

An aerial photograph of a village with numerous houses featuring reddish-brown brick roofs. The houses are interspersed with lush green trees and vegetation. A narrow road or path runs through the village, and a body of water is visible on the right side. The overall scene depicts a sustainable urban environment.

miyamoto.

Nature-Based Solutions for Sustainable Urban Development





Improving Urban Housing and Communities

Nature-based solutions (NBS) offer innovative approaches to transform urban living conditions:

- **Integration of green spaces**, sustainable water management, and natural materials
- **Rain gardens and bioswales** for stormwater management
- **Urban forests and green corridors** for air quality improvement and recreation
- Use of **natural, locally sourced materials** like bamboo for affordable, sustainable construction

These solutions significantly enhance the quality of life in urban areas. By implementing NBS, cities can reduce flooding risks and mitigate possible heat waves. Additionally, these approaches provide multiple co-benefits and can be part of multi-functional spaces providing recreational spaces for the community, contributing to overall well-being.





Collaborative Approaches and Local Engagement

Successful implementation of NBS requires solid partnerships and active community involvement:

- **Participatory planning** approaches ensure NBS meets local needs
- **Community-led design** of green spaces, urban agriculture projects or other, to make sure that the spaces and designs respond to local needs and expectations
- **Collaboration between government agencies, businesses, and community organizations**, particularly regarding the maintenance and operation phase.
- **Enhancement of local governance strategies** through community-level NBS implementation, facilitating stronger links between communities and institutions.



These collaborative approaches offer several benefits. They foster a sense of ownership and stewardship among residents, increasing the likelihood of long-term success for NBS projects. This community involvement also strengthens local governance structures, which are crucial for long-term maintenance, operations, and sustainability. By involving a variety of stakeholders, cities can tap into a wealth of knowledge and resources, enabling and empowering communities while driving innovation in NBS implementation. This approach enables the development of projects at various scales, ensuring that NBS can be tailored to address specific local challenges while contributing to broader urban sustainability goals.

As a result, NBS projects become well-suited to local contexts and create more effective channels for ongoing collaboration and support, further reinforcing their long-term viability and impact.



Co-benefits of NBS

Nature-Based Solutions offer a multitude of benefits that extend far beyond their primary function of disaster risk reduction and climate resilience. These co-benefits encompass environmental, social, and economic dimensions, making NBS a holistic approach to urban development and sustainability.

- **Environmental perspective**, NBS plays an important role in maintaining biodiversity and enhancing ecosystem services. They contribute to improved air and water quality, carbon sequestration, and the mitigation of possible urban heat waves. In terms of water management, NBS facilitates natural filtration processes, aiding in stormwater management and reducing the strain on existing drainage systems.
- **Socially**, NBS create multifunctional spaces that enhance community well-being. These interventions can be linked to multi-functional spaces which provide valuable recreational areas, promoting physical activity and mental health. They can also contribute to food security through urban agriculture initiatives and improve overall public health by reducing pollution and creating healthier urban environments.
- **Economically**, NBS stimulates local development by creating jobs, beautifying neighborhoods and supporting the increase of foot traffic near local businesses. They can also reduce long-term infrastructure costs by alleviating the burden on traditional systems and increasing the lifespan of existing structures.



Complementing Traditional Gray Infrastructure

Nature-Based Solutions are not intended to replace traditional gray infrastructure entirely, but rather to work in tandem with them, creating a hybrid approach that maximizes efficiency and sustainability. Recognizing the value of existing or new gray infrastructure while enhancing its performance and sustainability through natural interventions.

NBS can be strategically implemented to enhance the performance of gray infrastructure. For instance, in cities with existing piping and channeling systems, NBS can be used to enhance permeability and infiltration, allowing water to filter through specific areas. This can help manage stormwater more effectively and reduce the burden on traditional drainage systems. In addition, by integrating NBS, cities can create more multifunctional spaces that not only manage water and reduce disaster risks but also provide additional benefits such as improving public health, promoting local economic development, and creating safer spaces and addressing some of the limitations of purely gray infrastructure solutions, which can be costly and often serve a single purpose.

The complementary relationship between green and gray solutions offers a more holistic, sustainable, and adaptable approach to urban infrastructure. This integrated strategy is better equipped to address the complex challenges of rapid urbanization, providing cities with more resilient and multifaceted solutions to their infrastructure needs.



Innovative Financing Mechanisms

Securing adequate funding for Nature-Based Solutions is crucial for widespread adoption and integration into urban development strategies. Cities and organizations are exploring various funding mechanisms to support NBS implementation. These include green bonds, public-private partnerships, and community-based financing models. Some innovative approaches involve creating water credits, like carbon credits, which can incentivize the implementation of water-management NBS. Additionally, integrating NBS into mainstream urban development and infrastructure budgets can ensure the long-term sustainability and scalability of these projects.

These financing strategies aim to unlock the full potential of NBS in urban environments. By diversifying funding sources and creating innovative financial instruments, cities can overcome economic barriers to NBS implementation.

Nature-Based Solutions for Sustainable Urban Development

1

Improving Urban Housing and Communities



Urban green spaces



Stormwater management



Sustainable construction

Benefits: reduces flooding, mitigates heat waves, enhances quality of life, improves overall well-being.

2

Collaborative Approaches and Local Engagement

Successful NBS requires **partnerships** and **community involvement**.

Participatory planning ensures NBS meet local needs; community-led design for green spaces and urban agriculture.

Collaboration with government, businesses, and local groups strengthens governance and supports **long-term success**.

3

Co-benefits of NBS



Environmental

restores biodiversity, improves air/water quality, reduces heat waves



Social

creates recreational spaces, enhances well-being, promotes urban agriculture



Economic

creates jobs, supports local businesses, reduces infrastructure costs

4

Complementing Traditional Gray Infrastructure



NBS **complement**, not replace, gray infrastructure for **hybrid solutions**.

Enhances existing systems for better stormwater management and multifunctional spaces.

Holistic approach addresses urbanization challenges.

5

Innovative Financing Mechanisms



Funding through green bonds, public-private partnerships, and community-based models.

Innovative options like water credits incentivize NBS implementation.

Long-term sustainability achieved by integrating NBS into infrastructure budgets.

miyamoto.

Sacramento | San Francisco | Pleasanton | San Jose | Los Angeles | Ontario | Orange County | San Diego | Reno
Las Vegas | Phoenix | Washington, D.C. | Puerto Rico | Mexico | Costa Rica | Colombia | Haiti | Italy | Ukraine
Lebanon | Turkey | Jordan | Uzbekistan | Afghanistan | India | Morocco | Nepal | Indonesia | Japan | New Zealand