INTERACT-Bio
Integrated action on biodiversity

ICLEI Local Governments for Sustainability | CBC Cities Biodiversity Center

GUIDELINES FOR AN INTEGRATED APPROACH IN THE DEVELOPMENT AND IMPLEMENTATION OF NATIONAL, SUBNATIONAL AND LOCAL BIODIVERSITY STRATEGIES & ACTION PLANS – COMPANION VOLUME 2

Outline of lessons learned from applying the Guidelines to mainstreaming biodiversity in urban planning processes and practices in selected Global South countries

Table of Contents

Introduction

This document serves as companion volume to the *Guideline for an Integrated Approach in the Development and Implementation of National, Subnational and Local of Biodiversity Strategies and Action Plans* published by the Secretariat of the Convention on Biological Diversity in 2017. It provides supplementary information for the Guideline by outlining lessons learned about vertical integration and mainstreaming biodiversity into planning processes in selected Global South countries through the INTERACT Bio – Integrated Action for Biodiversity Project.
INTERACT Bio is funded by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) through the International Climate Initiative (IKI). This project's main focus is to support the implementation of National Biodiversity Strategy and Action Plans (NBSAPs) through the mainstreaming of biodiversity objectives in planning and development processes across selected city-regions in 3 biodiverse Global South countries, namely Brazil, India and Tanzania.

Dar es Salaam is a major Tanzanian city and commercial port on the Indian Ocean coast. The city comprises 1,393 km^2 of land mass within a zone of significant marine, coastal and coastal forest biodiversity, with eight offshore islands. It is known as the economic, industrial, commercial, trading, educational, cultural and transportation hub of Tanzania. However, the City has experienced rapid urban growth over the past three decades, which has caused the deterioration of the living environment and inefficient and ineffective service delivery to city dwellers (ICLEI, 2018).

This volume seeks to provide guidelines for biodiversity mainstreaming and integration at the national, subnational, and local levels of government within a Global South context, based on the lessons and practical experiences of mainstreaming biodiversity vertically in Brazil, India and Tanzania.

The INTERACT Bio project provided an opportunity to implement mainstreaming on the ground in the three project countries. This on the ground and practical application and implementation of integration across and within government in the selected project countries, highlighted a rich tapestry of approaches and practices. It showed that the local context determines and shapes the application of vertical integration processes and mainstreaming entry points.

This document starts by briefly explaining why vertical integration is important, and how mainstreaming was applied in the INTERACT Bio project. This is followed by an overview of the status of Biodiversity Strategy and Action Plan (BSAP) development in these three countries at national and subnational government levels. It also visually illustrates the decision-making process in each of the three countries by means of process flow diagrams of policy versus practice.

Why is vertical integration important?

Nature in the developing context is of paramount importance. Communities' dependence on natural resources are becoming more apparent, perhaps now more than ever, as climate change continues to severely impact the lives of many. Urban communities are particularly vulnerable to the impacts of the interconnected global crises: climate change, biodiversity loss, pollution and health. Recent studies indicate that crossing the threshold for inducing enduring and self-sustaining alterations to specific planetary systems may occur at or before a 1.5°C increase in global temperatures, expected to happen by the early 2030s. Many economies are ill-prepared for the repercussions: the potential activation of a network of interconnected socio-environmental risks could accelerate climate change by releasing carbon emissions and magnifying associated consequences, making populations vulnerable to climate fluctuations. Societies' collective capacity to adapt may be overwhelmed given the magnitude of potential impacts and the substantial investment needed in infrastructure, leaving certain communities and nations incapable of absorbing both immediate and long-term effects of swift climate shifts (WEF, 2024). The reality is that with a growing population in contexts where development is a priority, pressures on nature and biodiversity increase exponentially. The global population is projected to increase by nearly 0.7 billion people over the next decade (WEF, 2024). Uncontrolled demands for settlements, particularly new developments in urban areas, are contributing to the destruction and loss of key ecosystems and the associated goods and services. Agricultural expansion stands as the most prevalent form of land-use alteration, encompassing over a third of terrestrial land masses dedicated to crop cultivation or animal husbandry.

This expansion, in tandem with urban area doubling since 1992 and unprecedented infrastructure growth fueled by rising populations and consumption, has primarily encroached upon forests, notably old-growth tropical forests, wetlands, and grasslands. Within freshwater ecosystems, a convergence of threats including land-use modification, water extraction, exploitation, pollution, climate shifts, and invasive species persists. Human activities exert significant and widespread impacts on marine environments, marked by direct exploitation, notably overfishing, pollution from both land and sea sources, alteration of land and sea use, including coastal development for infrastructure and aquaculture (IPBES, 2019).

What is the difference between vertical integration and biodiversity mainstreaming?

Vertical integration seeks to advance the subnational and local implementation of national NBSAPs, provide guidance on how to make best use of subnational and local authority knowledge in compiling and implementing NBSAPs, and coordinate planning, governance and monitoring mechanisms between different levels of government to optimize synergies (CBD, 2017).

Biodiversity mainstreaming is a process of integrating and internalising of biodiversity concerns – potentials, needs and risks – fully reflected in development policies, plans and activities and in all human behaviour in order to achieve sustainable outcomes for both biodiversity and development. Biodiversity mainstreaming involves a mix of state-, market-, technology- and citizen-led action (IIED 2017; Cowling et. al. 2009).

A significant portion of the world's biodiversity is located in developing countries (Adenle et al. 2015). These countries, however, face many challenges and are under intense development pressure due to poverty, weak institutions and high economic growth rates linked to rapid infrastructure development (Walde et al. 2019). Furthermore, the lack or loss of momentum on outreach, and funding for biodiversity especially in the Global South could see continued declines in biodiversity and the health of ecosystems (Adenle et al. 2015). This continual loss of biodiversity, degradation of ecosystems and subsequent reduction in ecosystem goods and services is one of the greatest global challenges faced by governments and civil society.

Existing conservation action in developing countries is not providing effective protection to mitigate biodiversity loss (Adenle et al. 2015). It is important to sustain high biodiversity levels as it provides many ecosystem services that can benefit humans both directly and indirectly. Therefore, there is an urgent need for increased biodiversity conservation and management in these countries.

Using the INTERACT-Bio project as an example for mainstreaming biodiversity

The Integrated subnational action for biodiversity (INTERACT-Bio): Supporting implementation of National Biodiversity Strategy and Action Plans through the mainstreaming of biodiversity objectives across city-regions, the project was designed for improving the utilization and management of nature within fast-growing cities and the regions surrounding them. The overarching project aim or outcome was that biodiversity and ecosystem management in the three-model city-regions in Brazil, India and Tanzania was recognized as a cross-sectoral task (horizontal integration) and as such integrated in their sub-national Biodiversity Strategy and Action Plans (BSAPs). Simultaneously, those sub-national BSAPs contributed to the NBSAPs of their countries, in which the sub-national level was increasingly acknowledged as an actor with its own targets, as well as implementation partner for national goals (vertical integration). Therefore, by supporting the implementation of NBSAPs through the mainstreaming of biodiversity objectives across city-regions, the project was aiding the project nations and cities in vertical integration for biodiversity mainstreaming and decision-making. The project duration was four years spanning from January 2017 to December 2020 and the project countries included Brazil, India and Tanzania which will be discussed further on in this guideline.

The project aimed to provide expanding urban communities in the Global South with nature-based solutions and associated long-term benefits. It enabled governments at all levels, from local to national, to integrate their efforts for mainstreaming biodiversity and ecosystem services into core subnational government functions such as spatial planning, land-use management, local economic development and infrastructure design. This mechanism will also supported by demonstration initiatives and outreach, among others.

The city-regions

Brazil, India and Tanzania each have globally unique biodiversity, but complex development challenges are widely manifested in their fast-growing cities and surrounding regions. These three countries are all signatories to the Convention on Biological Diversity (CBD) and are considered frontrunners in implementing the Aichi Biodiversity Targets. The project presents these three countries with a unique opportunity to enable deeper engagement of, and contribution by, their subnational governments in implementing their current, and shaping their future National Biodiversity Strategy and Action Plans (NBSAPs). In each project country the project is implemented in three city-regions: in Brazil, Campinas, São Paulo State and Belo Horizonte and Londrina; in India, Kochi, Kerala State and Mangaluru and Panaji; and Dar es Salaam, Arusha and Moshi in Tanzania. All these city-regions are fast-growing cities located within areas of globally unique biodiversity and complex development challenges.

Figure 1.2 Map of city-regions in the three project countries

Guidelines at a glance

The Guidelines are intended to be a simple, easy but effective supporting tool for national, subnational and local governments to use in order to develop and enhance its biodiversity planning and management. The technical focus of the Guideline will be on lessons learned and approaches adopted from parties in the Global South, drawing comparatives with the Global North towards the development of a comprehensive guide to vertical integration.

Target audience

The primary target audience of these Guidelines are government agencies responsible for biodiversity conservation, planning and management, at the national-, subnational-, city-region and local levels. Their networks of partners may also benefit from the Guidelines. The Guidelines are intended to have applicability for governments worldwide. The configuration of subnational levels of government will differ according to the constitutional model and system of governance that applies to a particular country. Subnational and local authorities are governance units at various levels within countries that are accountable to national governments to varying degrees. For the purposes of these Guidelines:

- "Subnational governments" refers to the level of government immediately below the national/federal level (including states, provinces, domains, prefectures, territories, regional and semiautonomous administrations/ governments); and
- "Local authorities" include all levels of government below the subnational, national or federal level (including districts, counties, municipalities, cities, metropolitans, towns, villages, communes etc.).

Furthermore, the Guideline is aimed at capacitating relevant government officials responsible for biodiversity planning and management including and not limited to town planners, engineers, environmental officers, administrators, department managers and policy/decision makers. The guideline also seeks to leverage and catalyse external and private sector involvement and empowerment by showcasing an all of society approach through on the ground cases.

How to use the guidelines

It is important to view these guidelines as an add-on to existing instruments and institutions at national, subnational and local government level. These guidelines are not meant to replace existing policies, strategies and plans but rather to act as a subsidiary to existing efforts. It is vital for spheres of government to understand its context, and in so doing, what the challenges and opportunities are for adopting a holistic approach to national and subnational biodiversity planning and decision making.

Best case methods and approaches for biodiversity management and planning

According to the Secretariat of the Convention on Biological Diversity (2011), "Mainstreaming" means the integration of the conservation and sustainable use of biodiversity in both cross-sectoral plans such as sustainable development, poverty reduction, climate change adaptation/mitigation, trade and international cooperation, and in sector-specific plans such as agriculture, fisheries, forestry, mining, energy, tourism, transport and others. It implies changes in development models, strategies and paradigms.

Mainstreaming of biodiversity into sectors (and vice-versa) can include strategies to:

- Reduce the negative and enhance the positive impacts that the sector has on biodiversity.
- Enhance, or to restore biodiversity and ecosystem services.
- Secure and promote local communities' access to and benefits from the use of biodiversity; and to enable their participation in the design and implementation of biodiversity management policies and practices

Integrating biodiversity into National Strategies, Plans and Programs

Mainstreaming at the national level involves the inclusion of biodiversity concerns in policies and processes in various sectors and activities with national and society-wide impact. While mainstreaming at this level will be the most effective in promoting the integration of biodiversity concerns into specific sectors and in different tiers of government, it may be the most difficult to achieve. Success may be dependent on the endorsement and support of the NBSAP and of its principles at high levels of government.

