Local Biodiversity Strategy and Action Plan

GUIDELINES

An aid to municipal planning and biodiversity conservation

Japan Biodiversity Fund
生物多様性日本基金

ICLEI
Local Governments for Sustainability

UNITED NATIONS UNIVERSITY
UNU-IAS
Institute of Advanced Studies

LAB
Local Action for Biodiversity

Convention on Biological Diversity

Disclaimer

This document has been prepared by ICLEI – Local Governments for Sustainability in partnership with United Nations University Institute of Advanced Studies (UNU-IAS) and the Secretariat of the Convention on Biological Diversity (SCBD) with support from the Ministry of Foreign Affairs of Japan. In producing this document, the authors have relied upon information provided by third parties. The contributing partners do not give any representation or warranty, express or implied, as to the accuracy, completeness or fairness of the contents of this document, nor accept any responsibility or liability for any loss arising from reliance on it. Any use of this report by any third party for whatever purpose is solely the responsibility of that party who should use such due diligence to verify the document's contents and consult its own advisers as may be appropriate.

Contributing partners

ICLEI – Local Governments for Sustainability the world's oldest and largest association of local governments and governmental organizations working on sustainable development. ICLEI promotes local action for global sustainability and supports cities to become sustainable, resilient, resource-efficient, biodiverse, low-carbon; to build a smart infrastructure; and to develop an inclusive, green urban economy with the ultimate aim to achieve healthy and happy communities. In this respect, ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and help local governments develop sustainably. ICLEI's 'Biodiverse City Agenda' is coordinated by ICLEI Cities Biodiversity Center, based in Cape Town, South Africa. Website: www.iclei.org

United Nations University Institute of Advanced Studies (UNU-IAS) is a global think tank whose mission is "to advance knowledge and promote learning for policy-making to meet the challenges of sustainable development". UNU-IAS undertakes research and postgraduate education to identify and address strategic issues of concern for all humankind, for governments, decision-makers, and particularly, for developing countries. Established in 1996, the Institute convenes expertise from disciplines such as economics, law, social and natural sciences to better understand and contribute creative solutions to pressing global concerns, with research and programmatic activities related to current debates on sustainable development. UNU-IAS, based in Yokohama, Japan, has two International Operating Units: the Operating Unit Ishikawa/Kanazawa (OUIK) in Japan and the Traditional Knowledge Initiative (TKI) in Australia. Website: www.ias.unu.edu

Secretariat of the Convention on Biological Diversity (SCBD), based in Montreal, Canada, was established to support the goals of the Convention on Biological Diversity (CBD) which was signed at the Earth Summit in Rio de Janeiro, Brazil, in 1992 and entered into force on 29 December 1993. It is the first global agreement to cover all aspects of biological diversity: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the use of genetic resources. The primary functions of SCBD are to organize meetings, prepare reports, assist member governments in the implementation of the various program of work, coordinate with other international organizations and collect and disseminate information. Website: www.cbd.int

Biodiversity and Municipal Planning:

Local Biodiversity Strategy and Action Plan Guidelines

Georgina Avlonitis (ICLEI)

Christopher Doll (UNU-IAS)

Russell Galt (ICLEI)

Andre Mader (SCBD)

Raquel Moreno-Peñaranda (UNU-IAS)

Shela Patrickson (ICLEI)

Jose Antonio Puppim de Oliveira (UNU-IAS)

Wanyu Shih (UNU-IAS)

Table of Contents

Acknowledgements

We would like to thank the Ministry of Foreign Affairs of Japan for providing generous support to enable the production of this publication. Additionally, we pay tribute to the group of world-leading cities that have successfully participated in ICLEI's Local Action for Biodiversity (LAB) Program, generating invaluable insights, experiences, lessons, management tools and case studies.

Abbreviations

CBA	Cost Benefit Analysis
CBI	City Biodiversity Index
CBO	Cities and Biodiversity Outlook
COP	Conference of the Parties
EIA	Environmental Impact Assessment
GBIF	Global Biodiversity Information Facility
GBO	Global Biodiversity Outlook
GIS	Geographical Information System
EEA	European Environment Agency
ICLEI	ICLEI – Local Governments for Sustainability
IUCN	International Union for Conservation of Nature
LAB	Local Action for Biodiversity
LBSAP	Local Biodiversity Strategy and Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
MDG	Millenium Development Goals
M&E	Monitoring and Evaluation
NGO	Non-governmental Organisation
SCBD	Secretariat of the Convention on Biological Diversity
SEA	Strategic Environmental Assessment
SMART	Specific, measurable, achievable, realistic and time-bound
TEEB	The Economics of Ecosystems and Biodiversity
UNU-IAS	United Nations University – Institute of Advanced Studies

About these guidelines

These guidelines draw from local government experiences and examples, in a range of geographical and politico-administrative contexts.[1] They are designed to assist local government practitioners and policy-makers in managing biodiversity and are flexible to the level of resources and experience available. They should be of as much use to technically-advanced local governments wishing to hone their existing plans, as they should be to relative newcomers wishing to initiate strategic biodiversity planning (figure 1). Actionable suggestions are posited to guide and inspire users, but will not be equally relevant or feasible in every local government. Users should therefore exercise some discretion in identifying the most appropriate suggestions for meeting their respective needs. In all cases, users are encouraged to be ambitious whilst prioritizing what is realistic and achievable. Capacity, in particular, will determine what is possible but **even a single individual with scarce resources can make a catalytic start**.

Section 1 provides a background to local biodiversity management issues and introduces the concept of a Local Biodiversity Strategy and Action Plan (LBSAP) and the rationale for developing one. Section 2 provides practical suggestions on how to begin compiling an LBSAP, from assempling a team to conducting a biodiversity assessment, and explores the concept of biodiversity mainstreaming. Section 3 identifies the standard information that an LBSAP should contain and suggests how to construct a vision, guiding principles, goals, targets and actions. It examines a number of extracts taken from existing LBSAPs of leading local governments. To further inspire the design of actions proposed in an LBSAP, section 4 outlines the various tools and approaches that can be applied at the local level to effectively manage and mainstream biodiversity. Finally, section 5 provides a short conclusion.

[1] Previous work on the importance of local and sub-national BSAPs include publications aimed primarily at national governments in an attempt to encourage their support for local and sub-national level BSAP compilation. Notable publications include i) Pisupati, B. 2007. *Effective Implementation of NBSAPs: Using a decentralized approach Guidelines for Developing Sub-National Biodiversity Action Plans.* UNU-IAS, Yokohama. URL: http://www.ias.unu.edu/resource_centre/Effective%20Implementation%20of%20NBSAPs%20-%20Pisupati.pdf ; ii) Puppim de Oliveira. J.A. et al. 2010. *Cities, Biodiversity and Governance: Perspectives and Challenges of the Implementation of the Convention on Biological Diversity at the City Level*. UNU-IAS, Yokohama. URL: http://www.ias.unu.edu/resource_centre/UNU-IAS%20Cities%20and%20Bio%20e-ver.pdf ; and iii) Tasker-Brown, J. et al. 2010: Supporting Local Action for Biodiversity: The Role of National Governments. UN-Habitat, Nairobi. URL: www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3135

Figure 1. Potential focus areas of an LBSAP depending on local capacity.

Section 1 - Background

Biodiversity and ecosystems constitute the foundation on which humankind depends for survival and quality of life. Green infrastructure,[2] particularly in urban settings, provides citizens with numerous goods and services, in excess of what is provided by conventional grey infrastructure. These 'ecosystem services' include education, recreation, storm water absorption, climate regulation, and food production.

Despite occupying just 2-3 % of the Earth's land surface, cities are home to over 50 % of the world's population, and this figure is estimated to rise to 90 % by the year 2100.[3] Cities account for 75 % of resource consumption worldwide and therefore impact significantly on both near and distant ecosystems. Urbanisation is occurring at an explosive rate: over 60 % of the urban area projected to exist in 2030, has yet to be built.[4] Most of this growth will occur in biodiverse areas such as coastal zones and flood plains, and primarily in Asia and Africa.[5] Such transformation will pose severe and unprecedented challenges to biodiversity conservation.

Conversely, cities present multiple opportunities to create a more sustainable future by way of enhancing resource-efficiency, reducing ecological footprints [6] and fostering innovation, political leadership and social responsibility. It is at the local level where national and international policies and plans are implemented, and where large numbers of citizens can apply pressure on decision-makers to

[2] Green infrastructure is a natural and human-made infrastructure relying mostly on living beings, such as plants and animals, and the ecosystems in which they are embedded (e.g., water streams, wetlands, hills, etc)
[3] UNDESA, Population Division 7 2007. *World Urbanization Prospects: The 2007 Revision*, UNDESA, New York. URL: http://www.un.org/esa/population/publications/wup2007/2007WUP_Highlights_web.pdf
[4] SCBD 2012. *Cities and Biodiversity Outlook: Action and Policy.* CBD, Montreal, pg 7. URL: http://www.cbd.int/en/subnational/partners-and-initiatives/cbo/cbo-action-and-policy-executive-summary
[5] *Ibid*
[6] The ecological footprint is defined by the Global Footprint Network (www.footprintnetwork.org) as *"a measure of how much area of biologically productive land and water an individual, population or activity requires to produce all the resources it consumes and to absorb the waste it generates, using prevailing technology and resource management practices."*

instigate change. It is in cities, where the vast majority of academic and research instutions are found, and where connections are enabled that support the birth and development of novel solutions to environmental challenges. It is in cities where such innovations can be empowered by dense concentrations of social, political and financial capital.

