to a future that is just, resilient, equitable and inclusive. It outlines a list of priority sectors for actions between climate mitigation and adaptation which includes- energy and buildings; transportation; solid waste; air quality; water, wastewater and stormwater; urban planning, greening and biodiversity; and disaster management,

Source: *BBMP with technical support of WRI India*

Additionally, the adoption of NbS is listed as Urban Planning, Greening and Biodiversity Goal 3 under the BCAP report. The goal relates to the use of NbS as an urban planning and design tool to improve climate resilience and livability. This involves conserving and restoring all blue-green networks in the city, increasing the tree cover and vegetation of the city and ensuring footpaths with permeable surfaces.

3. KEY MEASURES FOR MAINSTREA—MING NbS IN BENGALURU

NbS in India, have been discussed as an emerging concept to address varying ecological and societal challenges, but have not been integrated into mainstream policies, plans or regulations. There are only a handful of ongoing projects carried out by businesses under corporate social responsibility or by research organisations and think tanks. Mainstreaming NbS is therefore integral to ensure scaling up and that benefits of NbS are achieved. Followed is a process framework for mainstreaming NbS in Bengaluru

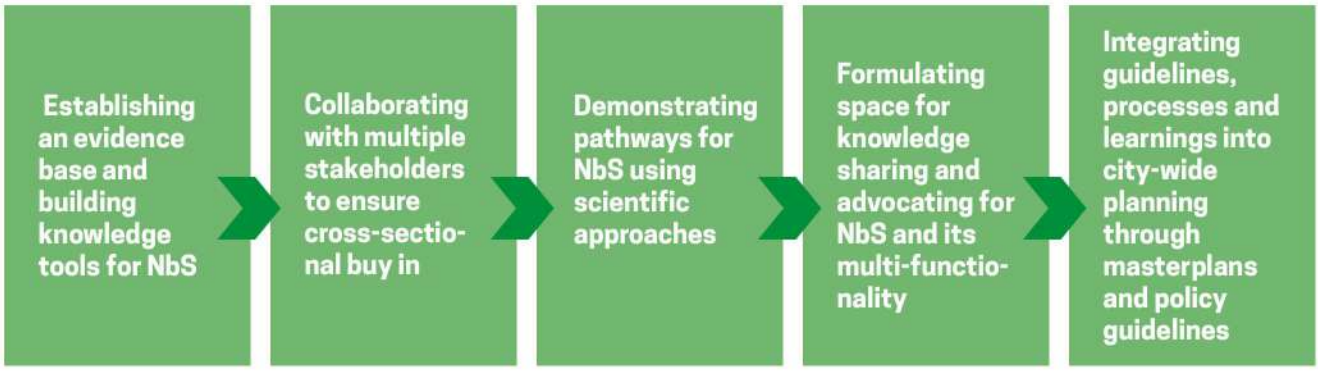


Figure 3: *Process framework for mainstreaming Nature-based Solutions in India (Steps derived from ICLEI, 2008 and modified)*

i) Establishing an evidence-base and building knowledge tools

The first step towards mainstreaming NbS is to establish an evidence base and build knowledge tools to support NbS activities. This includes investing in research and knowledge, while also producing tools such as maps, implementation equipment and kits, as well as interactive platforms for increasing engagement and ease of access to information.

A study by the Indian Institute for Human Settlements mapped the green and blue spaces in Bengaluru. It looked at the cooling potential of green spaces (Fig 4) and the presence of birds (Fig 5) as indicative of areas of conservation value that would also mitigate heat stress for citizens. The study also found that all birds responded negatively to the hotter parts of the city. Such maps help identify potential intervention sites where heat is causing the most damage, and where implementing NbS can be most beneficial and crucial.