Integrating biodiversity into Sub-National Level Strategies, Plans & Programs

Sub-national strategies, plans and programs are an important entry-point for mainstreaming as decisions at this level are likely to have more direct impact on ecosystems. The greater proximity of sub-national government structures to action on the ground has been one of the rationales behind some national government's delegation, or decentralization, of natural resource management authority to lower levels of government.

Environmental Assessments

Integrating Environmental Impact Assessment (EIA) requirements into development planning can be a powerful approach to mainstreaming. This can be done by incorporating the findings of EIAs into planning and/or by using Strategic Environmental Assessments to guide planning processes. Strategic Environmental Assessments identify and evaluate the possible consequences of policies, plans or programs, before they are implemented, in order to ensure that they balance economic, social, and environmental objectives. It is particularly useful in drawing attention to interrelated ecosystem services and in addressing trade-offs between them.

The CBD Ecosystem Approach

The CBD's ecosystem approach provides a framework of 12 principles that can be used to guide planning processes at national and sub-national levels in order to ensure that policies, plans and programs consider biodiversity alongside economic and social objectives. With its provisions for the accommodation of different uses and interests in biodiversity, for the recognition of the interconnectedness of ecosystems, and for stakeholder participation and adaptive management, the ecosystem approach is an effective guide for mainstreaming.

Spatial Planning

Spatial plans provide an important opportunity for mainstreaming biodiversity into sectoral and cross-sectoral plans as they determine where economic activities and infrastructure developments are established.

Dealing with specific spatial areas and the activities undertaken within them, spatial planning also provides for the coordination of different sectors and tiers of government. Many countries have begun integrating environmental and sustainability objectives into its spatial plans, thereby opening a door for biodiversity. In addition, having policies relating to biodiversity and incorporating them into urban city planning is key to securing nature in cities.

Having biodiversity spatial plans incorporated into Integrated Development Plans, Spatial Development Frameworks and other planning tools would be highly beneficial. Local land use planning processes, and the integration of spatial conservation assessments in these processes, have been proposed as an effective approach to conserving biodiversity outside of protected areas.

Framework: Two-way integration guidelines for national, subnational and local authorities

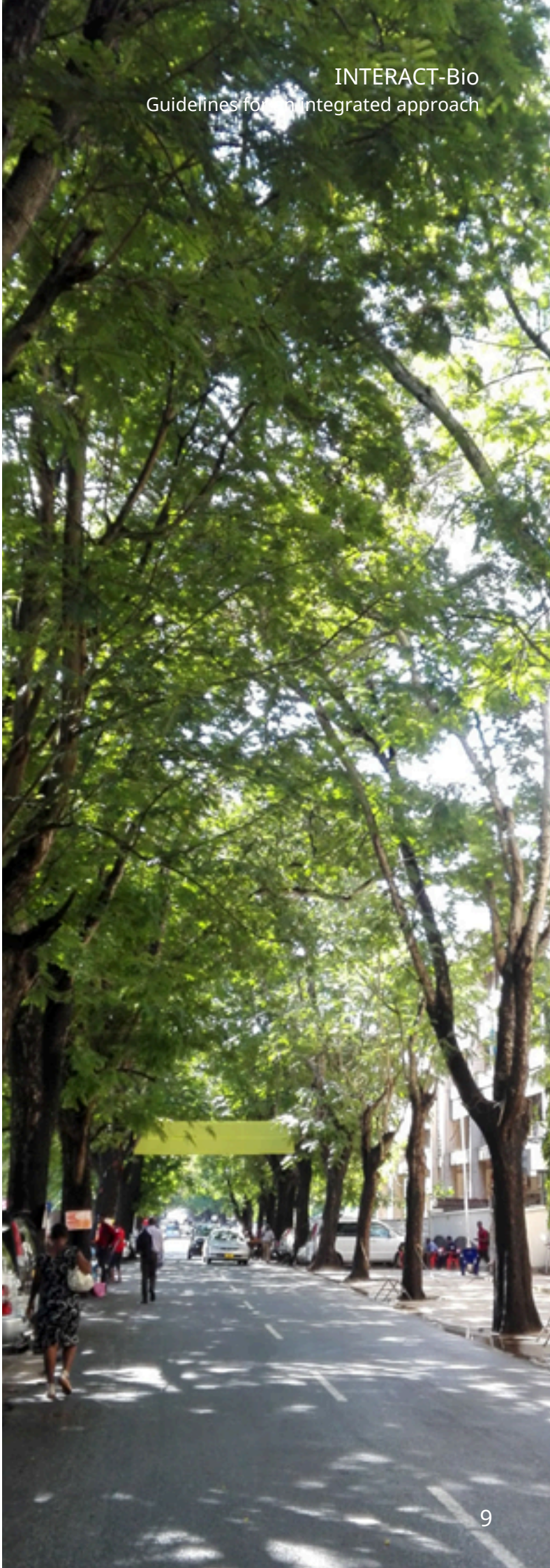
Successful implementation of NBSAPs at subnational and local levels requires vertical integration of strategic planning and implementation, coordination (i.e. agreement on common priorities and on division of responsibilities and labour) and cooperation or collaboration (i.e. development of joint work plans, working together) between the various levels of authority.

Thirteen general areas for action to promote such integration, coordination and cooperation are identified and presented in this chapter, and guidance is set out under each of these. Inasmuch as some approaches and activities are applicable to more than one of the thirteen areas for action, there is some level of repetition and overlap in their content.

To facilitate access to the most relevant guidance to each situation, the thirteen areas and their scope are summarized in the list below, and users may proceed to the section appropriate to the situation and challenge encountered:

- Specifying and institutionalising collaboration and coordination in policy and strategy: The role of subnational and local authorities can be set out and reported on in policy and strategy documents and reports related to biodiversity, including NBSAPs and National Reports.
- Clarifying mandates, institutional roles and responsibilities: Roles and responsibilities of subnational and local authorities on biodiversity can also be established through basic legal frameworks at all levels of governance, as well as norms, regulations and corporate strategies and policies for public agencies and bodies.

- Establishing institutional coordination and cooperation mechanisms and forums: Whether or not the roles of different levels of government are codified in formal documents, subnational implementation can be strengthened through appropriately designed councils, agencies, permanent or regular consultative bodies and even informal forums.
- Coordinating strategies to ensure alignment with NBSAP and Aichi Biodiversity Targets: Each level of government can define appropriate strategy and action aligned to relevant guidance of the CBD, such as its programmes of work and cross-cutting issues, its tools and guidelines, its COP decisions and its Strategic Plan and Aichi Biodiversity Targets.
- Planning for action together: When Parties plan their national strategies and action plans in coordination with subnational and local authorities or their representative bodies, institutional capacity is built for coordination. Agreeing on indicators appropriate to the different levels can help to coordinate decision-making between all levels.
- Cross-sectoral planning and cooperation: Mainstreaming biodiversity into the planning of sectoral programmes and projects, particularly those with potential biodiversity impacts, and cooperation among sectoral agencies at the operational level, offers indirect yet effective opportunities for joint implementation of NBSAPs.
- Cooperation across political borders: Because ecosystems and nature do not follow political borders, cooperation between national, subnational and local authorities on common assets such as wetlands, river basins and forests, or protection of migratory or charismatic species is necessary for managing and reducing the ecological footprint impact across borders and effective coordination of trans-boundary actions in achieving NBSAP targets.
- Facilitating consultation and participation: Independent of other aspects of coordination and collaboration, actions by national authorities to ensure consultation and involvement of subnational and local authorities, or their representative bodies, will encourage and support implementation at all levels.



- Financial support and incentives: Very often, subnational and local authorities do not have access to dedicated financial resources to work on biodiversity, and even less to coordinate with other levels of government. National governments are encouraged to identify funding avenues and incentives towards supporting subnational and local authorities in the implementation of NBSAPs. Financial support and incentives provide a direct and effective way to ensure coordination and collaboration at all levels.
- Technical support and non-financial incentives: The provision of technical support and other non-financial forms of recognition (awards, competitions, acknowledgement through media or visibility, etc.) by national authorities or other relevant organizations also facilitates action by subnational or local authorities for biodiversity.
- Capacity building and sharing lessons learned: Many Parties and their national authorities already offer web-based or in-person training opportunities, or compilations of effective practices, for subnational and local authorities on the implementation of NBSAPs, whether of their own production or by contracting appropriate institutions or bodies.
- Cooperation on science, information, monitoring and evaluation: Effective NBSAPs and related plans or programmes require a solid scientific base of data in order to define goals and targets, and to develop a system for monitoring and evaluating their implementation. Subnational and local authorities often possess valuable information and can contribute with scientific and technical data. With a common scientific basis, vertical coordination is naturally easier and more effective.
- Communication and awareness raising: Coordination across levels of government in implementing NBSAPs requires specific messaging, joint positioning and production of communication materials, so that all levels of government are represented, with their concerns and contribution acknowledged.

GoLS vertical integration evaluation

An assessment conducted by the Group of Leading Subnational Governments toward Aichi Biodiversity Targets (GoLS, 2018) evaluating vertical integration amongst its members, delivered interesting results. The exercise aimed to understand the extent to which vertical integration for biodiversity management and decision-making, particularly related to NBSAP and S'LBSAP development and implementation. A survey questionnaire posed several questions to GoLS members (Aichi: Japan, Campeche: México, Catalonia: Spain, Gangwon: Korea and Québec: Canada), the results of which indicate national, subnational and combination policy, planning and function across the thirteen general areas for action (A – M) articulated above. The results in the table below highlights the extent to which the thirteen general areas for action (A – M) are present in biodiversity management, planning, decision-making, roles and responsibilities of each GoLS member.

The results in the table below substantiates the reality that biodiversity conservation management and planning is pioneered at the local and subnational level, with approximately 59% of interventions being driven by regions, cities and towns.

INTERVENTION TYPE (areas of action)	NUMBER OF INTERVENTIONS PER LEVEL OF GOVERNMENT		
	NATIONAL	SUB-NATIONAL	MUTUAL
A *(A & D)*	3	0	8
B *(B)*	4	1	
C *(C, E, G, K, L)*	6	40	1
D *(F, H, I, J, M)*	31	41	5
TOTAL	**44**	**82**	**14**

Case studies

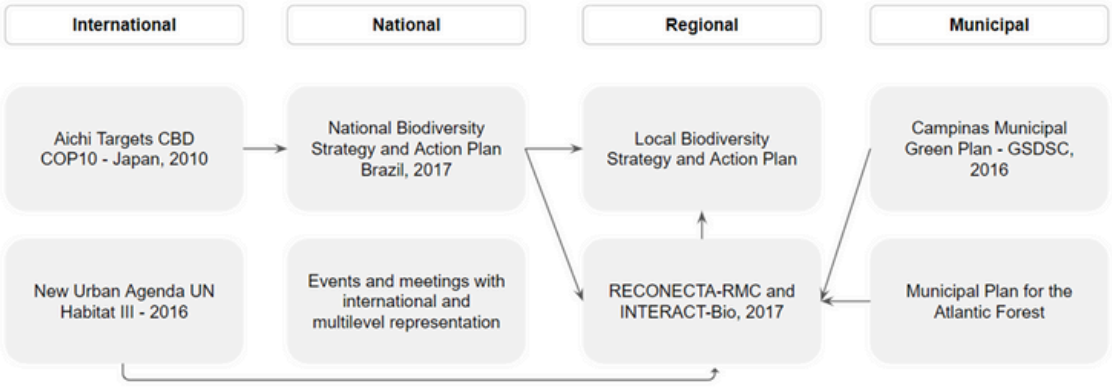
The development of the Guidelines included the compilation of related case studies from the three INTERACT-Bio model cities. Project teams were requested to share the status of vertical integration within their respective regions, and how this is achieved and embedded in biodiversity management, planning and decision-making.