In cities, there is also considerable potential for internal production and use of ecosystem services. This entails integrating biodiversity into urban planning to create ecological corridors, stepping stones, green roofs, wetlands, waterways, ecoducts, agricultural patches, etc., that generate tangible benefits for citizens. The imperative for biodiversity in cities therefore goes beyond simple conservation, to considerations of internalising provisions of ecosystem services, which would otherwise be sought from outside the city.

By presenting a practical approach to biodiversity planning and management, this document seeks to help local governments harness available resources and opportunities to address global biodiversity loss and ecosystem degradation. By taking action for biodiversity, local governments and their citizens can expect to reap a wealth of benefits, whilst supporting the sustainability of humankind.

1.1 What is an LBSAP?

A Local Biodiversity Strategy and Action Plan (LBSAP) is a guiding strategy, complemented by specific actions and adopted by local governments to achieve optimal and realistic governance and management of biodiversity and ecosystem services. An LBSAP is essentially the local equivalent of a National Biodiversity Strategy and Action Plan (NBSAP, see appendix 1) which is the primary instrument use by national governments for implementing the Convention on Biological Diversity (CBD). LBSAPs have been formally recognized in decision X/22 at the 10th Meeting of the Conference of Parties (COP) to the Convention on Biological Diversity (CBD COP 10) in Nagoya, Japan, in October 2010. The decision asks Parties to encourage local governments to develop and implement LBSAPs in support of NBSAPs and indeed, in support of the Convention. An LBSAP can be a stand-alone document, but its core principles should be integrated into broader city plans because virtually all line functions are affected by, and impact on, biodiversity. Integration entails "spreading the load" (i.e. the responsibility for managing biodiversity) across line functions.

Box 1. Terminology

Note that the terms 'local government', 'city' and 'local authority' are used interchangeably and are, in these guidelines, understood to have essentially the same meaning unless indicated otherwise.

An LBSAP is most useful when the actions it details require biodiversity to be integrated across local development processes. Such actions can be extremely varied according to the needs, capacity and context of the local government concerned and may include biodiversity assessment, establishment of protected areas, enforcement of relevant laws and policies, capacity building and awareness-raising. Certain local governments are now heightening their commitment and sense of responsibility, by consolidating their LBSAPs with measures to reduce ecological footprints.

Compared with NBSAPs, LBSAPs can be more specific, in terms of assigning deadlines and staff to meet deliverables. So too, they can be more consultative, informed directly by the views of colleagues, partners, and the general public. Such broad consultation helps to ensure that the LBSAP is well-informed, widely-supported and thus, easier to implement effectively.

LBSAPs can assist in translating international and national biodiversity policies and targets into implementable action at the local level. Thus, LBSAPs can contribute significantly to their respective countries' efforts to implement the CBD. Furthermore, as the order of government closest to people, local govenments are well-placed to inform sub-national and national BSAPs through feedback mechanisms. Given that cities share much in common, actions which succeed in one city may also succeed in others. As such, the composition of LBSAPs can benefit by drawing from the experiences of other local governments. This global learning process will help to expedite the integration of biodiversity to local development processes.

Box 2. Definitions

A **biodiversity strategy** comprises an overarching vision of what will ideally be achieved in terms of biodiversity, including a statement of principles, clearly defined priorities and short, medium and long-term goals, as well as a set of targets to help guide implementation.

A **biodiversity action plan** identifies priority actions and clearly outlines how these will be implemented, by whom, by when, and using what resources. Other important aspects that should be included in the action plan are a framework for mobilizing funding and a communication strategy.

1.2 Why have an LBSAP?

Biodiversity management at the local level is particularly important for several reasons. Firstly, a large portion of the world's land surface is administered *de juris* or *de facto* by local governments. They can determine whether and how areas are developed. Secondly, local governments – especially cities - have unique opportunities to engage, educate and mobilize citizens and can thereby cultivate a more ecologically-sensitive society. Thirdly, biodiversity and ecosystems generate multiple services that can enhance municipal service delivery in a cost-effective manner (e.g. storm water regulation, mitigation of urban heat island effect).

192 national governments worldwide, as well as the European Union, have signed the CBD, indicating their commitment to achieving its primary objectives, which are:

- The conservation of biological diversity;
- The sustainable use of the components of biological diversity;
- The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

In addition to these objectives, the CBD Strategic Plan for Biodiversity 2011-2020 lists five strategic goals comprising twenty Aichi Targets (see appendix 2). Achievement of these objectives, goals and targets will not be possible without the active contribution of local governments. Just as national governments are encouraged to develop NBSAPs in alignment with the Strategic Plan, local governments are encouraged to develop LBSAPs in alignment with NBSAPs. This way, continuity and synergy in biodiversity policy and planning will be greatly facilitated.

Section 2. Getting started

This section provides practical suggestions on how to begin compiling an LBSAP in a methodological and structured way. It is important to secure as much institutional support as possible for the development of an LBSAP. An initial planning stage is desirable to determine: who should be inolved in the LBSAP development team; how the LBSAP process will be governed and managed; what resources are required; and how long the process will take. Where appropriate, this information should be included in the LBSAP itself. Remember that any activities entailed with developing an LBSAP should be specific, measurable, attainable, relevant and time-bound (SMART).

2.1. Assemble a team

It is recommended that a small core team be established to take primary responsibility for developing the LBSAP. Ideally the team should be inter-departmental and where appropriate, comprise representatives of relevant external groups: local nature societies, non-govenmental organisations (NGOs) and academic institutions can harbor a great deal of knowledge on the whereabouts and ecology of local species and habitats. Over time, advice and capacity sought externally should be replaced by internal capacity.

As organizational capacity grows, so do the opportunities for mainstreaming biodiversity across local government departments and sectors. The success of an LBSAP will largely depend on how well it helps to meet the needs of the city, and indeed, how well such achievements are communicated. Success will encourage additional financial and technical support to the LBSAP, creating a virtuous cycle.

Members of, or advisors to, the core team should collectively be:

- Senior enough to make decisions, or have direct access to decision-makers including heads of departments and elected officials;
- Dedicated and motivated enough to contribute meaningfully to the process;
- Technically knoweldgable about relevant ecological, social and economic issues. The collective technical competence of the team and its advisors should ideally cover:
    - Spatial planning, including Geographical Information System (GIS);
    - Biodiversity, ecosystem services, and conservation planning;
    - Local development priorities and how their delivery interacts with biodiversity;

- Economic skills, including at least a basic understanding of ecological economics;
- Facilitation, mediation and participatory appraisal skills, which can greatly improve the efficacy of stakeholder engagement;
- Social and cultural dimensions of biodiversity, for example, how local livelihoods depend on natural resources.

2.2. Determine resource requirements

Developing an LBSAP will require some resources, not least for staff time, organizing meetings, undertaking field surveys, consulting stakeholders and marketing. It is recommended that an initial assessment of the resource requirements be undertaken. This assessment should identify the necessary in-kind resources (e.g. staff time or meeting venues) as well as potential funding that can be sought from external and internal sources. Once there is clarity on the resource requirements and sources of such resources, colleagues, partners and potential donors should be approached to leverage their support. Some advice is as follows:

- Identify possible funding sources at the local level and determine elgibility requirements to receive those resources. Note that in many local governments, budgetary cycles exist whereby the executive body (e.g. city council) must approve significant expenses periodically.
- Identify external sources of funding in higher level authorities (national or state governments). In light of important CBD decisions (specifically X/22 and XI/8) it is not unusual for national governments to financially support the development of LBSAPs.
- Talk to high-ranking or influential officials to convince them of the importance of LBSAPs. Their engagement can bring important political and financial support to the LBSAP process.
- Identify potential financial support and human resources outside the sphere of govenment, such as foundations, international organizations and NGOs. Companies and individuals might even be interested in supporting the process.

Resources might be scattered in different local government departments, institutes, universities and NGOs and will need to be systematically collected and combined. It is important to make use of what is available; a shortfall of resources need not impede the development of an LBSAP. In the early stages, research needs and knowledge gaps will come to light, as will the economic, social and cultural importance

of biodiversity. Increasing numbers of stakeholders will become actively invovled. Such momentum can help to attract in-kind and financial support during the development of an LBSAP.

Resources should be carefully assessed to inform a realistic timeframe and expectation of what the process will deliver, as well as to avoid early cessation (owing to the exhaustion of resources) before meaningful delivery.