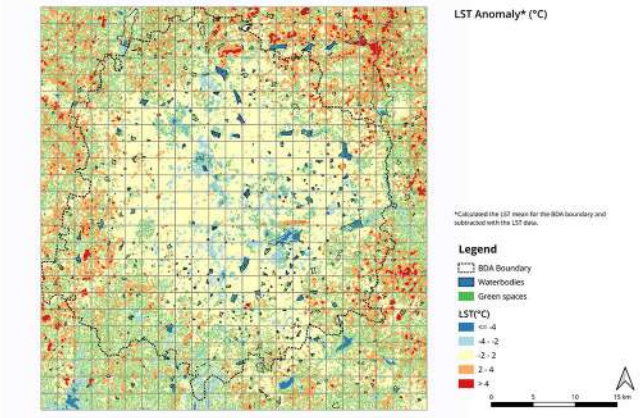


Figure 4: *Map showing Land Surface Temperature anomalies derived from Landsat satellite data (2021). The city's spatially averaged temperature is subtracted from every pixel, and the pluses are warmer sites and the minuses are cooler than the city-wide average. Cooling potential of green spaces acts as evidence for indicating which wards can be prioritised for conservation and development of green spaces, particularly in years that are especially above average maximum temperatures*

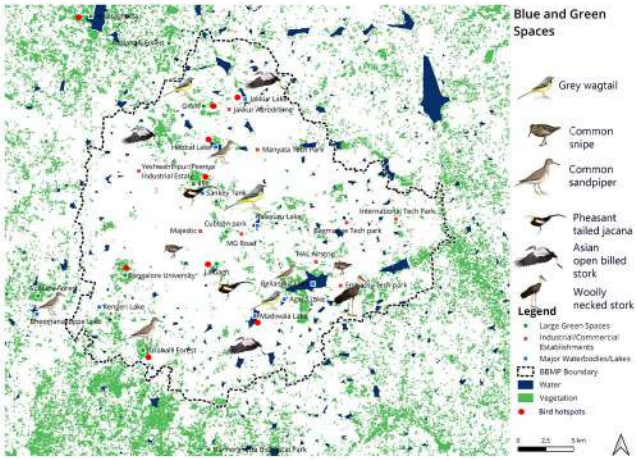


Figure 5: *Map illustrating blue and green spaces and bird hotspots, allowing us to assess what kind of species biodiversity is supported by specific kinds of urban spaces.* ***Source: Dhananjayan M, Ravi Jambhekar***

Such maps can aid planners, project proponents, governments and citizens make decisions about where and how to integrate and implement appropriate NbS by harnessing this information. Particularly, it provides information about hyper local scales (the lowest unit of administrative governance), which is critical in addressing climate change adaptations, and implementing NbS activities. It is important to note here that people experience their environment at these small scales, and outlining differences and potential for NbS at such scales can have a significant impact.

BRIGHT SPOT

Understanding ward-level heat strategy in Bengaluru - Climate Action in Marappanapalya Ward

A collaborative project between Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore Creative Circus, and the Initiative for Climate Action piloted a 3-part approach to map and effectively understand heat stress in the Marappanapalya ward in North Bengaluru.

It included (1) a systems-level framework of heat stress, its impacts, and response to it at the ward-level, (2) technical approaches to identify areas of maximum exposure within the ward and (3) citizen experiences to understand local contexts. This allows for local risks and vulnerabilities to surface, be understood, and tackled in an effective manner at the smallest urban administrative unit in India to ensure community participation and resource mobilisation.

The project proposed a multi-dimensional spatial mapping approach to bring together layers of biophysical, demographic, and socio-ecological information in a manner which enhances response capacity and preparedness to heat stress. This approach can aid in bridging the gap between a top-down understanding of climate action, and the lived reality of adapting to climate change.

ii) Collaborating with multiple stakeholders such as urban planners, citizens, municipal officials to ensure cross-sectoral buy-in and commitment for NbS

Implementing NbS in the urban context requires collaboration with multiple stakeholders, due to the nature of activities and ownership, or governance of spaces and resources. NbS are often implemented in both public (gardens, lakes, parks) and private (terraces, office buildings) spaces. Stakeholders range from an individual citizen to a government body to a residents welfare association. Public perception of NbS has been a consistent challenge across all regions, since successful implementation of NbS requires local buy-in, and the management and monitoring of their ecological components may rely heavily on community participation. *(Anderson et al., 2021)*. Studies have shown that engaging communities in the planning and implementing of NbS projects can enhance local ownership, acceptance and long term success.

In the context of the Global South, experts consulted in this study cited higher perceived reliability of conventional infrastructure approaches and confusion over the definition of NbS as the two major obstacles to their implementation.