This section highlights the submission from Campinas (Brazil), Kochi (India) and Dar es Salaam (Tanzania).

Brazil

Brazil has been a signatory to the Aichi Targets since 2010 when these were proposed at CBD COP-10 in Japan. This political compromise has unfolded on the development of the National Biodiversity Strategy and Action Plan (NBSAP) in 2017, establishing goals and strategic pathways to be followed until 2020. Also central for national strategies towards biodiversity conservation was the New Urban Agenda adopted at Habitat-III in 2016. These national compromises were fundamental for promoting the biodiversity conservation agenda to Brazilian municipalities, encouraging new policies and endorsing previously established initiatives.

Campinas, the model city of INTERACT-Bio in Brazil, established its Municipal Green Plan in 2016, through the Secretariat for Green and Sustainable Development (SGSD), also integrating the Atlantic Forest Municipal Plan to its conceptual framework. The abovementioned international compromises signed by the federal government increased the importance of these initiatives to the achievement of strategic goals. Despite being efficient to guide municipal action and to attend specific local goals, it became evident that for reaching the Aichi Targets and Habitat III goals, these policies would have to strengthen and articulate action not only at the municipal level, but engage with the region to set more efficient policy and management of resources.



To attend this call for regional action, the Secretariat for Green and Sustainable Development of Campinas initiated an effort to engage the municipalities of the Metropolitan Region of Campinas (MRC) to take part and plan a policy to orient activities, establish cooperation goals and methods as well as priority fronts of action. As a result, in 2017 the RECONECTA-RMC program was submitted to the Metropolitan Agency of Campinas (Agência Metropolitana de Campinas-AGEMCAMP) and was officially established, institutionalizing mandates and roles for cooperation through Technical Cooperation Agreements signed by the 20 mayors of the MRC. INTERACT-Bio engaged in the initiative as a partner and since then has supported implementation and facilitation of activities, such as the ongoing meeting of the technical body of the project.

RECONECTA-RMC was a milestone to the region as it established Working Groups commissioned for priority fronts of action aiming at developing guidelines for the implementation of policies on: 1. Linear Parks; 2. Urban afforestation; 3. Ecological Corridors; 4. Regional Wild Fauna; 5. Regulation, Compensation and Inspection; and 6. Communication and Articulation. This effort was enhanced by ICLEI that alongside the development of these guidelines, engaged with technicians from the MRC in a participatory effort to analyse Ecosystem Services (ES) provision sites, as well as pressure points where such services were compromised.

This resulted in stronger horizontal integration between municipalities operationalized through workshops for collectively identifying the Ecosystem Services of the region. The methodology was based on the proposal of Burkhard et al. (2012) and consisted of the analysis of land use categories and attribution of value corresponding to the ES provided. The main goal was to answer the question: “What is the current capacity of Ecosystem Service provision per land use category?”. For scoring ES capacity, a scale of 0 to 3 was used, encompassing zero (0), low (1), medium (2) and high (3) capacity. This score generates a data matrix that is later spatialized in maps. This assessment resulted in the development of the Ecosystem Services Illustrated Map, as well as an enhanced understanding of the region’s potentialities and challenges.

The joint effort from the Working Groups of RECONECTA-RMC and the ES mapping led by ICLEI were further systematized both by SGSD and ICLEI representatives and consolidated as a formal proposal to AGEMCAMP, the Connectivity Area. The goals and strategies proposed in this document were submitted and successfully included on the Preliminary Tender Document to be evaluated and potentially included to the Priority Areas for Metropolitan Action of the Integrated Urban Development Plan (IUDP - Plano de Desenvolvimento Urbano Integrado – PDUI) of the MRC.

This was considered a crucial step for regional management of biodiversity and nature as it established mechanisms and functions for the implementation and enhancement of connectivity between green areas of the region, facing the challenges of land use change, one of the biggest threats to biodiversity conservation in Brazil. As an exemplary result of these efforts, Demonstration Projects were implemented in 2021, with the installation of Canopy Wildlife Crossings at three roads on different areas of the region. ICLEI also offered technical support, alongside a consultancy firm, for the development of the MRC LBSAP, based on the already existing and above-mentioned pillars of action of the RECONECTA-RMC Program.

The development of the LBSAP included further analysing the actors and political scenario, and resulted in the establishment of the Action Plan for the Implementation of the RMC Connectivity Area (LBSAP).
The Plan was developed in a participatory manner through targeted listening, questionnaires, and facilitation of virtual workshops, engaging around 80 different actors. It resulted in the consolidation of 19 strategic objectives, distributed among the six pillars of action, and broken down into goals, actions and indicators. In order to ensure the continuity and effectiveness of the process in the long term, the Plan identified a series of future recommendations, including localising goals and indicators to enable effective monitoring, as well as ensuring conditions for the social control of the actions outlined in the implementation pillars.

To further endorse these processes of integration at the regional level, ICLEI hired two consultancies with technical expertise to identify and describe Intercity Environmental Compensation Mechanisms, to support the integrated management of natural resources. In this sense, the consultancies reviewed the Metropolitan Statute (Law 13.089/2015) a nationally determined law that regulates the establishment of metropolitan areas and provides general guidelines for regional public policies underpinning the shared management of municipal responsibilities. Through these consultancies, it was possible to establish recommendations and strategies for the implementation of the integrated urban development plan, an instrument provided for in Article 7 of the aforementioned Law that establishes the guidelines for strategic territorial development and structuring projects for metropolitan regions and urban agglomerations.

Another result of the consultancies was the production, in 2022, of the Technical Note with Recommendations for the Integration of Ecosystem Services into the National Urban Development Policy (PNDU). The document presents recommendations for ecosystem services to be integrated into urban development and offers reflections on supra-municipal planning and multi-scale territorial analysis strategies.

Understanding that fulfilling these recommendations will allow for the comprehensive consolidation of the strategic objectives of the LBSAP, which in turn will ensure the sustainability of the initiative, in 2023 ICLEI offered further assistance to conduct an assessment on the status of the implementation of the Action Plan in all 20 municipalities of the RMC, to then publicize the data and facilitate social control. As of 2024, strategies to advance with the achievement of the strategic objectives are being structured alongside AGENCAMP. Furthermore, an alignment of the LBSAP with the Global Biodiversity Framework was conducted, in an effort to verify synergies and localize indicators. To further promote vertical integration, in the last years ICLEI has organized and taken part in different events and workshops focused on systematizing perspectives from Brazilian actors, especially local governments, regarding key points for the Post-2020 Biodiversity Framework. More recently, since the GBF's approval in 2022, ICLEI has offered technical support in the process of updating Brazil's NBSAP, ensuring framework conditions for subnational actors.

The efforts described above have been uploaded to the CitiesWithNature platform, where local governments are provided with the possibility to report efforts related to biodiversity conservation as well as to access information shared by other cities regarding the theme. Also key for forecasting these efforts, the INTERACT-Bio website provides materials and databases on the project's activities and key deliverables, as well as further information about other cities of the project.

India

India became a Party to the CBD in 1993, and prepared its first NBAP entitled "National Policy and Macro Level Action Strategy on Biodiversity" in 1999, (referred to as Strategy (1999) hereafter) to give effect to its commitments under the CBD. The Strategy (1999) was prepared after extensive consultations with stakeholders at all levels. The Strategy was revised and updated into the NBAP (2008)) to bring the biodiversity agenda in alignment with the NEP (2006). This revised version of NBAP was further updated with Addendum 2014 to NBAP (2008) in order to integrate the Strategic Plan for Biodiversity 2011- 20 (SPB 2011-20) in the NBAP which was adopted by CoP 10, held at Nagoya in the Prefecture of Aichi in Japan.

Legislative framework for vertical integration

The Biological Diversity Act (2002) recognises India's richness in biological diversity and associated traditional and contemporary knowledge systems, acknowledges its commitment to implement the CBD and provides for "conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources and for matters connected therewith or incidental thereto."

The Act creates a three-tier architecture for its implementation at national, state and the local levels. This architecture coordinates the implementation of the NBAP in collaboration with line agencies and other non-government stakeholders.

Figure 1 shows the three-tier structure and links with the line ministries/ departments and other stakeholder groups. The nodal ministry at the national level is the Ministry of Environment, Forest and Climate Change. The nodal department at the national level is the National Biodiversity Authority. The State Biodiversity Boards exist at the state level and the Biodiversity Management Committee is present at the local level.

Vertical integration of the NBAP is highlighted through the three levels of governance. The NBAP has been developed at the national level. NBAP integration in state plans has been secured through the State Biodiversity Strategy and Action Plans (SBSAPs). These were prepared by the states following an extensive process of consultations with stakeholders. At the local level, the LBSAPs reflect local level ground realities in the implementation of NBAP. An LBSAP includes a vision and linked focus areas which provide overarching direction to the plan. The vision and focus areas are supported by goals and actions which are implemented over a specific time period to realise the LBSAP vision. This gives cities a structured tool and process to plan, and allocate resources, for biodiversity and urban nature at the level of their jurisdiction. This ensures an inclusive and decentralised approach to the governance and management of biodiversity.