2.3 Set a timeframe

Depending on, *inter alia*, the resources available, local context, extent of stakeholder engagement and depth of background research, an LBSAP may take anywhere between a few months and a few years to compile. It is recommended that the LBSAP itself proposes actions over a 5 to 10 year timeframe. Given that the LBSAP is essentially a living document that evolves and improves in light of new knowledge and development priorities, its compilation is an almost open-ended process. Nevertheless, specific actions and deliverables entailed in the development of an LBSAP should still be time-bound, ensuring that:

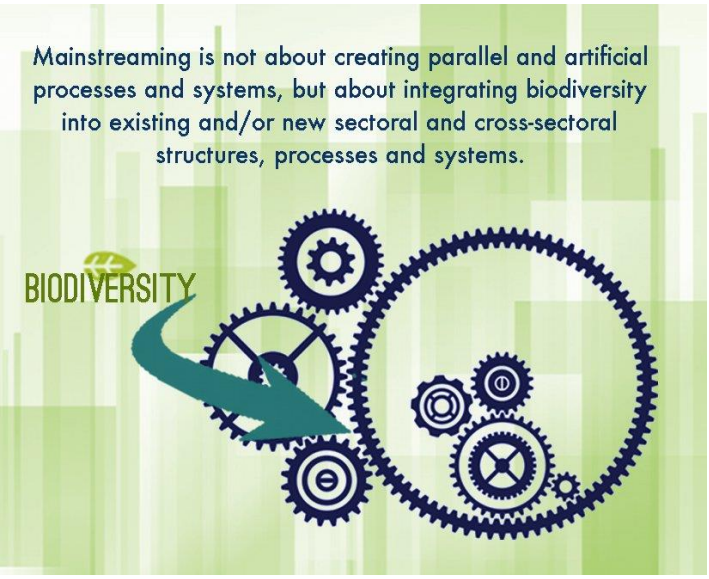
- The process of compiling the LBSAP is not delayed by a lack of available information, as information is never perfectly sufficient;
- The deadlines for drafts and the completed product (to be considered for executive approval) are realistic, taking into account the availability of those who are relied upon to compile it;
- That the timing of important milestones, including executive approval of the LBSAP, are synchronised with relevant processes such as elections and budgetary cycles.

2.4. Understand biodiversity mainstreaming

A critical question for those developing an LBSAP is:

What is the most effective way to mainstream biodiversity considerations across the work of my city?

Biodiversity mainstreaming is especially important in cities, where multiple sectors and interest groups are densely concentrated, and where environmental management, per se, is often dwarfed by other local government priorities. It refers to moving biodiversity issues from the periphery to the centre of decision-making, whereby they are reflected in the very design and substance of sectoral policies. Mainstreaming is not about creating parallel or artificial processes and systems, but about integrating biodiversity into existing and/or new sectoral and cross-sectoral structures, processes and systems.



In practice, biodiversity mainstreaming entails integrating 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, as well as in sector-specific plans, such as agriculture, fisheries, forestry, mining, energy, tourism, and transport. As such, it should be a central component of any LBSAP.

Mainstreaming is an incremental and planned process requiring a sustained effort, over several years on several fronts. It is hoped that mainstreaming will help local actors recognize the value of biodiversity and ecosystem services, and act to maximize the positive, and minimize the negative, ecological impacts of their activities. Through mainstreaming, biodiversity concerns will be internalized across sectors, thereby distributing responsibility for biodiversity management. This sharing of ownership and responsibility can free up resources traditionally used by environment authorities to mitigate unsustainable sectoral policies and substantially increase the financial, human and technical capacity for biodiversity management.

Biodiversity mainstreaming entails three key steps:

i. Identify the relevant sectors and actors that utilise or impact on biodiversity and ecosystem services, and examine their plans and policies.
ii. Initiate contact with these sectors and stakeholders (e.g. through meetings, workshops and seminars) and identify and nurture potential ‘champions’ for biodiversity. Determine what initiatives, interests and plans they have.
iii. Identify areas of alignment that present opportunities for integrating biodiversity measures into broader sectoral plans and devise actions accordingly.

There are a number of tools and approaches available to support biodiversity mainstreaming at the local level (these form the subject of section 4). However, it is first necessary to: understand the political and

institutional context of the local government in question, including relevant policy and planning processes; identify and engage relevant stakeholders; and gather knowledge and information.

Box 3. CBD Mainstreaming Mandate

Article 6b of the Convention stipulates: "Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs and policies."

In addition, the CBD's 5th Conference of the Parties endorsed the **ecosystem approach**, which provides for the integrated management of land, water and living resources and promotes a balance in the achievement of the three objectives of the Convention, as the primary framework for action under the Convention.

The third edition of the **Global Biodiversity Outlook** reports that while addressing biodiversity loss requires addressing the underlying causes or indirect drivers of that decline, there has been insufficient integration of biodiversity issues into broader policies, strategies and program. It states that better decisions concerning biodiversity must be made at all levels and in all sectors, in particular the major economic sectors, with a key enabling role played by government.

Given the importance of mainstreaming, it is not surprising that it is one of the first of five goals of the Convention's Strategic Plan for Biological Diversity 2011-2020, specifically, Strategic Goal A which is to "Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society."

2.4.1. Assess the political context

When developing an LBSAP, it is important to understand the political context in which the biodiversity management and urban planning take place in order to garner political support and avoid political pitfalls. Some recommended actions to better understand a local government's political situation are as follows:

- Consult (relatively) independent stakeholders with an interest in biodiversity, like NGOs;
- Consult officials who have been in the local government for a long time (even if they are not directly involved with the environment);
- Scan the local media for news on environmental issues concerning past and present administrations;
- Consult people actively involved in politics (specialists, journalists, etc.) to determine the ruling party's priorities and their history of action in the realm of environment and development;
- Check how the local government's budget is allocated across sectors, noting any relevant trends.

2.4.2. Assess relevant policy and planning processes

LBSAPs should be synchronized with the local government's policy and planning processes. The timing of budgetary and election cycles should be taken into account as shoud the roles and influence of different sectors. Typical policy and planning processes are described below.

National and international policy and planning processes

Formal policy and planning processes focusing specifically on biodiversity exist in most countries, with the majority of Parties to the CBD having already established NBSAPs. When developing an LBSAP, one should check for such national documents and become familiar with national priorities. Parties to the CBD are increasingly recognizing the fact that, in order to achieve the Aichi Targets that they have agreed upon, the collaboration and contribution of local governments is essential. By positing the LBSAP as a contribution to national strategies and commitments, it will be easier to leverage the support of national governments. Where appropriate, LBSAPs should also be aligned with existing global development priorities, such as the Millennium Development Goals (MDG),[7] especially Goal 7: Ensure Environmental Sustainability. Such alignment will provide the LBSAP with a distinct advantage, by way of enhancing its legitimacy and relevance.

Local development processes

Biodiversity management is seldom regarded as a high priority for local governments unless it is deemed to support the attainment of broader municipal goals. Despite considerable progress in raising awareness of the beneftis of green infrastructure in cities, biodiversity conservation is still often regarded as an impediment to development. Dispelling such notions is a challenge that requires win-win solutions and the formation of novel partnerships. Cities have multiple planning processes concerning such matters as housing, transportation, agriculture, green spaces, land-use zoning and economic development, all of which affect biodiversity. To influence these sectors, one must infiltrate their respective planning processes. Typically each sector is subject to at least annual reviews that enable strategies to be modified. Elections, budgetary meetings, and environmental impact assessments also give rise to opportunities to influence policy direction. Overarching city plans can also be targeted. In this way the considerable workload of

[7] www.un.org/millenniumgoals

caring for local biodiversity is appropriately shared multiple actors, enabling a dedicated biodiversity team to spend more time soliciting colleagues and coordinating activities.

Informal processes

There is also a myriad of informal processes occurring at different levels (from local to international) and involving different stakeholders (civil society groups, NGOs, universities, businesses, etc.). It is worth screening these processes to see whether any could significantly affect the LBSAP process. For example, in many countries, local chieftains have strong informal influence over land-use decisions, so should be taken into account in the LBSAP process.

2.4.3 Identify and engage with stakeholders

The process of developing an LBSAP should engage as many legitimate stakeholders as possible. This will facilitate the collection of information to improve the quality and comprehensiveness of the LBSAP, as each partner will bring their own knowledge and skills. Allowing stakeholders to provide inputs will also foster a greater sense of ownership and acceptance, making implementation of the LBSAP easier. So too, engaging multiple stakeholders will raise the profile of the LBSAP, which could enhance fundraising efforts.

Figure 2. Stakeholders in the development and implementation of an LBSAP.

Within government, important stakeholders and potential partners could include the environment, finance and planning departments, parliament (and/or city council/parliamentary committees), and the judiciary, as well as ministries responsible for forests, agriculture, marine areas, mining, infrastructure, transport, tourism, international cooperation and trade.

Within civil society, important stakeholders and potential partners could include national and international NGOs working in the country, UN representatives (and focal points) and development agency staff, persons in charge of in-country donor coordination, environmental groups, farmers, fishermen, indigenous communities, academics, scientists, research institutions, professional associations, labour groups, and chambers of commerce.