CASE STUDY

Pilots for Mainstreaming NbS at different scales in the city for 'Sustainable Bengaluru'

As urban populations grow and diets shift toward more fresh produce like fruits and vegetables, the demand for fresh food is growing. A few forms of NbS, especially those that support pollinators, play a critical role in urban agriculture and sustainable food systems. Urban spaces, often surprisingly rich in biodiversity, can offer better refuges for pollinators than neighboring rural areas due to reduced pesticide use and more resources (Wenzel et al., 2020). There are also opportunities in cities to support local food systems by generating quality manure from organic waste and fostering habitats that sustain pollinators, which in turn enhance crop yields and food security.

Pilot studies conducted include stakeholders at four distinct scales or levels:

- *Individual citizens (building and maintaining terrace gardens)*
- *Institutional campuses (developing green spaces that cover large grounds and have buildings that maintain terrace gardens)*
- *Residential complexes (building spaces for community engagement and cohesion as well as greening)*
- *Urban lakes (collaborating with municipal officials to improve urban pollination in surrounding green spaces)*

This revealed opportunities to explore the best pathways to implement NbS, understand challenges faced by varying stakeholders, and study implementation and success of NbS at different scales.

iii) Demonstrating pathways for NbS and improving science

NbS demonstration in India is still rare, particularly in the urban context where "nature" may often be seen at odds with processes of urbanization and urban development. A significant step therefore involves showcasing the processes and activities to be undertaken for specific NbS, outlining possible co-benefits, as well as improving the science on NbS through this step.

CASE STUDY

Demonstrating NbS pathways through creation of pollinator-friendly spaces

The study conducted by Ashoka Trust for Research in Ecology and the Environment (ATREE) and Indian Institute for Human Settlements (IIHS) aims to emphasize the importance of supporting a healthy and diverse population of pollinators to ensure food and nutrition security for urban centres. Pollinator integration in edible gardens has the potential to contribute to urban agriculture, conservation of urban biodiversity and sustainable urban development.

1. *At Venkateshpura Lake, raised mounds of earth have been planted with pollinator-attracting plants, including edible vegetables and various greens. A large 'bee resort' serves to provide nesting spaces for cavity-nesting bees. Larger sculptures crafted out of Lantana camara, an invasive species, have also been installed as an aesthetic and creative element. They are multipurpose, providing shade and also supporting climbing plants. The lake shore area is visited by several people from the neighbouring area. Hence, it is a place that can be used for raising awareness and engaging the community in creating biodiversity-supportive spaces in the city. This was done in partnership with the Karnataka Tank Conservation and Development Authority (KTCDA) and the Executive Engineer, Lakes Department, Yelahanka Zone, BBMP.*

Figure 6: *Assessment and monitoring of pilots aimed at supporting pollinators*

2. At an institutional campus (a school), available space was creatively used by ATREE to create walkways with pergola structures which support edible gourd vegetables. Engaging school children in planting and monitoring activities was a key component of supporting pollinators in a school campus. Integrating urban food systems in areas with large campuses and spreading knowledge of planting not just ornamental species, but pollinator-friendly species is critical for improving biodiversity.

3. In home gardens, ATREE has set up pollinator-integrated multifunctional gardens covering terraces and grounded properties. Several interventions and features have been incorporated to create sustainable home gardens. These include the use of open-pollinated seeds sourced from farmers, setting up stingless bee boxes and bee hotels to support multiple bee species, seed boxes for collecting and preserving seeds, using trellis and pergol as for supporting edible plants designed using an invasive weed (Lantana camara), bird feeders, compost bins and harvest bags.

4. At an institutional campus (IIHS), bee hotels were set up along with the edible and pollinator friendly gardens. Any organic waste that was produced by the institution was composted and used to improve soil fertility. The quality of compost from municipal food waste was studied, revealing that the soil phosphorus values were comparable to those recommended by Fertilizer Control Order standards, and even higher than the recommendations for soil organic carbon.