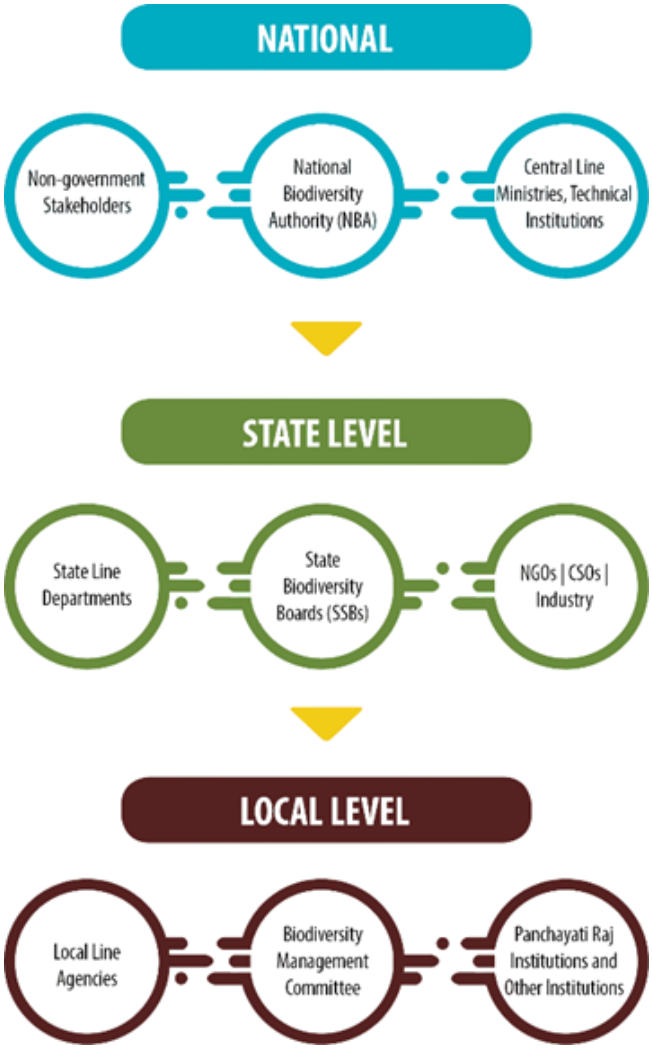


Figure 1 Implementation architecture for biological diversity (Source: MoEFCC, 2019)

The National Biodiversity Authority (NBA) was established by the Central Government in 2003 to implement India's Biological Diversity Act (2002). The NBA is a Statutory Body and it performs facilitative, regulatory, and advisory functions for the Government of India on issues of conservation, sustainable use of biological resources and fair and equitable sharing of benefits arising out of the use of biological resources.

The State Biodiversity Boards (SBBs) focus on advising the State Governments, on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing of the benefits arising out of the utilization of biological resources. The SBBs also regulate, by granting of approvals or otherwise upon requests for commercial utilization or bio-survey and bio-utilization of any biological resource by the Indians. The local level Biodiversity Management Committees (BMCs) are responsible for promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity.

The NBAP has defined 12 National Biodiversity Targets (NBTs) which correspond to the Aichi Targets. One of the components that is identified for achieving the NBTs is the People's Biodiversity Register. The Register contains comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them.

To illustrate horizontal integration, the example of People's Biodiversity Registers is showcased. These registers form a part of NBT 1 (By 2020 a significant proportion of the country's population, especially the youth, is aware of the values of biodiversity and the steps they can take to conserve and use it sustainably) and NBT 11 (By 2020, national initiatives using communities' knowledge relating to biodiversity are strengthened, with the view to protecting this knowledge in accordance with national legislations and international obligations). NBT 1 corresponds to Aichi Target 1 and NBT 11 corresponds to Aichi Target 11.

Developing the PBR for each local body is the responsibility of the Biodiversity Management Committee. The same is validated by the State Biodiversity Board. The state-wise status of the PBRs is compiled by the State Biodiversity Board (for reporting the updates with regard to NBT1 and NBT 11). These state-wise reports are compiled to develop the national level report by the National Biodiversity Authority and used to report the status of achievement of the relevant NBTs and the relevant Aichi Targets.

Mainstreaming Biodiversity Conservation into Urban Planning: An example of Kochi

Extensive awareness generation activities, capacity building and detailed interactions with elected representatives and officials of Kochi Municipal Corporation has helped the city to understand the significance of urban biodiversity. Kochi Municipal Corporation has been regularly making budgetary provisions for several initiatives on biodiversity conservation in their annual budget. This amount was approximately INR 220 million or c.a. € 2.7 million for 2018-19; INR 280 million or c.a. € 3.1 million for 2019-20; INR 221.05 million for 2020-21; INR 273.3 million for 2021-22; INR 183.5 million for 2022-23 and INR 231.0 million for 2023-24. Activities planned include development of an action plan for Vembanaad Lake and the backwaters, supporting conservation of mangroves, promoting rooftop gardens, canal restoration, establishment of butterfly gardens in selected schools in the city, open green space management, development of sacred grove and awareness programmes. The city has developed its Local Biodiversity Strategy and Action Plan, City Biodiversity Index and People's Biodiversity Register.

Development of LBSAP of Kochi

Developed under the INTERACT- Bio project, the LBSAP of Kochi aims at integration of NBAP into the city plans. The LBSAP of Kochi, developed through extensive primary and secondary data collection and consultations is in line with the SBSAP of the state of Kerala and the NBAP of India. The 12 National Biodiversity Targets (NBTs) have also been prioritised, based on the existing situation and city interest and actions developed in the LBSAP in order to help meet these NBTs.

A participatory and scientifically informed approach was followed for the development of the LBSAP of Kochi (Figure 2). Consultation meetings both at the city and ward levels were initiated since the inception of the project in 2017. Detailed meetings with the specific intention of developing the LBSAP were conducted between March- July 2019. At the city level workshop, major ecosystems (Focus Areas) 2 within the city were identified and the current health status of those ecosystems was discussed and ranked as very good, good, moderate, poor, and very poor. Following this, prioritization of the drivers that impact the health of the ecosystems was carried out. This information formed the foundation for the development of the LBSAP. Various ward level meetings followed the city level meetings and consultations. During the ward level meetings, the drivers impacting the health of the ecosystem and the indicators for each ward cluster were subjected to detailed discussion.

Extensive discussions were carried out with the participants during these meetings. A Technical Working Group (TWG) was constituted to validate the data collected and formulate goals and actions for inclusion in the LBSAP. The committee was composed of experts from various disciplines including Natural Resource Management, Ecology, Marine Sciences, Anthropology and Sociology. While selecting the TWG members, emphasis was given to each expert's familiarity with the city and experience of working on biodiversity related issues in the city. This aided a focused discussion on the issues regarding biodiversity conservation in the city and supported formulation of a relevant action plan for the biodiversity of Kochi.

Linking the LBSAP to NBTs

Through the consultation meetings and detailed discussions, the NBTs were prioritised with regard to the needs of Kochi city. In addition, synergies between goals in LBSAP of Kochi and the National Biodiversity Targets were also identified. The synergy scores and KMC's priority scores are summarized in Table 1. The NBT-LBSAP synergy score has been prepared by attributing the nature of impact (direct, indirect, or no impact) of biodiversity goals in contributing to the NBTs. The biodiversity goals were developed in consultation with the Technical Working Group, based on the drivers impacting ecosystem health identified during the consultation meetings. The nature of the impact of biodiversity goals was arrived at after detailed deliberations and multiple iterations.

The synergy score was given a score of 0 in absence of any direct impact, 0.5 in case of an indirect impact and 1 in case of a direct impact on NBT contribution. The total score for each NBT was calculated by summing up individual scores obtained for each biodiversity goal. The final score was decided by ranking the scores on a scale of 1-12. The NBT which scored the highest got the highest rank (1) and the least scored NBT got the lowest rank (12). The priority score for the city was prepared through discussions with the relevant stakeholders (councillors and subject experts). The synergy scores were finalised on an ascending scale of 0-10 (with regard to the significance of the issue for the city). The maximum synergy was given a score of 10 and the minimum synergy was given a score of 1. No synergy was given a score of 0.

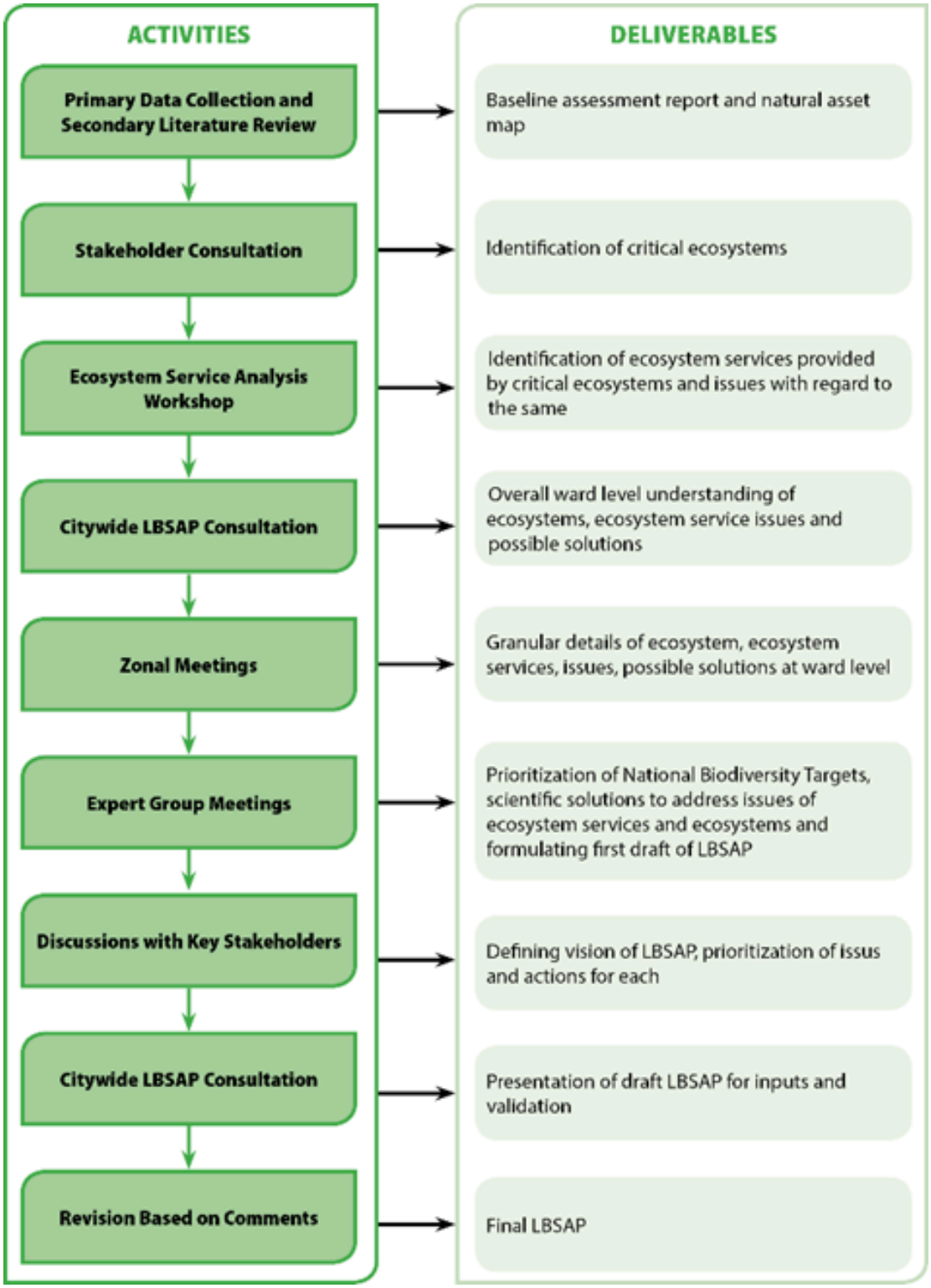


Figure 2: LBSAP development process

Table 2: NBSAP-LBSAP synergy scores and priority scores of Kochi Municipal Corporation (KMC)