Within the private sector, important stakeholders might include green-tech businesses, private developers, construction firms, utility operators, factory managers, and local restaurants.

Relevant stakeholders may hold conflicting views on what constitutes appropriate local development. Stakeholder engagement should be dynamic and democratic enough, to allow for a diversity of viewpoints to be expressed and considered. Special efforts should be made to ensure that no relevant groups are excluded from the process.

Opportunities for stakeholder engagement include official hearings, public debates, dedicated workshops, world-cafés, small semi-structure meetings, telephonic interviews, web-based social media platforms and electronic surveys. Whatever forum is chosen, there should be clear objectives and expected outputs (see box 4).

Box 4. Objectives of consultation

The Municipality of Bergrivier, conducted a public consultation by way of telephonic interviews and focus group meetings, with the following objectives:

- Identify the biodiversity priority issues ;
- Identify how the core functions of various stakeholders impact on biodiversity (positive and negative);
- Identify interventions aimed at the direct and indirect conservation and promotion of biodiversity in the municipal area which have the potential to be complemented and built on through the LAB process;
- Solicit inputs from stakeholders on initiatives they would like to see incorporated into the LBSAP;
- Identify partnership opportunities that the Municipality can make use of to promote the conservation of biodiversity.

2.4.4 Assess local biodiversity and ecosystem services

Data collection and analysis is essential to understanding the richness, abundance, distribution, status, trends, and ecology of local species and habitats. It is also essential for understanding the flows of ecosystem services that are generated and mediated by biodiversity. Such data must underpin effective strategies for biodiversity conservation.

The ICLEI Local Action for Biodiversity (LAB) Program[8] encourages participating local governments to undertake an intensive biodiversity assessment prior to, or in conjunction with, the development of an LBSAP. The results are published in a 'Biodiversity Assessment Report' which serves as a valuable reference and learning resource, and provides a solid foundation on which to develop the LBSAP.

However, owing to resource constraints and time pressure, it is not always possible to conduct a thorough biodiversity assessment prior to developing an LBSAP. In such circumstances, a rapid assessment can be undertaken over a shorter period of just 1 to 2 weeks. Even rapid assessments can provide a credible basis for developing an LBSAP. Furthermore, the LBSAP can itself articulate as a priority action, the identification and remediation of significant knowledge gaps.

Local governments have a number of tools at their disposal to assess biodiversity, including the following:

1. The **City Biodiversity Index**[9] (CBI) comprises 23 indicators to help cities manage their biodiversity conservation efforts and integrate biodiversity considerations in urban planning and governance.

[8] www.iclei.org/lab
[9] http://www.cbd.int/authorities/gettinginvolved/cbi.shtml

The CBI can serve as a valuable tool for self-assessment allowing cities to set goals and periodically check progress.

2. **The Economics of Ecosystems and Biodiversity** (TEEB) D2: Report for Local and Regional Policy-makers [10] and TEEB Manual for Cities [11] draw attention to the global economic benefits of biodiversity, highlights the growing costs of biodiversity loss and ecosystem degradation. The studies set out various principles and methodologies for valorizing ecosystem services and integrating their values into local decision-making processes, drawing from case studies around the world.
3. The **Global Biodiversity Information Facility** (GBIF, see appendix 3) encourages free and open access to biodiversity data via the internet, with a view to enhancing decision-making and advancing scientific research. The GBIF-ICLEI Best Practice Guide for Biodiversity Data Publishing by Local Governments [12] increases awareness and understanding of the tools and protocols available for data management as part of local government planning processes.

There are also various sources of biodiversity information including: satellite imagery, arial photos, land cover and land use maps; lists of local fauna and flora and their habitats; conservation status of species and/or habitats; academic papers; environmental impact assessments; development plans; and socio-demography reports.

However, the most effective means to acquiring information is often through conversation. Stakeholders can yield a surprising amount of information and be able to give useful pointers and advice. When engaging with stakeholders, it is worth pursuing the following information:

a) Local biodiversity characterists, including status, trends, and drivers of change.
b) Local information on the links between biodiversity and human well-being.
c) The economic value of local biodiversity, including: the value of the goods and services provided by biodiversity (such as pollination, water purification, food provision, soil retention etc.); the long term revenue that can potentially be generated through biodiversity-related businesses (e.g. tourism and fishing); the present and possible future costs to society of biodiversity loss; and potential savings to government and society through stemming the loss of biodiversity.
d) It can include information/ knowledge on how different stakeholders use and benefit from biodiversity.

[10] www.teebweb.org/publications/teeb-study-reports/local-and-regional
[11] www.teebweb.org/manual-for-cities
[12] www.gbif.org/orc/?doc_id=4661

e) The linkages between biodiversity and specific sectors including: how each sector uses, benefits from, and impacts on biodiversity and ecosystem services.

f) Any sector-specific biodiversity-relevant knowledge and information (including traditional knowledge, practices, and governance) that can be used to reach LBSAP goals.

This section has outlined the initial activities that can be undertaken to assemble a core team, determine a timeframe and resource requirements, build an appropriate knowledge base, and identify relevant stakeholders to support the development and implementation of an LBSAP. With an understanding of the political context, relevant policy and planning processes, and the characteristics of local biodiversity and ecosystem services, **you are now ready to add flesh to the LBSAP**, which is the focus of the next section (section 3).

Section 3. Compiling the LBSAP

This section identifies the standard information that an LBSAP should contain and provides guidance on how to acquire such information. It also provides examples of specific actions that can be proposed in an LBSAP with a view to mainstreaming biodiversity across local government sectors.

3.1. Best practice principles

When developing and implementing an LBSAP, there are some important principles to bear in mind, adhering to which will significantly improve both the suitability of agreed targets and the efficacy of proposed actions:

- **Underpin conservation decisions with best available scientific evidence.** Local governments should substantiate and corroborate their biodiversity policy with latest scientific findings and as much evidence as possible. Scientific evidence on the benefits of biodiversity including economic values of ecosystem services can also provide effective communication material and strengthen the impetus for action.
- **Pursue economic growth without compromising ecosystem health and vice versa.** LBSAPs should improve, not hinder development. They should capitalize on opportunities for win-win conservation and development solutions. A careful assessment would help local governments to identify critical biodiversity assets for protection and relinquish to development, areas with low ecological value.
- **Balance public interest with property rights.** Land justice should be considered in throughout the LBSAP process, which requires a balance between the public interest and the rights and responsibilities of individual property owners.
- **Ensure strategies and actions are sensitive to the needs and characteristics of local communities and encourage public engagement.** Building partnerships with local communities will enable local govenments to: leverage considerable additional knowledge and expertise; improve the quality of the LBSAP accordingly; and foster community-wide responsibility for biodiversity.
- **Develop area-specific strategies and actions to reflect local identities.** While international case studies can provide inspiring success stories, the complex mix of challenges and opportunities is never identical in different cities. Thus in addition to learning from the experiences from others, it is

important that local governments are open to devising their own new and innovative approaches that reflect local characteristics.

- **Align with existing conservation plans, aiming to be additive rather than redundant.** A wide range of conservation plans might have been developed in governments and non-government organizations. LBSAPs should align with, and reinforce, the goals and objectives of existing plans, forming partnerships where necessary. This will avoid duplication and ensure more efficient expenditure of precious conservation resources.

3.2. Name the LBSAP

Naming an LBSAP may seem trivial but it is in fact a prime opportunity to brand and promote the document, to help the core team understand how it fits within the city, and to articulate its purpose. Let it be as descriptive and catchy as possible. Whilst 'Biodiversity Strategy and Action Plan' is self-explanatory and mirrors the terminology used by the CBD, it may be ineffective for marketing purposes. Think about the target audience of the LBSAP. Will the word, 'biodiversity', confuse certain readers? In any case, an exciting, customized title geared towards the desired target audience will find greatest traction. Here follows a selection of names that have been used by cities:

- Natural Connections: Local Biodiversity Strategy & Action Plan: Strengthening and integrating our efforts to protect Edmonton's biodiversity
- City of Johannesburg - Biodiversity Strategy and Action Plan
- Waitakere Biodiversity Action Plan
- eThekwini Municipality Environmental Management Department: Strategic Plan
- City of Cape Town Municipality – Environmental Resource Management Department, Biodiversity Management Branch: Strategic Plan 2009-2019

3.3. Set the scene

To set the scene, interesting contextual information should be provided in the LBSAP. It is recommended that such information includes:

- Relevant statistics of the city such as size, population, growth rate, mayor, etc.;
- Biodiversity found in and around the city including information on the ecology, status and trends of

important species and habitats;

- Challenges facing local biodiversity and ecosystem sevices (e.g. urbanization, pollution and invasive alien species), and the departments responsible for managing biodiversity;
- Existing institutional framework including legislation, policies and plans;
- Noteworthy biodiversity projects.

To avoid distracting from the essence of the LBSAP, contextual information should be kept relatively concise. As such it is recommended that links and references to more thorough information (such as a biodiversity assessment report) are included, or that such information be simply annexed to the LBSAP.