Figure 7: *Infographic highlighting how bees fare along a gradation of urbanization in Bengaluru. Urban areas may offer refugia to a greater diversity of bees because of the diversity of floral resources compared to intensively cultivated rural areas. Pollinator-friendly plants in urban areas can therefore be crucial to improving and supporting biodiversity. Bee hotels may thus be a successful option to foster solitary bees in urban gardens.* ***Source: ATREE***

Independent monitoring of environmental and social variables as part of project design and implementation to assess performance of NbS and learn reasons for success and failure would enable improvement and accountability, as well as strengthen scientific practices.

iv) Formulating spaces for knowledge sharing and advocating for policy relevant and multi-functional NbS

Evidence-based interventions leveraging NbS implementation in India are still rare, particularly in the urban context where they are critical for human well-being. Creating areas for exchange of knowledge and capacity building can be an important avenue to mainstream the implementation of NbS at various scales.

Linking such knowledge back to decision-makers, policy makers, and urban city planners by highlighting their ***ability to contribute to various***

policy arenas such as climate change adaptation, public health, nature protection, and economic development is important. Today's crises require systems thinking approaches to be applied in order to address multifaceted issues. For example, converting municipal waste into compost can be beneficial for use in urban farms, improving food security and preventing use of pesticides and chemical fertilisers that may seep into the soil and contaminate underground water and urban lakes. Use in urban gardens can improve soil health and greening and can be scaled up.

BRIGHT SPOT

Incentivising NbS through the growing market for carbon credits

There has been a recent policy push towards a carbon credit market in India. This presents an opportunity to integrate NbS into compliance guidelines for generating credits, since NbS activities can sequester carbon. This may also incentivise private investment into NbS. However, such an integration should also ensure socio-economic equity and responsible implementation. This means ensuring that the activities that ensure environmental integrity, are also socio-ecologically appropriate and secure the rights and livelihoods of local communities.

v) Integrating guidelines, processes and learnings into city-wide planning through master plans, urban planning and infrastructure development, permits and regulations, certifications and other incentives to scale up

Mainstreaming NbS requires collaborative, integrative governance that crosses organizational, jurisdictional, and administrative boundaries to support joint action. Institutionalising NbS in city plans, and other policy guidelines may lead to a higher likelihood of implementation and avenues for governmental accountability and regulation of other agencies such as builders, urban planners, architects etc. A lack of this integration constitutes a barrier to the allocation of budgets and resources for NBS also determining the need for more effective methods for NBS financing *(Mendonça et al. 2021)*.

BRIGHT SPOT

Fostering biodiversity on campuses

One of the biggest challenges in creating biodiversity-friendly spaces in cities is the scarcity of land. As rapid urban expansion shrinks natural vegetation and open areas, existing green spaces often fall under multiple administrative bodies, making it necessary to obtain various permits to work for long-term conservation. changing land use policies and management regimes further complicate the situation.

In this context, privately or publicly owned campuses offer a promising alternative. Institutions such as universities, multinational corporations, government agencies, and defense establishments manage large, relatively stable areas of land. In cities like Bengaluru, employing these spaces to enhance biodiversity and ecosystem services can yield significant environmental benefits. Additionally, many institutions are motivated to improve their campuses, engage employees and staff in conservation efforts and provide opportunities for education and research.

BioConserve Summit 2025, organized by IIHS in partnership with Infosys Limited, brought

experts and stakeholders from across the country. The event showcased inspiring success stories and sparked discussions on challenges and opportunities among pioneers from various fields. The enthusiasm and commitment displayed at the summit highlight the growing potential for developing resilient, biodiversity-rich urban campuses, contributing to a more sustainable future and aligning with India's vision for biodiversity conservation.

4. POLICY RECOMMEN—DATIONS

Four essentials for NbS in Bengaluru

Mainstreaming NbS in Bengaluru can be a practicable and beneficial solution to help address and mitigate the numerous challenges being faced by the city, including dust, vehicular and water pollution, water scarcity, urban heat phenomena in the context of climate change, and depleting natural biodiversity. The rapid growth of the city is accompanied by an increasing number of residential societies and flats, number of vehicles and congestion that further exacerbate the stress on water and other resources. Ensuring that the development and growth of the city is accompanied by NbS could ensure improved human well-being.