		NBAP-LBSAP Synergy score Rank (Highest-1, Lowest-12)	KMC priority score (Highest-10, Lowest-1)
Target 1	By 2020 a significant proportion of the country's population, especially the youth, is aware of the values of biodiversity and the steps they can take to conserve and use it sustainably	4	7
Target 2	By 2020 values of biodiversity are integrated in national and state planning processes, development programmes and poverty alleviation strategies.	2	5
Target 3	Strategies for reducing rate of degradation, fragmentation and loss of all natural habitats are finalised and actions put in place by 2020 for environmental amelioration and human well-being	1	9
Target 4	By 2020, invasive alien species and pathways are identified and strategies to manage them developed so that populations of prioritised invasive alien species are managed.	7	7
Target 5	By 2020, measures are adopted for sustainable management of agriculture, forestry and fisheries	5	6
Target 6	Ecologically representative areas under terrestrial and inland water, and coastal and marine zones, especially those of particular importance for species, biodiversity and ecosystem services and conserved effectively and equitably, based on protected area designation and management and other area-based conservation measures are integrated into the wider landscapes and seascapes, covering over 20 % of the geographic area of the country by 2020.	10	8

Table 2: NBSAP-LBSAP synergy scores and priority scores of Kochi Municipal Corporation (KMC) (continued)

		NBAP-LBSAP Synergy score Rank (Highest-1, Lowest-12)	KMC priority score (Highest-10, Lowest-1)
Target 7	By 2020, genetic diversity of cultivated plants, farm livestock and their wild relatives, including other socio-economically as well as culturally valuable species, is maintained and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	9	2
Target 8	By 2020, ecosystem services, especially those relating to water, human health, livelihoods and well-being are enumerated and measures to safeguard them are identified, taking into account the needs of women and local communities, particularly the poor and vulnerable sections.	3	7
Target 9	By 2015, Access to Genetic Resources and the Fair and Equitable Sharing of benefits arising from their utilisation as per the Nagoya protocol are operational, consistent with national legislations.	12	0
Target 10	By 2020, an effective, participatory and updated national biodiversity action plan is made operational at different levels of governance.	6	3
Target 11	By 2020, national initiatives using communities' knowledge relating to biodiversity are strengthened, with the view to protecting this knowledge in accordance with national legislations and international obligations.	11	4
Target 12	By 2020, opportunities to increase the availability of financial, human and technical resources to facilitate effective implementation of the Strategic Plan for Biodiversity 2011-2020 and the national targets are identified and the strategy for resource mobilization is adopted.	8	4

Project Steering Committee: ensuring vertical and horizontal integration

The Interact Bio project in India has a Project Steering Committee (PSC), with representation from all three levels of governance. The PSC is headed by the Special Secretary/ Additional Secretary, Ministry of Environment, Forest and Climate Change, Government of India. Representation from the state level is ensured by the relevant State Biodiversity Boards and the local level representation is ensured by the project cities. Table 2 details the same. The role of the PSC, which meets once in every six months, includes:

- Oversee implementation of the programme;
- Review project progress and finances;
- Approve planned project activities; and
- Provide support to resolve issues in implementation.

Table 3: Details of Project Steering Committee

Special Secretary/Additional Secretary, MoEFCC	**Chairperson**
Executive Director, ICLEI SA	Member
Chairman, NBA	Member
Advisor, MoEFCC	Member
Member Secretaries of 4 concerned SBBS	Member
Representatives of 4 city municipal corporations	Member
Secretary, NBA	Member Secretary

In addition, the National Government schemes are implemented on the ground by the state government agencies, and local government agencies. Most schemes having a direct connection with biodiversity or its components are implemented through a mission approach to achieve the desired results. Vertical integration of these missions is secured by collaborative mechanisms of the Central and the state governments. Vertical integration of the Green India Mission (GIM) and National Mission on Sustainable Agriculture (NMSA) is shown as an example (Source: MoEFCC, 2019).

GIM Implementation Mechanism

Objectives: Increased FTC, improvement in the quality of forest cover and ecosystem services including biodiversity, hydrological services and carbon sequestration

National Level

1. National Governing Council chaired by Minister MoEFCC
2. National Executive Council chaired by the Secretary MoEFCC and co-chaired by Directorate General of Forests
3. Mission Directorate headed by a Chief Executive Officer

State Level

1. State Level Forest Development General Body chaired by Chief Minister/ Environment Minister
2. State level executive committee chaired by the Principal Secretary, Forests

Local Level

1. District Forest Development Agency chaired by Chairman Zila Parishad
2. District Level Steering Committee chaired by district collector with representation of Integrated Watershed Management Programme (IWMP), National Rural Livelihood Mission (NRLM), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and GIM.
3. Biodiversity Management Committee

National Mission on Sustainable Agriculture (NMSA)

Objectives: Making agriculture more productive, sustainable, remunerative, climate resilient, optimizing water utilization through the motto ‘more crop per drop’.

National Level

1. National Advisory Committee (NAC) Chaired by the Secretary (A&C)
2. Project Sanctioning Committee (PSC) Chaired by the Mission Director, NMSA

State Level

1. State Level Committee (SLC) chaired by Agriculture Production Commissioner
2. State Standing Technical Committee (SSTC) headed by the official nominated by the State and membership of universities and technical experts

Local Level

1. District Mission Committee (DMC) chaired by the collector or CEO Zila Parishad
2. Representation of line departments, Growers’ Association and Krishi

Tanzania

Dar es Salaam is a major city and commercial hub in Tanzania. With a current annual population growth rate of 6.5% (current population: 4.4 million), Dar es Salaam is the fastest growing city in East Africa. Tanzania is also a fast urbanising society: By 2012, Dar es Salaam City accommodated 10% of the total population of Tanzania (Wenban-Smith, 2014). But due to poor urban growth management, Dar es Salaam is characterized by large unplanned and informal settlements that occupy 70% to 80% of all residential land area (World Bank, 2016). The projected annual average of new urban dwellers to Dar es Salaam is around 226,000 people and there is high demand for land for settlements and industrial development (Worrall et al, 2017). In the built-up areas, densification is leading to increasingly sealed surfaces and at the urban fringe, natural and agricultural land is being cleared for urban development. Beyond the city limits, forests are being cleared for timber and charcoal. At the same time, local livelihoods are highly dependent on nature's benefits. Peri-urban agriculture, artisanal fishing and nature-based tourism support thousands of livelihoods in the City (Karutz et al., 2019).

In addition to the high level of dependence on nature's benefits, the City of Dar es Salaam is located in a globally important biodiversity hotspot, the 'East African coastal forest'. Biodiversity hotspots are areas of exceptional concentrations of endemic species (i.e. found nowhere else in the world) that are simultaneously undergoing a high rate of loss of habitat (Myers et al., 2000).

The biodiversity governance and planning context

The Ministry responsible for the Environment regulates all matters of biodiversity in Tanzania. Under the Minister's command, is the Division of the Environment (DoE) and the National Environmental Advisory Committee (NEAC) as an advisory body to the Minister. The National Environment Management Council (NEMC) is the technical advisory, co-ordinating and regulatory agency responsible for the protection of the environmental and sustainable use of the natural resources in Tanzania. With regard to the NBSAP, the CBD focal point is responsible for the preparation and monitoring of the plan. Sector ministries, government agencies and other non-state actors are responsible for implementation of the NBSAP as indicated in the action plan (Tanzania NBSAP 2015).

In order to effectively facilitate coordination and communication on environmental management issues that include biodiversity, the Government has established Environmental Coordination Units in all Sector Ministries and designated Environmental Management Officers in Local Government Authorities at City, Municipality, District, Township, Ward, Village, Street and Hamlet levels. In addition, the Government has established a Special Environmental Police Unit in the Tanzania Police Force in order to strengthen enforcement of relevant laws (Tanzania NBSAP 2015).

It is worth mentioning here that the 2015 Tanzania NBSAP points to a number of challenges that will have an impact on efforts to mainstream biodiversity in the country. These include:

- Inadequate coordination between ministries, government agencies, the private sector and communities in development planning is still not optimal;
- Inadequate capacity for planning and enforcement of policy and legislation (human, financial and institutional) at the level of implementation;
- Low level of stakeholder involvement and participation in planning and decision-making;
- Insufficient data and information about biodiversity, inadequate capacity for research and dissemination, and insufficient collaboration between institutions that manage data;
- Inadequate capacity and awareness about the value of biodiversity and sustainable resource management;
- Insufficient allocation of resources for biodiversity research, management, capacity and institution building;
- Inadequate incentives for sustainable use of biological resources; and
- Overlapping mandates of different legislations and authorities and therefore roles and responsibilities are not clear.

Mainstreaming and as part of this, 'vertical integration', relies upon understanding the limitations to and opportunities or entry points for integration and once entry points are recognised, to understand the decision-making processes within and across institutions and across levels of governance within institutions. In addition, it was important for mainstreaming efforts to be informed by an understanding of how nature in the city is viewed and understood by various stakeholders. The INTERACT-Bio project team in Tanzania explored two avenues for vertical integration: urban planning and Local Biodiversity Strategy and Action planning.

Integrating Nature's Benefits and Urban Planning

In Tanzania, urban planning is regulated and coordinated at the national level by the Ministry of Lands, Housing and Human Settlements Development via the Planning Act. At the level of the City, the most recent Master Plan for Dar es Salaam (1979) would have been one mechanism for vertical integration, but the government's attempts to revise the outdated Dar es Salaam Master Plan were hampered by a lengthy litigation process between 2017 and 2021. Apart from this delay, there is critique of master planning and other conventional planning tools due to their limited ability to address rapid change and a high degree of informality in African cities. A 2016 study by the World Bank described the spatial planning and decision-making environment in Dar es Salaam and in Tanzania in general to be highly fragmented and that decision-making can be informal (i.e. despite formal procedures being in place, they are not always followed). This, together with limited urban planning and development controls to guide rapid growth, especially the spread of informal settlements (World Bank, 2016), a different approach would be needed.

The Tanzanian Ministry of Regional Administration and Local Government (PO:RALG) oversees regional development management and administration by coordinating rural and urban development management policy and strategies as well as the activity of Regional Secretariats. It helps to build the administrative capacity of local governments and to strengthen channels of communication between national and sub-national bodies to devolve power to the local level, ultimately aiming to improve the quality of life for Tanzanians. As part of this role, the PO:RALG Ministry recently coordinated a nation-wide project to strengthen urban planning and development control. This project provided opportunities to integrate urban nature aspects into urban planning processes.

During INTERACT-Bio project scoping (in 2017), the City of Dar es Salaam identified the need to strategically and spatially prioritise city greening but indicated that they did not have the tool to guide this type of decision-making. It is out of these conversations that the idea to create the 'A Thematic Atlas of Nature's Benefits to Dar es Salaam' (Karutz et al., 2019), emerged. Therefore, the project elected to focus on the development of an urban nature planning tool that was deemed necessary by the City, and to explore potential vertical integration processes.

The Local Biodiversity Strategy and Action Plan

As a Party to the Convention on Biological Diversity (CBD) since 1996, Tanzania is committed to developing national strategies, plans or programmes for the conservation and sustainable use of biological diversity. The Vice-President's Office: Environment Division, is the entity responsible for the drafting of the NBSAP, its implementation at the local level, and for monitoring and reporting progress to the CBD. Tanzania's most recent National Biodiversity Strategy and Action Plan (NBSAP: 2015 – 2020[1]) makes provision for national-level biodiversity-related goals that are closely aligned with the Kunming-Montreal Global Biodiversity Framework and Targets. Since 2010, formal recognition, globally, of the role of local governments in biodiversity planning, gave rise to a local mechanism: the Local Biodiversity Strategy and Action Plan (LBSAP).