3.4. Devise an overarching strategy and action plan

The core team, together with relevant stakeholders, should define an overarching strategy for directing the governance and management of biodiversity in the local govenment. It should be formulated through a participatory process with inputs from various stakeholders gathered through, for example, official hearings, public debates, semi-structured meetings, workshops and world-cafés. It should contain a vision, a statement of principles, clearly-defined priorities including short, medium and long-term goals, a set of targets to guide implementation and a set of actions designed to achieve targets (figure 3).

Figure 3: Schematic representation of an LBSAP.

3.4.1. Construct a vision

Constructing a long-term vision for biodiversity will provide direction, inspiration and motivation to the core team and other stakeholders in the LBSAP process. It entails articulating an optimal future scenario to strive towards. It should be concise and ambitious yet achievable, with clear social and economic

relevance. A compelling vision can provide a powerful means to galvanize city-wide cross-sectoral support for an LBSAP.

The CBD Strategic Plan for Biodiversity 2011-2020 comprises a vision:

By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.

After an extensive public onsultation, the City of Edmonton, distilled a 'Community's Vision of Success':

A system of conserved natural areas, ecologically and effectively managed, connected to the ravines and river valley, linking the natural and restored green spaces and regional natural areas, recognized and supported by the community of Edmonton as a valued asset.[13]

Similarly, the City of Cape Town constructed the following vision:

To be a City that leads by example in the protection and enhancement of biodiversity. A City within which biodiversity plays an important role, where the right of present and future generations to healthy, complete and vibrant biodiversity is entrenched, and to be a City that actively protects its biological wealth and prioritises long term responsibility over short term gains.

3.4.2. Establish guiding principles

Guiding principles serve to express a set of values and beliefs that set the tone of an LBSAP and provide important parameters for specific goals, targets and actions. When the City of Joondalup developed an LBSAP, the Council endorsed five key principles to guide and underpin biodiversity management undertaken by the City. They are:

1. ***Publicise and Promote Biodiversity****- To regularly publicise and promote the work the City is doing in managing its Biodiversity.*
2. ***Effective Implementation*** *- To ensure that City plans, strategies and actions relating to biodiversity are being achieved and include the ongoing restoration and rehabilitation of degraded areas and control of invasive species.*
3. ***Raising Awareness*** *- To increase the community's understanding and awareness of biodiversity issues that affect the City and can impact on the lifestyles of residents.*

[13] The LBSAPs of Edmonton and Cape Town can be found on ICLEI Cities Biodiversity Center's resource page at: http://archive.iclei.org/index.php?id=12223

4. ***Community Participation*** *- To encourage the community to actively engage in biodiversity projects.*
5. ***Partnerships and Collaboration*** *- To build partnerships, where appropriate, that will assist in achieving effective resource utilisation and share information and ideas.*

3.4.3. Set goals, targets and actions

Goals, targets and actions should be ambitious, yet realistic and achievable. Furthermore, they should be developed in close consultation with relevant stakeholders. It is recommended that they collectively span a period of 5 to 10 years to allow for the inclusion of important long-term actions.

The CBD Strategic Plan for Biodiversity 2011-2020 comprising five Strategic Goals and twenty Aichi Targets, provides a helpful framework in which to devise locally-tailored goals and targets for inclusion in an LBSAP. At the national level, the NBSAP is the most relevant document with which to ensure alignment of LBSAP goals and targets. At the local level, other local development strategies should be considered including those relating to health, education, water management, transport infrastructure, energy security, and climate change adaptation. Ensuring such vertical (local to international) and horizontal (cross-sectoral) alignment will heighten and widen the relevance of the LBSAP and facilitate biodiversity mainstreaming by inducing cooperative support. Thus, the CBD, NBSAP, and other local government strategies, collectively provide an excellent basis for formulating a tailor-made set of LBSAP goals and targets.

It may also be useful to conduct a simple assessment of the strengths, weaknesses, opportunities and threats (SWOT exercise) concerning biodiversity management. After formulating a set of goals, the City of Waitakere (now part of Auckland City Council), conducted such a SWOT exercise to assess current management practices in relation to those goals (see table 1).

Once a set of goals and targets is defined, an action plan should be developed to achieve them. There may be several actions required for each target, and one action may contribute to several targets. Actions can range from expanding a protected area to running a communications campaign, and from restoring a degraded habitat to adopting specific by-laws.

Each action should be clearly defined in terms of the organization(s) or individual(s) responsible for their implementation. The funding requirements and potential funding sources for each action should also be denoted. One should not refrain from proposing actions that require additional fundraising to support

implementation. It is perfectly normal for an LBSAP to comprise a 'wish list' of actions that form the subject of future fundraising efforts.

Table 1: The City of Waitekere's SWOT analysis of its management goals.

Goals	Strengths	Weaknesses	Threats	Opportunities
Establish the state of Waitakere's biodiversity	Existing staff skills, level of interest and information available on the Waitakere Ranges	Lack of good data on the area of Waitakere outside the Waitakere Ranges	Inaccessibility of much of the area of the Waitakere Ranges	Information sharing with volunteer groups Partnerships with Universities and Crown Research Institutes
Provide for maintenance and long-term viability of the City's biodiversity	Supportive legislation -Waitakere Ranges Heritage Area Act -District Plan Natural environment of the Waitakere Ranges	Inadequate evaluation of restoration projects	Urban development Loss of habitat Plant and animal pests climate change	Co-ordination of biodiversity effort by all players
Enable re-establishment of species lost	Ark in the Park capability Department of Conservation support Proximity of island sanctuaries such as Tiritiri Matangi and Motuhie	Limited resources in terms of availability of species and expertise to undertake transfers	Plant and animal pests Climate change	Partnering with Ark in the Park and Department of Conservation

3.5 Examples and extracts

Although the underlying structure of LBSAPs is normally consistent, different local governments have different formatting protocols and may use different terminology to describe the same component of an LBSAP e.g. what some refer to as a 'goal', others call an 'objective'. This should be born in mind when examining the following extracts taken from the LBSAPs of three cities, namely, Joondalup, Johannesburg and Liverpool. These extracts serve to illustrate the diversity of goals, targets and actions that an LBSAP can comprise.

3.5.1 The City of Joondalup's LBSAP

In developing its LBSAP, the City of Joondalup identified six key target areas for biodiversity management:

1) Planning and Development
2) Catchment Management
3) Reserve Management
4) Corridors and Connectivity
5) Community Education and Awareness
6) Community Engagement and Partnerships

These key focus areas reflect areas of responsibility in which the City can make a significant difference in the management of biodiversity. Here follows a closer examination of target 4 on corridors and connectivity, and its associated actions:

Target 4. To provide and protect biodiversity corridors and linkages to improve the viability and facilitate the movement of local flora and fauna.

Ecological linkages facilitate wildlife movement and connect significant vegetation and habitats. Without linkages between natural areas fauna can become isolated in one bushland area making them more susceptible to disease, fire and predators as well as reducing their food supply and restricting their breeding populations. The City has several significant regional ecological linkages, particularly from the south to the north, and the protection of the viability of these linkages is critical. It is also important to identify additional areas that have the potential to form parts of linkages.

Table 2. Target 4 in the City of Joondalup's LBSAP.

Action number	Action	Responsible business unit	Timeframe for completion
4.1	Ensure that verges along major arterial roads are planted with appropriate local native flora, (as per Master Landscaping Plan).	IS	Ongoing
4.2	Identify indigenous tree and shrub species suitable for planting along verges and medians to create biodiversity linkages	OS, APES	Short
4.3	Modify road construction practices to ensure that road-base is not installed under the median or is boxed out after construction.	IS	Short
4.4	Identify existing wildlife linkages and the actions needed to protect and enhance these corridors.	IS, SD, OS	Short
4.5	Provide safe animal passages along biodiversity corridors, (such as those recently installed at Carine Lake) and provide means to direct animals to them	IS, OS	Long
4.6	Ensure biodiversity linkages are protected through effective infrastructure and community awareness raising.	APES, SD	Medium
4.7	Develop management guidelines for biodiversity linkages that integrate residential gardens. Encourage residential gardeners to plant species which complement the City's biodiversity linkages.	SD, IS, OS	Medium
4.8	Review the Perth Biodiversity Survey (2004) and list priorities and new biodiversity areas with the intent of adding further to the 32 sites that the City already has listed under schedule 5 of DPS2,	SD, IS	Short

4.9	Update the biodiversity maps developed as part of the Perth Biodiversity Project and ensure the information is included in the City's GIS system.	IS, IM	Medium

3.5.2. The City of Liverpool's LBSAP

Liverpool's LBSAP divides its strategies and actions into target areas that relate to the various roles and responsibilities of Council which have the potential to impact on the viability of the City's biodiversity. These target areas are:

1) Statutory Planning;
2) Land and Water Management;
3) Education;
4) Resources;
5) Monitoring.