Mainstreaming NbS into various government policy guidelines and regulations is an important pathway to ensure its implementation. For this certain steps to be taken include:

DATA-BASED DECISION MAKING

Utilize data from urban ecosystems, hydrology, and agriculture to guide decision-making. Creating a centralized database that tracks water quality, food production, biodiversity, and ecological health will help assess the effectiveness of integrated solutions and provide real-time insights for adaptive management. Mapping of potential sites for NbS in Bengaluru based on integration of blue, green, and grey infrastructure and potential beneficiaries would help decision makers and developers make informed decisions. Data-driven decisions improve NbS efficiency over time. Measurable benefits will strengthen the case for investment and scaling up NbS. Real-time monitoring fosters public participation and awareness.

There have been large-scale public implementations of rainwater percolation pits across Tamil Nadu to enhance groundwater recharge and combat water scarcity. However, the absence of a structured monitoring protocol could have optimized their long-term effectiveness, ensured proper maintenance, and provided better insights into their impact on groundwater table.

COLLABORATIVE GOVERNANCE AND STAKEHOLDER ENGAGEMENT

Multi-stakeholder engagement is crucial for the successful implementation of integrated NbS. The framework must prioritize collaboration between local governments, community groups, environmental organizations, private sector stakeholders, and urban planners. Establishing a city-wide task force on sustainable urban development can drive this collaboration and ensure alignment with local needs and priorities. Partnerships among governments, NGOs, academia,

private sectors, local communities, and financial sectors to jointly develop and implement NbS projects may result in fewer trade-offs and enhance synergies amongst stakeholders.

INTEGRATING NbS INTO EXISTING POLICY GUIDELINES AND INSTITUTIONAL MECHANISMS

NbS require implementation via multiple arenas of policy ranging from environment, water management, waste management, transportation, urban housing and development and therefore will need to be integrated into pre-existing policy. Since NBS is a relatively new concept and policy intent which requires a combination of multiple fields and knowledge *(Sowińska-Świerkosz and García 2022)*, it requires new approaches to urban governance, and NbS policies need to be flexible to overcome bureaucratic procedures.

The Karnataka government and electricity boards mandated that new residential and commercial buildings install solar water heaters to qualify for an electricity connection and also provide tariff discounts. Similar efforts can be applied to key NbS which have potential of scalability.

By integrating NbS into urban planning, cities can reimagine how infrastructure is designed, used, and maintained, creating spaces that serve both people and ecosystems.

DRAFTING A BENGALURU-SPECIFIC MANUAL AND A DYNAMIC PORTAL

NbS that include biophysical, ecological, hydrological and environmental justice dimensions to guide donors, corporates, government agencies and civil society organizations could be developed. Not every nature action can become a "successful" NbS. Indicators and definitions of what constitutes a Nature-based Solution should be outlined in detail, along with indicators such as native vegetation planted, number of species supported and amount of water reused.

TRAINING AND CAPACITY-BUILDING FOR DIVERSE STAKEHOLDERS

For scaling up adoption of NbS in city planning and development, new curricula on NbS in teaching and training of city engineers, urban planners, and landscape architects would be required. Additionally, it will be helpful to involve ecologists and other experts into urban planning and engineering decisions.

FINANCIAL INCENTIVES FOR NATURE-BASED SOLUTIONS

Provide financial incentives to private developers and businesses to implement NbS in their projects. This can include tax breaks, grants, and access to funding for initiatives such as green roofs, rainwater harvesting systems, and urban tree planting. Additionally, such incentives should detail the guidelines for the use of native, water-efficient species, minimising water-intensive lawns and aesthetic features, providing local biodiversity-friendly habitats encouraging coexistence of biodiversity and people. Additionally, tax incentives for rooftop farming and water harvesting, subsidies for community gardens, and technical assistance for urban farmers could encourage NbS.

Native checkered keel-back snake eating an exotic alien tilapia fish in Bengaluru. The interaction of exotic and invasive species with native biodiversity in the city can be complex and needs better understanding

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GREENING URBAN FOOD SYSTEMS THROUGH NATURE-BASED SOLUTIONS IN BENGALURU

AFD has been working with the Indian Institute for Human Settlements (IIHS) and Ashoka Trust for Research in Ecology and the Environment (ATREE) to analyse the links between urban agriculture, nature-based solutions (NBS) and city-scale resilience in Bangalore. Documenting the role of urban food systems in the production of ecosystem services aims at contributing to the development of sustainable urban development policies. This project is part of the ECOPRONAT research programme, which supports research on how to better take into account biodiversity and mainstream it into key economic sectors.

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