The development of an LBSAP for Dar es Salaam was considered to be a good opportunity to promote vertical integration due to the clear requirement to link local biodiversity action plans with national and global biodiversity targets. For the development of an LBSAP, the Dar es Salaam City Council recommended that this tool be developed for the Ilala area of Dar es Salaam, based on the relatively good levels of capacity and information for this part of the City.

Decision-making processes and flows

Effective vertical integration relies on an understanding of the formal and informal decision-making processes between different levels of governance. Environmental and Planning decision-making processes and pathways in Tanzania tend to be fragmented and are not always clearly defined. However, a number of processes were discussed, during the course of the INTERACT-Bio project, which indicated some degree of consistency.

To promote sound environmental and land use planning and to ensure implementation of and budget allocations to these activities, tools such as the Ilala LBSAP and the Thematic Atlas, can be integrated vertically in one of two ways. Firstly, they can be mainstreamed into the Municipal and/or City Strategic Plan (See Fig. 2). Associated municipal budgets depend on national decisions which are approved in July of each year. Lobbying typically begins around November/December each year. Alternatively, or possibly in parallel, tools can be tabled for consideration at the level of municipal Management Team Meetings, where all department heads assemble. If the tool is deemed important and prioritised, it can be presented to counsellors and the relevant municipal and city directors. Once prioritised at this level, the tool is presented to District and Regional Consultative Committees. In discussion with various officials, it became apparent that District and Regional Consultative Committees rarely meet in reality. From this level, a tool can then be recommended to various relevant ministries, in this case to the President's Office: Regional Administration and Local Government (i.e. PO:RALG) and the Ministry of Lands, Housing and Human Settlements Development. The relevant national Ministry can then issue a permit for implementation at the City or Municipal level (See Fig. 2).

[1] The Tanzanian government initiated a process to appoint a consultant in 2024 to revise the NBSAP.

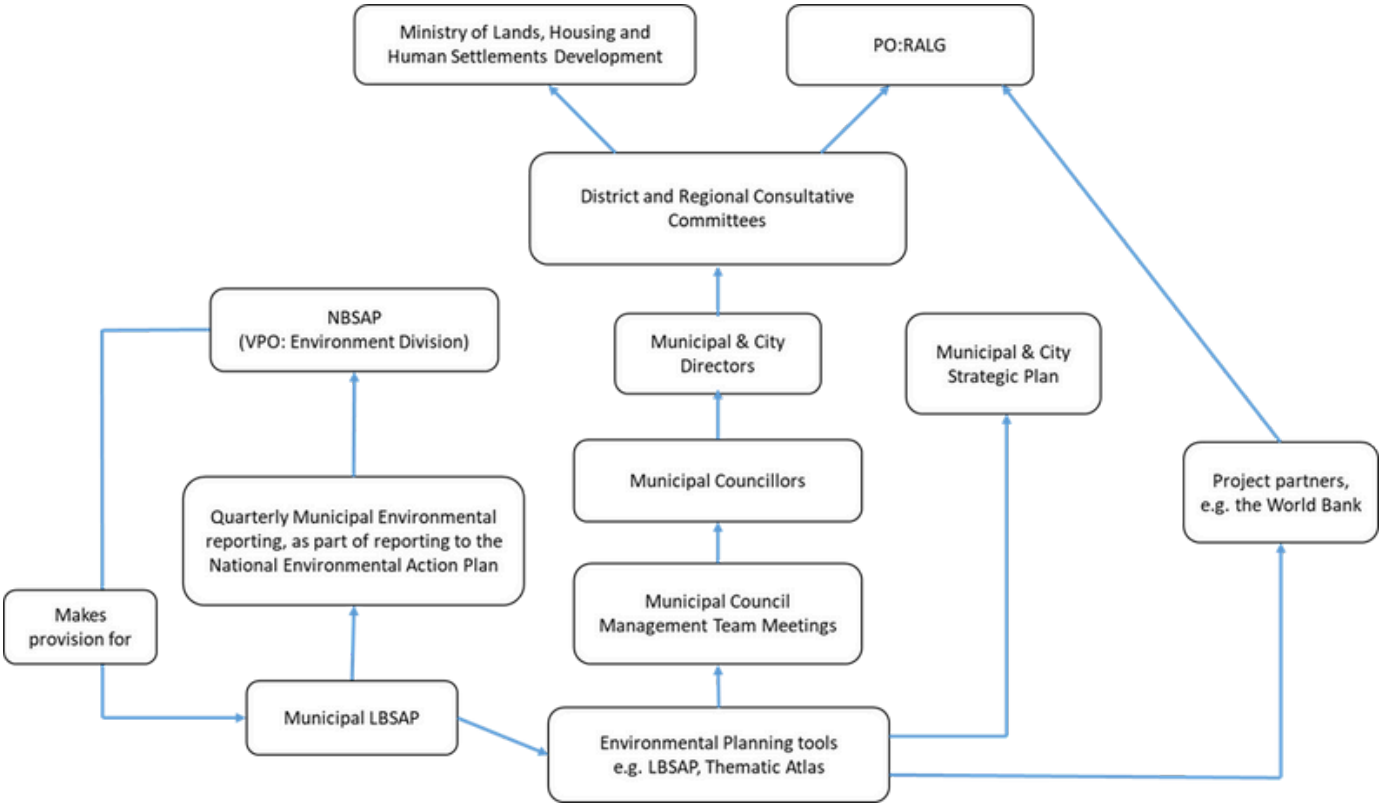


Fig. 2. A schematic interpretation of decision-making flows in Tanzania in the context of vertical integration of environmental and land use aspects.

In terms of the LBSAP, LBSAP goals and actions have to show strong alignment with the goals and targets as set out in the NBSAP. This alignment should facilitate 'top-down' vertical integration. In turn, 'bottom-up' vertical integration can and should be facilitated through quarterly municipal progress reports to the Vice President's Office: Environment Division. Municipalities are required to report in accordance with the National Environmental Action Plan. In this context, the LBSAP can be seen as a specific action plan (within the broader environmental action plans of the Municipal Council) that is explicit about biodiversity albeit within a social development context.

Vertical mainstreaming tools

A general observation in Dar es Salaam was that, despite a long history of urban greening and allocating municipal funds to greening, there was little understanding of how greening can be viewed as providing benefits to people and providing solutions to a variety of social and economic issues in the city. The links between greening and the rich local natural heritage ('biodiversity hotspot') were also not well known and the majority of vegetation planted as part of city greening efforts are non-native to the area. Our mainstreaming strategies in Dar es Salaam therefore had to incorporate some capacity building with regards to the benefits of nature in urban settings and the importance of integrating nature's benefits into urban planning.

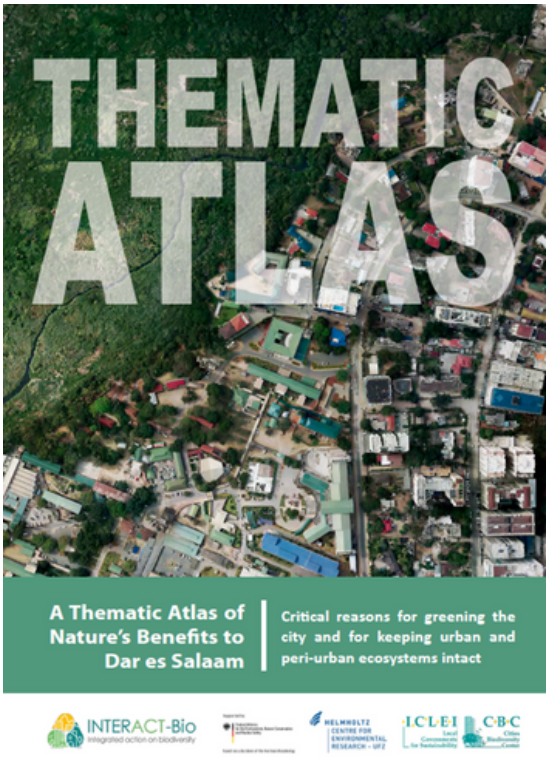
A Thematic Atlas of Nature's Benefits to Dar es Salaam

City officials in Dar es Salaam expressed a need to strategically and spatially prioritise their annual municipal investment in city greening. This need led to the development of the Thematic Atlas. The conceptual basis of 'A Thematic Atlas of Nature's Benefits to Dar es Salaam' is ecosystem services thinking, which highlights the societal and economic benefits of green open space and vegetated areas in urban and peri-urban contexts. Each of seven 'themes' in The Atlas represents an urban challenge, such as rising urban heat or flooding. Spatial data, including geo-referenced imagery and vector shapefiles, were used to link the spatial location of issues with the spatial location of

existing green spaces and the ecosystem services provided by those green open spaces. Together, these aspects provided a logical and spatially explicit basis for prioritising the city's investment in green open space (Karutz et al, 2019). For example, a city may choose to plant large numbers of trees where areas of extreme urban heat overlap with areas of high air pollution; for example, around bus terminals. With this approach, the City can build a defensible rationale for the spatial prioritisation of sites for greening investments for the achievement of outcomes that relate to societal well-being, protected and enhanced economies and the reduction of urban health risks such as heat islands. The Atlas presents an approach that can be developed without perfect or complete information and data, and may therefore have wide applicability to cities experiencing resource constraints similar to those exhibited by Dar es Salaam.

The Thematic Atlas contains seven themes:

1. Socio-economic importance: Dar es Salaam's ecosystems secure thousands of livelihoods
2. Water is a human right: Dar es Salaam's water sources under stress
3. Public health: Roadside greening for cleaner air
4. Greenspace is essential for healthy communities
5. Prepared for climate change: Urban vegetation cools the city
6. Prepared for climate change: Green areas can reduce flood risks and protect urban infrastructure
7. Dar es Salaam – a biodiversity hotspot: safeguarding threatened biodiversity in and around Dar es Salaam



The technical document and maps of the Atlas were co-created with Dar es Salaam City Council, its five municipalities, the Regional Government of Dar es Salaam (who reports to the PO:RALG), staff of the Ministry of Lands, Housing and Human Settlements Development and a wide range of non-government stakeholders and contributors, including NGOs and universities (see Karutz et al 2019). The need for the Atlas was affirmed with stakeholders and the potential themes were discussed. Following agreement on themes, draft maps and text were developed for each theme. Stakeholders were invited to validate draft maps and text, in a workshop setting before the product was finalised.

The Atlas chapter addressing biodiversity had to be developed through a combination of basic map layers and expert input to create a full map of the biodiversity of Dar es Salaam. This map was used to create an educational poster about the value of nature in Dar es Salaam (ICLEI, 2019).