Each section of the LBSAP was allocated a number of targets with action points to address these targets. The example below considers section 2 above (land and water management), and looks at the first target and its associated action points.

Target area 1: Acquire and manage land to proactively protect and restore native vegetation communities and species habitat

Council can make a significant contribution to the protection, restoration and enhancement of important vegetation communities and wildlife habitat by making some changes to the way it manages the land it is responsible for.

Actions

a) Prioritise Council's land acquisitions using conservation significance assessment maps from this Strategy (Part E), to give priority to the acquisition of land identified as being of highest conservation significant and/or which contributes to regional connectivity areas and riparian corridors.

b) Apply the information from the vegetation community maps (Part E) to guide decision making about planting of relevant locally indigenous species on Council land and in regeneration projects.

c) Use native plants of site specific origin in new plantings wherever possible to maintain genetic integrity. Support the continuation of existing programs of bushland regeneration and keep a record of works on Geographic Information Systems.

d) Use conservation significance assessment maps (see Part D) to identify priority bushland and corridor areas to be targeted by Council Environment Plan, community bush regeneration projects, and threat management activities.

e) Protect and rehabilitate roadside reserves, and plant out with native trees and shrubs if native vegetation does not exist or is of poor condition.

f) Establish Community nursery to collect local seed and provide stock to Council's (and others) rehabilitation programs.

g) Give priority to undertaking enhancement and maintenance work in areas of environmental significance, as defined by conservation significance mapping (Part E).

h) Fence off key remnants, particularly Endangered Ecological Communities where appropriate to protect reserves in order to facilitate the protection and/or regeneration of understorey.

i) Prepare discussion paper on roadside reserves as potential corridors between significant remnants.

j) Develop guidelines for the restoration of native vegetation communities and species habitat.

3.5.3. The City of Johannesburg's LBSAP

The City of Johannesburg's action plan includes 7 target areas each addressing a different suite of problems. These include:

1) The broader strategic issues of the urban ecological network that essentially sets the scene for biodiversity protection and integration into the City;
2) Issues of governance and institutional arrangements that would enable the biodiversity strategy and action plans;
3) Action plans related to environmental education and awareness to raise the profile and understanding of the role of urban biodiversity within the City;
4) Specific issues around biodiversity within Johannesburg (this subsection is divided into the features associated with watercourses, ridges and species and ecosystems of special concern);
5) A subsection dealing with action plans to address the social open space system in the City and the biodiversity contribution that it can make;

6) Action plans relevant to the services and utilities Johannesburg provides its citizens and what they can do to contribute to the biodiversity values;
7) A specific set of actions that relate to the control and removal of invasive alien plants within the city.

Each action plan is set out within a template that:

- describes the action plan,
- what objectives it would satisfy,
- what problems it aims to address,
- what the possible constraints to implementation are and how they might be overcome,
- lists the existing relevant policies and legislation that deal with the action, and
- lists other linked action plans.

The prioritisation of the action plans scores the action on a scale of 1 to 3 where:

1 = Action required immediately, essential to success of plan; 2 = Action definitely required but not urgent, important to the success of plan; 3 = Action would be useful to the success of the plan.

At the end of the action plan section a summary table provides an overview of all the action plans as well as providing an indication of the time frame for implementation and the responsible department or entity for that action. A closer look at target area 7 on alien vegetation control and removal, and its associated actions, is shown in table 3:

Table 3. Target Area 7 in the LBSAP of the City of Johannesburg.

Strategic objective	Action area	Action plan	Priority	Time frame	Responsible department
Alien vegetation control and removal	7.1	Manage invasive alien plants in the City of Johannesburg within the appropriate policy and legislative frameworks	1	Medium to long term	Environmental Management, City Parks, MOEs, Working for Water, GDACE
	7.1	Harmonize the actions of all role-players through strategic planning	1	Medium term	Environmental Management, City Parks, MOEs, Working for Water, GDACE
	7.3	Appropriate awareness-raising, institutional arrangements and capacity-building implemented	1	Short term	City Parks and Environmental Management

	7.4	Control the introduction and establishment of new IAPs prevented through early detection and rapid response	1	Short term	Environmental Management, City Parks, MOEs, Working for Water, GDACE, SANBI
	7.5	Impact of existing IAPS reduced through the implementation of integrated control measures	2	Long term	Environmental Management, City Parks, MOEs, Working for Water, GDACE
	7.6	Adaptive management informed by Research, Monitoring and Evaluation	2	Long term	City Parks, Environmental Management, Working for Water, GDACE

3.6. Monitoring and evaluation

The implementation of the LBSAP should be monitored continuously and evaluated periodically. Monitoring and evaluation (M&E) will ensure that implementation of actions is aligned to the vision and targets of the LBSAP. It will allow for adjustments to be made to the LBSAP in light of changing circumstances within the city.

The M&E system should be linked to quantitative outputs of the LBSAP and be able to give a clear indication of progress at any given time. The LBSAP should be reviewed and updated at an appropriate frequency, generally every 5 to 10 years. The review should focus on changes to biodiversity values (generated by ongoing biodiversity assessments using tools such as the CBI) that have occurred, and how actions and implementation should be adapted to cope with those changes. Similarly, changes in the political, institutional and legislative framework should be taken into account during the review process to ensure that the LBSAP is well-calibrated to meet new requirements or rules. This adaptive management cycle will improve the efficacy of the LBSAP over time.

To ensure the effective mainstreaming of biodiversity, all departments that have a role to play in implementing the LBSAP should include outputs included in their business planning and performance management processes.

Specific recommendations for an M&E system include:

- Clear responsibilities and time frames should be set for the implementation of the action plan.
- A detailed M&E system should be linked to quantitative outputs of the LBSAP, including changes to biodiversity on the ground.
- The LBSAP should be reviewed at least every 5 years as part of an adaptive management cycle.
- Gaps in the LBSAP should be identified and addressed with appropriate interventions.
- Responsible line departments and should ensure that the actions involving them are reflected in their business plans, and performance management systems and that they have sufficient budget to implement the actions.

Section 4. Tools and approaches

Many tools and approaches can support biodiversity management and facilitate biodiversity mainstreaming at the local level. This section will provide a brief overview of some of these most commonly used with a view to inspiring actions for inclusion in an LBSAP.

Approaches include the Ecosystem Assessment Approach, Strategic Environmental Assessment (SEA), the CBD Ecosystem Approach and spatial planning. Tools include various legal, economic and financial instruments, sectoral standards, codes of conduct, guidelines, certification schemes, and good practices.

These tools and approaches are not specific to any particular sector or level of government. As will be shown in the case studies in this section, they can be employed in many different ways.

4.1 Approaches

4.1.1 Ecosystem Services Approach

This approach uses the Millennium Ecosystem Assessment's[14] ecosystem services framework to help policymakers identify how their decisions depend on, and impact biodiversity, and to understand, analyze and maximize both biodiversity and human-wellbeing benefits in their decisions. The approach proposes a five-step process for assessing the risks and opportunities inherent in decisions regarding activities that depend on and affect ecosystem services. It also proposes scenario planning as a way to systematically explore possible alternative futures stemming from different decisions and how they may affect direct and indirect drivers of ecosystem change. Finally, the approach provides guidance on choosing and implementing policies to sustain the ecosystem services that underlie development. The Ecosystem Services approach has been designed for incorporation into existing decision-making processes and to be used by decision makers at all levels of governance and in different sectors. Building on the work of the Millennium Assessment, The Economics of Ecosystems and Biodiversity (TEEB) was initiated as a global study seeking to highlight the economic value of ecosystem services. TEEB is outlined in section 4.2.3 on tools.

[14] http://www.unep.org/maweb/en/index.aspx

4.1.2 Environmental Impact Assessment and Strategic Environmental Assessment

Integrating environmental impact assessment (EIA) requirements into development planning can be a powerful approach to mainstreaming. This can be achieved by incorporating the findings of EIAs into planning and/or by using strategic environmental assessment (SEA) to guide planning processes. SEA is designed to be proactive by evaluating cumulative environmental consequences of proposed policies and plans over a large area, so as to ensure that biodiversity support is considered in the early stages of decision making. It is particularly useful in drawing attention to interrelated ecosystem services and in addressing trade-offs between them. Nevertheless SEA systems vary considerably and the concept has been applied to a diversity of public plans and programs including transport, energy, waste and agriculture, to support sustainable development. Many countries have passed laws requiring EIAs and/or SEAs for new developments. Likewise many donors have incorporated SEA requirements into their development assistance procedures and/or into specific Country Assistance Strategies and Plans.

4.1.3 The Ecosystem Approach

The ecosystem approach provides a framework of 12 complementary and interlinked principles[15] 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. The principles are as follows:

1. The objectives of management of land, water and living resources are a matter of societal choices.
2. Management should be decentralized to the lowest appropriate level.
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
4. Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:
    a. Reduce those market distortions that adversely affect biological diversity;
    b. Align incentives to promote biodiversity conservation and sustainable use;
    c. Internalize costs and benefits in the given ecosystem to the extent feasible.
5. Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

[15] http://www.cbd.int/ecosystem/principles.shtml

6. Ecosystem must be managed within the limits of their functioning.
7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.
8. Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
9. Management must recognize the change is inevitable.
10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.
11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices. Although it was developed to support national governments, the approach is also applicable to local development. The approach also provides for integration between various sectoral interests. Rather than providing a fixed method, the Ecosystem Approach's 12 principles are to be used flexibly and with varying weights assigned to them, according to the context.