When the Atlas was in the final stages of development, the project team asked the Dar es Salaam City Council and municipal representatives about the anticipated usefulness of the product. They indicated that it would be useful as a green space planning tool, to prioritise green space investment based on achieving multiple benefits in specified spatial locations. They envisaged that it would also support the development of greening action plans. City officials pointed out though that it would be important to incorporate the Atlas into the City Strategic Plan in order to ensure funding allocation to greening initiatives. The Dar es Salaam City Council used the city heat map from the Atlas in their presentations at different platforms to illustrate city issues within a climate change context, showing the influence of the maps beyond the Atlas.

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Once the Atlas was launched (October 2019), further needs were expressed. The City and five municipalities indicated that the education sector would benefit from a series of adaptations of the Atlas chapters for educational purposes and to change school curricula to accommodate ideas on urban nature and nature-based solutions. Another emergent need was expressed by various stakeholders to establish a cross-sectoral forum to discuss and coordinate greening efforts in the City as several agencies (notably the local road and rapid transit agency, and local nurseries) play a role in city greening. The Atlas was used to identify priority sites for practical demonstration projects to be implemented as part of the INTERACT-Bio project.

Finally, recommendations from the Thematic Atlas led to the project allocating funds to developing a biodiversity catalogue for Dar es Salaam to showcase Dar es Salaam's indigenous nature and to support awareness of its usefulness in the City.

Implications for vertical integration

Arguably, the Thematic Atlas and the associated biodiversity map, served firstly as an educational resource, emphasising the benefits of urban nature and the potential to use nature in urban settings to solve or at least partially address urban problems. The Atlas also identified a gap in that Dar es Salaam City does not have a resource to indicate which indigenous species can be grown and planted in the city. This led to a new task within the INTERACT-Bio project to develop such a resource: A catalogue for Dar es Salaam's native Biodiversity.

One of the biggest advantages of the Atlas is that the tool is based on principles to prioritise city greening which can be easily transferred to other cities and can be applied at various spatial scales within a city. Also, there is no need for sophisticated mapping resources to create a similar product, making this an attractive tool for developing cities with limited resources. Its scalability and wide applicability make the Atlas easily transferable and replicable which in turn increases its potential for wide use and potential integration into city strategies and sector plans.

The Atlas stimulated substantial interest from other sectors such as transport (notably the Dar Rapid Transit Company, an executive agency under the Tanzanian President's Office) and the education sector (Dar es Salaam Municipal-level). Thus, it has much potential for horizontal, cross-sector integration. For vertical mainstreaming to be effective, the tool would have to be integrated into the City Strategic Plan, but as mentioned, the challenge with formal Local Authority processes is that standardised institutional processes and timelines are not clear or explicit, making them difficult to engage as part of a vertical mainstreaming process. An unexpected uptake of the Thematic Atlas is that it is being taken up as part of a process of developing Greening Guidelines under the Dar es Salaam Metro Development Projects (DMDP), a collaborative initiative between the World Bank in Tanzania and the Tanzanian national ministry: President's Office: Regional Administration and Local Government (pers. comm. Grace Mbena, Ministry of Lands, Housing and Human Settlements Development and former senior planner in the City of Dar es Salaam).

Given this outcome, an insight for vertical integration is that, in the absence of clear and reliable government institutional processes, it was fortuitous that that World bank in Tanzania had a strong interest in city greening and rejuvenation (notably for example through the World Bank Msimbazi Opportunity Plan) during the course of the INTERACT-Bio project in Dar es Salaam. This synergy has led to vertical uptake of the city-level Thematic Atlas into national level for city greening guideline development.

The Ilala Municipal Council Biodiversity Strategy and Action Plan

The INTERACT-Bio project team facilitated the development of an LBSAP for the Ilala area of Dar es Salaam, between June 2018 and October 2019. This was done through a series of co-creation workshops. Although the Dar es Salaam Council is ultimately the administrative owner of the Plan, it was essential to involve a wide range of stakeholders to co-own issues and solutions. Apart from Ilala Municipal officials, the participating stakeholders included staff of the National Environmental Management Council (NEMC, an implementation institution under the VPO), the Office the Regional Government (Dar es Salaam Region), Dar es Salaam City Council (Planning Department), representatives of the Ministry of Lands, Housing and Human Settlements Development, representatives from the Lake Victoria Region Local Authorities Counties Cooperation (LVRLACC), NGOs, architects, landscape architects, local universities and a representative from the national Vice-President's Office: Environment Division, responsible for implementing Tanzania's NBSAP.

An LBSAP includes a vision and linked focus areas which provide overarching direction to the plan. The vision and focus areas are supported by goals and actions which are implemented over a specific time period to realise the LBSAP vision. This gives cities and municipalities a structured tool and process to plan, and allocate resources, for biodiversity and urban nature at the level of their jurisdiction. The intention is two-fold:

- To secure nature's benefits, such as improved health and quality of life, for local citizens, and;
- To simultaneously support national and global advancement in protecting and enhancing biodiversity and securing nature's benefits at the global scale.

The five main areas of focus developed in the Ilala Municipal LBSAP were: Awareness raising and capacity building; Maintain and expand green spaces; Improve livelihoods through green infrastructure initiatives; Protect and restore natural infrastructure; and utilising local solutions for waste management. During 2024, the Dar es Salaam LBSAP was revised and updated to include goals that relate to land use and urban planning as well as resource mobilisation to support the implementation of urban nature projects.

One of the main and successful features of the Ilala LBSAP process was the presence and involvement of the same national VPO: Environment Division representative throughout the process. This enabled stakeholders and especially officials at the city level to learn about the national NBSAP and about the importance of contributing to global targets from their national representative. This led to much dialogue between the City and national level about the resources necessary to support the implementation of the LBSAP and to impress the message that some of the work done by the municipal councils are already aligned with the LBSAP vision and goals. The VPO indicated that the best way for the LBSAP to interact with the NBSAP on an ongoing basis is in response to requests from national VPO to the Dar es Salaam Council to provide inputs into the quarterly reports (i.e. environmental implementation status reports), the City Council should also include reports on progress on the initiatives that form part of the LBSAP. The national VPO representative also emphasised that the Dar es Salaam LBSAP is the first LBSAP for Tanzania and should therefore be a model for other sub-national governments in Tanzania.

The LBSAP sets out to define goals for biodiversity action in Dar es Salaam, whereas the Thematic Atlas is a scalable planning tool to optimise the multiple benefits (i.e. ecosystem services) of urban greening. The Atlas also provides principles for locating multiple benefits spatially in the landscape. In other words, the LBSAP is an action plan which sets out goals, whereas the Atlas is a conceptual and practical tool for spatial planning to optimise the benefits of urban greening. Several of the Ilala LBSAP goals can be advanced by various elements of the Thematic Atlas.

Ilala LBSAP goals which can be supported by the Thematic Atlas for Nature's benefits to Dar es Salaam:

- Goal 1.1 Conduct targeted awareness raising campaigns on the value and sensitivity of nature, as well as the by-laws and regulations governing nature, at the local community level.
- Goal 1.2 Conduct training with decision-makers within Ilala Municipality on the benefits and risks of nature
- Goal 2.1 Develop a map of the existing green spaces within Ilala Municipality
- Goals 2.2 Undertake a study of the existing green spaces within Ilala Municipality to determine their current state.
- Goal 2.3 Develop a 'Greening Plan' for Ilala Municipality
- Goal 3.1 Inventories and map all green infrastructure related to livelihoods
- Goal 4.1 Develop a map of the existing blue and green infrastructure within Ilala Municipality
- Goal 4.2 Undertake an investigative inventory study of all the blue and green infrastructure within Ilala Municipality to determine the current state and the current benefits being derived.
- Goal 4.3 Undertake a prioritisation exercise to determine where protection and restoration efforts should be focused.

Achieving these goals at the level of Dar es Salaam City will require, in some cases, finer scale data and information than what the Atlas offers, but the Atlas would be a very good starting point. The Atlas can provide support to the Ilala LBSAP in two ways:

1. By providing maps of urban nature and;
2. By providing principles for the spatial prioritisation for actions.

Implications for vertical integration

Although the LBSAP process can be considered successful from the point of view of laying the foundation for sound vertical integration, implementation on the ground is expected to be a challenge and this was evident in the city official questions asked of the VPO with regards resources for implementation. In addition, in Dar es Salaam, environmental functions at the municipal level are generally not well resourced and there is currently no effective working structure for environmental coordination (World Bank, 2016). The Dar es Salaam Local Authorities meet only voluntarily and thus depend on personal good relations to achieve holding routine meetings once a month among the municipal environmental coordinators. Each Municipal Council within Dar es Salaam City has an environmental coordinator but these responsibilities are usually not full time but doubled up by public health officials (World Bank, 2016).

Concluding remarks

Given the challenging governance context in Tanzania, the approach this project took was to develop needs-based tools at the city-region level and to work with champions within the City who are influential change agents. This approach was taken instead of an approach that relies upon formal decision-making procedures. The approach is more aligned with the informal decision-making norm in this case. At the technical level, all biodiversity and nature-based solutions propositions were placed within a developing country context which emphasises biodiversity supporting livelihood enhancement, health and well-being. The goals of the Dar es Salaam LBSAP for example, are closely aligned with development needs of the city, as defined by the key stakeholders. The limitation of the chosen approach is that mainstreaming and in particular vertical integration is reliant upon informal processes and the continuity of individual champions, during and beyond the life span of the project.

Synthesis (lessons learnt)

Advantages of a top down approach are that lower levels of government may benefit from the resources and expertise accessible to higher levels of government and that strategies and action plans align with national and international commitments. Where a top down approach is followed, the national government should actively encourage the development of S/LBSAPs in terms of laws, policies or in the NBSAPs. These instruments should clearly set out specific goals and objectives. A bottom up approach is where SBSAPs are developed first. The various SBSAPS are then consolidated to determine national priorities for strategy and action plans that are ultimately incorporated into the NBSAP. The advantage of this approach is that SBSAPs reflect on–the-ground priorities and experience. The authority and responsibility to first prepare SBSAPs should be set out in relevant national legislation or policy documents.

Generally, there is a perception that developed countries have more institutional and financial resources for coordination, and often fewer pressing needs and obstacles than developing countries, where lack of institutional and financial resources, as well as other pressing development needs represent a major challenge to achieving effective coordination in NBSAP development and implementation. However, developing countries often deliver innovations in efficiency and effectiveness of actual ‘on the ground’ coordination and cooperation.

In recognition of its importance and cross-cutting political nature, Aichi Biodiversity Target 17 directs that the NBSAP be adopted as a policy instrument. Depending on national circumstances, enacting this instrument as law can enable monitoring of the effectiveness of implementation by parliamentary or other oversight mechanisms.

Brazil

Belo Horizonte

Belo Horizonte City-Region (BHCR) implemented in 2011 the Integrated Development Master Plan (IDMP-BHCR) which was defined and created as a management tool for the 34 municipalities that are part of the region. The Green-Blue network is one of the tools provided by the IDMP, which main idea/goal is to use the valley bottoms as connecting elements between areas of the city, such as protection areas, creating connectivity corridors, in order to facilitate and promote the protection and recovery of ecosystems degraded by the urbanization. The aim of the initiative was to promote the valorization and articulation processes of nature in the city, flood control and promotion of cultural and leisure activities. Despite being an important planning guideline, to achieve more ambitious goals for the application of these policies, an action plan between Belo Horizonte and the municipalities of BHCR would be necessary.

In July 2017, BHCR joined the INTERACT-Bio Project in Brazil, which has goals aligned with the international and national biodiversity agenda, as well as with the regional proposal of Green-Blue Network, helping in the union of efforts to integrate biodiversity in the territory.

Being part of the INTERACT-Bio project fostered engagement and collaboration between the Municipal Secretariat for the Environment of the city of Belo Horizonte (SMMA/PBH), Municipal Secretariat for the Environment of Contagem (SEMAD/Contagem), Secretariat for the Environment and Sustainable Development of Betim, Belo Horizonte Municipal Secretariat for Urban Planning (SUPLAN/PBH), the Metropolitan Agency of Belo Horizonte, the Belo Horizonte Municipal Parks and Zoobotany Foundation and the State Secretariat for the Environment and Sustainable Development (SEMAD). The activities promoted by ICLEI through the project supported a multilevel interaction, expanding the discussions and possibilities of reaching the objectives.

These activities facilitated by ICLEI enabled the development of some products such as the process of analyzing ecosystem services in the region and the main pressure points suffered. This assessment resulted in the development of the Green-Blue Network Illustrated Map, which has a language more accessible to the public. Also, a second map was developed using the multicriteria analysis methodology, pointing out the priority areas for applying nature-based solution techniques. All these discussions started from the collaboration between regional and local agencies, such as the secretariats enabling a vertical integration.

Some actions at the local level were developed based on global guidelines, such as the SDGs, and regional ones, Green-Blue Network. In 2019, the city of Belo Horizonte approved a new Master Plan, Law Nº. 11,181 / 19, which has as its guiding idea/fundamentals the recovery and preservation of the municipality's environmental heritage, seeking to maintain and recover green areas and the enhancement of water bodies. The instruments to guarantee the application of these guidelines are reflected in the plan, such as the requirement for a higher permeability rate based on the city's environmental structure map, in places such as areas of interest for environmental preservation, green zones connections and funds of the valley.

Despite having a regional scope, INTERACT-Bio aims to implement demonstrative projects of Nature-based solutions at local strategic points that can contribute to the network operation of natural resources, integrating ecosystem services at municipal and regional level. In Belo Horizonte, the forecast is that an average of 360 square meters of filtering gardens will be implemented, aiming at the local management of rainwater, in addition to promoting the increase of infiltration areas and ecosystem services provision.

Overall, the collaboration work between the partners in a regional or local level results in a project validated in a technical way and identified as of common interest to all actors, facilitating the implementation of initiatives. Also, the integration of agendas about biodiversity and climate change allows decision-making for more impactful initiatives reflecting in more resilient local areas. What is more, this kind of integration enables the discussion of new work fronts and setting long-term goals.

Londrina

The Metropolitan Region of Londrina (RML) was established in 1998 and currently has 25 municipalities. In addition to abundant water resources, the region shares characteristics common to expanding cities located in countries in Latin America and the Caribbean: they are a biodiversity hotspot while experiencing high rates of urbanization and a weak environmental policy. This framework has caused cities to demand more Ecosystem Services (SEs) than they are able to produce, which commonly makes them seek these services beyond their administrative limits.

An aggravating factor in this context is the fact that RML does not have a metropolitan agency, the purpose of which is to have an integrated look at the territory and think about policies and planning on a regional scale based on the potential and challenges common to different municipalities. Therefore, even though one of the main INTERACT-Bio actions planned for the RML has been the mapping of ecosystem services, the search for an integrated vision of the territory and the promotion of dialogues between the municipalities of the RML and between different agencies has ended up becoming an important element in the scope of the project.

The Municipal Secretary of the Environment of Londrina (SEMA) was the first actor in this project, since the decision to apply the RML to INTERACT-Bio came from this body. In that initial stage, it was important to acknowledge the support of the Paraná State Secretariat for the Environment (SEDU), which did so in an official way at the time of the selection process. After the municipality was approved, other agents were added to the process. Firstly, ICLEI South America itself, which was (and has been) the main driver of the project and of the processes that are part of it.

In September 2017, the 1st institutional and technical meeting took place with actors that were mobilized through INTERACT-Bio, which, in addition to members of ICLEI South America, brought together 48 representatives of public and private institutions and civil society. Representing the municipal public power, were present the deputy mayor, the Secretariat of the Environment (SEMA), the Institute of Research and Urban Planning of Londrina (IPPUL), Municipal Secretariat of Public Works Contracts (SMOP), Municipal Secretariat of Agriculture and Supply (SMAA), Municipal Transit and Urbanization Company (CMTU), Londrina Geographic Information System (SIGLON) and Civil Defense. The State Government was represented by the Legislative Assembly of Paraná (ALEP), Secretariat of the Environment, and Instituto das Águas do Paraná. Finally, were also present the Association of Municipalities of the Middle Paranapanema (AMEPAR), the Municipal Council for the Environment, the NGO Patrulha das Águas and INDDRA Energy and Wastes. The objective was to connect the decision makers of subnational governments to discuss the joint work provided by the project, with the aim of integrating elements of biodiversity management and the provision of ecosystem services to the planning and decisions of the RML.

The second meeting was characterized by intercity and intersectoral dialogue. In March 2018, the Municipality of Londrina, ICLEI South America and the Cities Biodiversity Center (CBC) - ICLEI Africa organized the “Conference and Workshop: Biodiversity, Ecosystem Services and

Metropolitan Management", with representatives from different municipalities, levels and sectors. The purpose of the event was to introduce the concept of Ecosystem Services, to train the technical staff of civil servants from different agencies and municipalities, to collect data for the regional diagnosis and, finally, to promote the intersectoral and governmental integration of different municipalities. In addition to the institutions that had already participated in the 1st institutional and technical meeting, representatives from the municipalities of Sertanópolis, Ibiporã, Guaraci, Rancho Alegre, Jataizinho, Sertaneja and Rolândia, Arapongas, Centenário do Sul attended this event. At the state level, Urban Development and Public Works and Paranacity attended the event. Public research institutions, higher education and high school institutions, professional associations, NGOs and consultancy and / or environmental services companies were also represented.

The first stage of the event - the conference - was attended by 84 people. The consultant at the Helmholtz Center for Environmental Research (UFZ) spoke about "Ecosystem Services and Urban Context" and the environmental analyst from the Ministry of Environment (MMA) presented "Perspectives and Actions for Municipal Environmental Zoning". There was also a presentation about the experiences in the metropolitan regions of Campinas and Belo Horizonte under the INTERACT-Bio Project. In addition to introducing the concepts of SEs to those present, the moment made it possible to see RML as belonging to a network formed by several cities - national and international - that, keeping the due particularities, has been guided by the same purposes, to integrate the perspective of sustainability in regional plans, actions and policies. It was also an opportunity to understand the connection between local actions and the most important global environmental milestones of the 21st century, which have Brazil as a signatory country.

Then, in the same event, the workshop was attended by 37 representatives of associations and public and private institutions from different municipalities. The objective was to identify ecosystem services in the region, as well as to point out the pressures suffered by them. Participants started by raising priority SEs in the context of their regions. After listing the most important among those surveyed, an analysis was made as to their origin, current condition (quality / quantity), main beneficiaries, supply and demand trends and factors of change. From this activity, there were four activities that appeared most frequently by the municipalities: Soil Drainage, Pressure under Areas of Environmental Interest, Soil Erosion and Solid Waste Destination. Then, the participants moved through these four themes to try to answer the following question: "What actions can be developed within the project (with 2020 as the horizon) for the theme in question?" And as the reflections were shared, the responses were being refined collectively.

At the beginning of INTERACT-Bio, the Secretariat for Urban Development and Public Works (SEDU) also entered as a strategic actor. The agency acts in the formulation of urban development policies in the State of Paraná and provides technical assistance to municipalities and associations of municipalities. At the same time INTERACT-Bio was being implemented in Londrina, SEDU was preparing the Term of Reference (ToR) for hiring a company to prepare the Integrated Urban Development Plan for the Metropolitan Region of Londrina (PDUI). On this occasion, ICLEI had the opportunity to review the ToR and indicate the inclusion of Ecosystem Services as a strategic variable to be considered during metropolitan environmental planning, due to its potential to integrate municipal territories and face extreme water-related events.

The absence of a metropolitan agency is a challenge that RML faces in its institutional arrangement, which makes it more difficult to deal with regional development policies in an integrated, consistent, and continuous manner. In this context, INTERACT-Bio, through technical-institutional meetings, the training of managers from different municipalities, the exchange of experiences and the mapping of ecosystem services provided opportunities for a dialogue at the metropolitan level that provided an integral and, therefore, a real view of the territory. It was a rare opportunity to bring together the challenges and potentials common to all in the

environmental sphere in an environment of dialogue that, in addition to being intermunicipal, also had the participation of organized civil society and entities beyond the political-institutional scope of the municipality. They participated from NGOs and public schools to research and higher education institutes. This broad approach and transversal dialogue made it possible to deal with environmental structures, understanding that they are not subordinated to the political-administrative limits of the municipalities, also understanding that these issues are relevant to society as a whole and that the commitment to the preservation and management of resources ecosystem services must be shared by all.

India

The Interact Bio project took an innovative approach and identified champions in the project city with whom regular informal interactions were carried out. In addition, a lot of focus was given to awareness generation activities (e.g. development of the pictorial handbook of trees of Subhash Bose Park and school level activities). This approach helped to integrate the project in the city. The technical experts and the technical working committee helped to provide more validity to the interventions being proposed. The method to approach biodiversity conservation from the ecosystem service point of view and linking it with livelihood and heath played a significant role in institutionalising the project interventions. The project steering committee has also supported vertical and horizontal integration.

Tanzania

In situations where government decision-making is highly informal or semi-formal (despite the existence of formal structures, institutions and processes), one strategy could be to partner with both local government as well as other strong partners who also work closely with the government (in this case the World Bank and sometimes the local universities). In this way, new ideas and tools become impactful and influence the current thinking, not because they are

being mainstreamed through formal and official processes but because they are taken up by stakeholders and actors who are influential in the space. This requires much emphasis on forging local partnerships and collaboration.

Mainstreaming efforts can be much enhanced in an informal context by investing in capacity building. Because of the high level of informality in government decision-making, the project team identified and worked with champions within government. Such champions have skills and intellectual capacity, institutional memory and exert influence through their positions. This ‘informal’ approach has been advantageous for the project and for promoting the uptake of new ideas and products around urban nature into local government thinking. But this strategy, focusing on champions, is also risky. Individuals can and do leave the system, for example, be redeployed elsewhere. A focused capacity building programme, running parallel to the technical aspects of a project, would enhance skills and build the different forms of human and institutional capital needed to adopt and work with new ideas and to insert them effectively into the local government mechanisms. Although the INTERACT-Bio project had some training and capacity building features, these aspects could be much enhanced at the project level.

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ICLEI – Local Governments for Sustainability is a global network of more than 2500 local and regional governments committed to sustainable urban development. Active in 125+ countries, we influence sustainability policy and drive local action for low emission, nature-based, equitable, resilient and circular development. Our Members and team of experts work together through peer exchange, partnerships and capacity building to create systemic change for urban sustainability.

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