4.1.4 Spatial Planning

Spatial planning provides an approach to integrating biodiversity considerations into development plans as it determines where and how economic activities and infrastructure developments are established. Dealing with specific areas and the activities undertaken within them, spatial planning also provides for the coordination of development across sectors and tiers of government.

Many cities have begun to integrate environmental and sustainability objectives into spatial plans opening a door for improving biodiversity management. Furthermore, spatial planning processes are generally becoming more democratic, and now often invite input and expertise from a range of stakeholders.

4.2 Tools

4.2.1 Indicators

Local efforts to conserve and enhance biodiversity confer a multitude of benefits to municipalities and their citizens. However, it is not always clear which efforts are the most effective in generating such

benefits. For this reason, appropriate monitoring systems are required which, through assessment of biodiversity statuses and trends, can support evaluation of actions.

Biodiversity monitoring systems usually comprise a set of indicators that are carefully chosen to reflect important characteristics of biodiversity such as diversity of species, coverage of natural vegetation and fragmentation of habitats, but also the efficacy of governance and level of public awareness. Indicators allow us to gauge reality in a simple but meaningful way. The advantages of indicators for assessing local biodiversity management are manifold, specifically they:

- Gauge the effectiveness of current measures;
- Mark progress towards sustainability;
- Improve citizens' and decision-makers' acceptance and support for biodiversity measures by affirming the benefits with facts and figures.
- Identify shortcomings that can be addressed with targeted responses;
- Allow for efficient and target-oriented allocation of funds;
- Unmask the ineffective allocation of funds; and

There are in fact numerous different indicator systems in existence. Ecosystem service indicators measure the capacity of ecosystems to render services and have been articulated in the TEEB study.[16] For example, to assess the regulation of air quality, one might consider the atmospheric cleansing capacity in tons of pollutants removed per hectare. To assess recreation and tourism, the number of visitors to green spaces per year could be considered.

However, the most relevant index for a local government to monitor biodiversity is undoubtedly, the City Biodiversity Index,[17] developed under the leadership of Singapore State Government. The index provides a set of 23 indicators specially designed for the urban context and providing a means for self-assessment and benchmarking of progress. The indicators cover three themes: i) native biodiversity in the city; ii) ecosystem services in the city; and iii) governance and management of biodiversity.

[16] TEEB 2009. *Report for National and International Policy-makers*, Chapter 3: Strengthening Indicators and Accounting Systems for Natural Capital. URL: http://www.teebweb.org/publications/teeb-study-reports/national-and-international/

[17] www.cbd.int/en/subnational/partners-and-initiatives/city-biodiversity-index

4.2.2 Legal Instruments

Biodiversity considerations may be integrated into a country's legal framework. This can be done at national or sub-national levels. Laws can also be designed specifically for a sector or an economic activity.

Laws governing the ownership, access and use of natural resources are particularly important for the protection and sustainable use of biodiversity. They can be instituted to encourage, control, or prohibit particular uses. When instituting such laws it is crucial that pre-existing customary laws, governance, and management structures be understood and considered, allowing new legal instruments to complement those (and aspects thereof) that promote sustainable and equitable use.

As with other tools, strategies and approaches (particularly economic instruments) discussed below, legal instruments designed for specific sectors should take into account their effects on other sectors. Likewise, they should consider the full range of stakeholders and other civil society groups likely to be affected.

4.2.3 Economic and financial tools[18]

Economic and financial tools can be particularly effective in mainstreaming because economic forces underlie and explain much biodiversity degradation and loss. These tools aim to 'correct' or modify economic forces in favor of the biodiversity conservation, sustainable use, and fair and equitable benefit sharing. They include:

- Economic valuation;
- Removal, phasing out or reform of harmful subsidies and other incentives that harm biodiversity;
- Positive incentive measures such as payments for ecosystem services;
- Taxes, user fees and other disincentives that apply the polluter-pays principle.

These tools are best implemented together, as a mix of policies aiming to create economic conditions and structures favorable to biodiversity. Several of these tools generate revenue (such as taxes and fees). This revenue can be earmarked, in part or in total, for a dedicated fund for biodiversity conservation activities. In these cases, the taxes or fees need to be calibrated carefully against the dual objectives of changing behavior and or revenue generation.

[18] For more information and guidance on this subject, please refer to CBD Technical Series no. 56 (http://www.cbd.int/doc/publications/cbd-ts-56-en.pdf) and TEEB D1: Report for National and International Policy-makers (http://www.teebweb.org/publications/teeb-study-reports/national-and-international/).

4.2.3.1 Economic Valuation

In recent years, various quantitative and qualitative studies have been conducted to assess the value of biodiversity and ecosystem services. Chief amongst these is The Economics of Ecosystems and Biodiversity (TEEB), an international initiative that draws attention to the global economic benefits of biodiversity, and highlights the growing costs of biodiversity loss and ecosystem degradation. TEEB comprises a number of reports, two of which are particularly relevant for local governments: TEEB D2: Report for Local and Regional Policy-makers[19] and the TEEB Manual for Cities.[20] The studies set out various principles and methodologies for valorizing ecosystem services and integrating their values into local decision-making processes, drawing from case studies around the world.

Valuation methods can provide compelling information for policy-makers, and enhance the efficiency of decision-making when applied carefully according to best practices. The increasing reliability of economic valuation tools has led governments and other stakeholders to apply them more frequently and to give increasing weight in decision-making to the estimates derived from using these tools.

Application of these methods can be useful in distinguishing between short-term and long-term economic costs and benefits (immediate costs of conservation vs. long term gains), and may assist in answering who should pay for the costs of conservation (developers vs. local communities).

Valuation tools can also be applied to environmental impact assessment (EIA) and, in particular, cost-benefit analysis (CBA). Biodiversity valuations can also inform decisions regarding optimal extraction rates for renewable resources. At the city level, biodiversity valuation can be integrated into:

- Macroeconomic or sector policy assessment tools (such as SEA);
- The development of (sector-wide) strategies and planning processes, associated programs and large-scale projects, as well as regional land-use planning;
- Local statistics and accounting, for instance in the context of natural resource accounts at local level (e.g. for water, forests and land).

[19] http://www.teebweb.org/publications/teeb-study-reports/local-and-regional/
[20] http://www.teebweb.org/wp-content/uploads/Study%20and%20Reports/Additional%20Reports/Manual%20for%20Cities/TEEB%20Manual%20for%20Cities_English.pdf

4.2.3.2 Reform of incentives and subsidies

Incentives that are harmful for biodiversity emanate from policies or programs that induce unsustainable behavior, such as:

- Producer subsidies that reduce the costs of key inputs or increase revenues; and consumer subsidies arising from under-pricing the use of natural resources.
- Policies and laws governing resource access and use, with harmful effects, such as 'beneficial use' laws or land tax systems that favor more intensive land uses), and inappropriate environmental or resource management policies or programs (possibly in conjunction with weak enforcement capacities).

The removal, phasing-out, or reform of harmful subsidies should not be achieved in isolation but rather as part of a broader process of fiscal reform entailing a more holistic approach that considers social dimensions as well. Looking at successful cases a number of success factors can be identified:

- Strong leadership and a broad coalition involving key stakeholders;
- Adoption of a 'whole-government' approach;
- Identify relevant vested interests; design and implement adequate responses;
- Analyze distributional impacts of reform and implement transitional or compensatory packages as appropriate;
- Adequate funding for transitional or compensatory packages;
- Improve transparency and enable informed public debate; and
- Use political windows of opportunity, e.g. budget reform processes.

4.2.3.3 Positive Incentive Measures

Incentive measures are required in Articles 11 and 20 of the CBD. An incentive measure is

A specific inducement designed and implemented to influence government bodies, business, nongovernmental organisations, or local people to conserve biological diversity or to use its components in a sustainable manner. Incentive measures usually take the form of a new policy, law or economic or social programme.[21]

[21] http://www.iisd.ca/biodiv/cop3/3_24_vfinal.htm

Positive incentives for the conservation and sustainable use of biodiversity encourage the achievement of biodiversity-friendly outcomes.

Direct approaches involve 'paying' (by monetary or non-monetary means) relevant actors to achieve biodiversity-friendly outcomes or, conversely, to not achieve biodiversity harmful outcomes. They include: conservation leases, covenants, easements, and long-term retirement schemes; tax breaks for environmental donations or expenditures; and payments for ecosystem services.

Indirect approaches seek to support activities or projects that are not designed exclusively to conserve or promote the sustainable use of biodiversity, but have the effect of contributing to these objectives. They include: development or commercialization of biodiversity-based products or services possibly combined with consumer information schemes, for instance certification or eco-labeling; and community-based natural resource management (CBNRM).

Hence, a range of positive incentive measures are available to encourage the conservation and sustainable use of biodiversity. They frequently come in various forms, being applied in a flexible manner and tailored to local conditions; for instance, payments for ecosystem services (PES) include various forms of payments for the maintenance of biodiversity and ecosystem services, involving the private and/or the public sector; and their (potential) scale ranges from global (e.g. the REDD+ scheme) to local. A number of important lessons can be distilled from the experiences of governments worldwide in creating positive incentives:

1. The removal, phase out or reform of harmful incentives will generally make positive incentives more effective.
2. Positive measures need to be well targeted to ensure cost-effectiveness and social equity.
3. Positive incentives need to be properly designed and implemented so as to avoid (or minimize) 'leakage' (e.g. the displacement of damaging activities from one region to another, or from one stage of a supply chain to another) and other adverse unintended consequences.
4. The provision of positive incentive measures, whether monetary or not, requires adequate funding.
5. Economic instruments (taxes and/or charges/fees) need to be calibrated accordingly. Adequate resources are also required to ensure effective monitoring.
6. A long-term commitment to provide positive incentives is important, first because impacts on biodiversity may take time to emerge, and secondly because maintaining positive effects may require a permanent change in behavior.

7. Positive incentive measures involve strengthening institutions and building trust among stakeholders. Distributional impacts must be properly understood, taking account of the life-choices of target groups and gender issues.
8. Monitoring and review of positive incentive measures is essential, to ensure they deliver their intended impacts in a cost-effective manner, without major adverse side effects and within a reasonable timeframe.
9. Many positive incentive measures involve the active participation and support of local or indigenous communities. Such participation should start early and be maintained over the long-term.
10. Capacity is frequently a constraint in implementing positive incentive measures, and it is therefore important to strengthen capacity in, and provide training for, the design and implementation of such measures.

4.2.3.4 Taxes, user fees and other disincentives

Taxes, charges, fees, fines, compensation mechanisms and/or tradable permits are tools that reflect the 'Polluter Pays' and 'Full Cost Recovery' principles i.e. they reflect the cost of losing biodiversity and ecosystem services, with the aim of ensuring that those who cause the loss also pay for it. Such tools can encourage polluters and those who overexploit biodiversity to take preventative action and to put aside funds for remedial action if such loss were to occur. They also ensure that those who reap certain ecosystem services pay for them rather than having society at large pay.

4.2.3.5 Standards, codes of conduct, guidelines and certification schemes

Standards are policies that regulate the effect that human activity may have on the environment. They may specify a desired state (e.g. Lake pH should be between 6.5 and 7.5) or limit alterations e.g. no more than 50% of natural forest may be damaged). In many cases, abiding to standards gives suppliers an advantage, through premium prices and access to niche markets reserved for high-performing suppliers.

Codes of conduct can be very detailed, and set out standards of behavior for responsible practices with a view to ensuring sustainable resource use. Two good examples of sector-specific codes of conduct are the

FAO Code of Conduct for Responsible Fisheries[22] and the World Tourism Organization's Global Code of Ethics for Tourism.[23]

Guidelines provide voluntary and practical advice on how to undertake particular activities. They are usually relatively general and can be applied to a number of circumstances. An example of such guidelines are the CBD Guidelines on Biodiversity and Tourism Development[24] which aim to make tourism and biodiversity more mutually supportive, engage the private sector and local and indigenous communities, and promote infrastructure and land-use planning based on the principles of conservation and sustainable use of biodiversity.

Certification schemes go a step further than voluntary codes of conduct in demanding adherence to a set of criteria which a given operation must meet before using a certain logo or brand name, or entering a specific market. Certification schemes can include biodiversity in their criteria and present consumers with a choice to buy a more sustainable product. Examples of certification schemes include those developed by the Marine Stewardship Council,[25] the Forest Stewardship Council,[26] the Rainforest Alliance[27] and the Marine Aquarium Council.[28] There are also a number of tourism certification schemes in existence.

[22] http://www.fao.org/docrep/005/v9878e/v9878e00.HTM
[23] http://ethics.unwto.org/en/content/global-code-ethics-tourism
[24] http://www.cbd.int/doc/publications/tou-gdl-en.pdf
[25] http://www.msc.org/
[26] https://ic.fsc.org/
[27] http://www.rainforest-alliance.org/
[28] http://www.aquariumcouncil.org/

Section 5. Conclusion

Local governments wield immense influence over biodiversity. In the battle to save life on Earth, they can make the difference between success and failure. Biodiversity generates and mediates flows of ecosystem services that underpin human wellbeing. Thus the decline of biodiversity imperils the prosperity of humankin, including the world's burgeoning population of urban dwellers. The imperative for action to curb the loss of biodiversity has never been clearer, yet there are limits to what national governments can achieve. Indeed, the successful implementation of the CBD depends largely on strength of contributions that other stakeholders make.

Across the world, local governments have demonstrated that with sufficient technical, human and financial resources, they can make astonishing contributions to the conservation of biodiversity, its sustainable use, and the fair and equitable sharing of its benefits. Furthermore, by doing so, they can reap substantial rewards: a mounting body of evidence indicates that investing in green infrastructure, restoring and protecting natural habitats, raising environmental awareness and tackling ecological footprints can significantly and cost-effectively enhance municipal service delivery.

In seeking to better manage biodiversity, local governments have a range of tools at their disposal. Chief amongst these is the LBSAP. It provides direction and momentum to biodiversity management, in a methodological and structured manner. It engages a broad base of stakeholders from government, civil society, academia and the private sector. It pulls together fragmented information, heightens awareness and strengthens our understanding of local biodiversity and ecosystem sevices. Moreover, it builds a coalition of patners prepared to take responsibility for biodiversity. The LBSAP, when aligned with national and international strategies, and integrated across sectors, can provide a powerful tool for managing biodiversity and catalyzing local action to conserve it. It can also serve to improve the sustainability, resilience and livability of our cities.

Good luck!

Appendix 1. National Biodiversity Strategies and Action Plans

National Biodiversity Strategies and Action Plans (NBSAPs) are the principal instruments for implementing the CBD at the national level and have therefore been relatively well defined. The strategy component of NBSAPs is a roadmap of how a country intends to fulfill the objectives of the CBD in light of its specific national circumstances. The related action plan constitutes the sequence of steps to be taken to meet the goals of the strategy. Due to the scale at which they are to be implemented and the differences in governance at the national and local levels, NBSAPs do not provide the perfect template for LBSAPs, but they nevertheless provide a useful point of reference with which to align planning at the local level. This is important because local governments are always, in some way, responsible to national government. By aligning with the same objectives and goals, local government will facilitate alignment with their national government's strategies and thereby facilitate cooperation with national government which opens possibilities of support in exchange for contributing to national implementation.

Appendix 2. Strategic Plan and Aichi Targets

At the tenth meeting of the Conference of the Parties to the CBD (CBD COP 10), the Strategic Plan for Biodiversity 2011-2020 provided five strategic goals and under each of them targets (the Aichi Targets) to provide "a ten-year framework for action by all countries and stakeholders to save biodiversity and enhance its benefits for people". When developing an LBSAP, it is worthwhile taking note of this international policy framework, which is likely to be followed by your national government. The Aichi Targets should constitute the "spine" on which the LBSAP is built. Even though many of the targets may not be relevant to the locality, the team in consultation with stakeholders should select the most appropriate targets and adapt them to their local context accordingly.

Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

- **Target 1** By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
- **Target 2** By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.
- **Target 3** By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.
- **Target 4** By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

- **Target 5** By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

- **Target 6** By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.
- **Target 7** By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
- **Target 8** By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
- **Target 9** By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.
- **Target 10** By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

- **Target 11** By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.
- **Target 12** By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.
- **Target 13** By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of 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.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services

- **Target 14** By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
- **Target 15** By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.
- **Target 16** By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

- **Target 17** By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.
- **Target 18** By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.
- **Target 19** By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.
- **Target 20** By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

Appendix 3. Managing biodivesity data

GBIF was established by governments in 2001 to encourage free and open access to biodiversity data, via the Internet. Through a global network of countries and organizations, GBIF promotes and facilitates the mobilization, access, discovery and use of information about the occurrence of organisms over time and across the planet.

A publicly accessible database that collects biodiversity data in a standardized, reliable format, can facilitate information sharing, contribute to scientific research and improve decision making. This can be achieved by integrating existing regional and local databases and publishing via the Global Biodiversity Information Facility (GBIF). Such a facility, dedicated to local governments, will be made available through the ICLEI Local Government Data Publishing Portal, created in partnership with the GBIF and the South African National Biodivesity Institute (for more information, please contact ICLEI Cities Biodiversity Center: biodiversity@iclei.org). By publishing their data, regions and cities in the GBIF network can enhance the quality, predictive value, verifiability and transparency of their planning processes, thus improving land-use decisions and the confidence that civil society can place in these decisions.