Biodiversity in municipal planning and services

Workshop background document for capacity building in the framework of the Life+ supported project, European Capitals of Biodiversity

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1. Background

In the framework of the LIFE+ supported project, *European Capitals of Biodiversity*, this background document has been prepared by ICLEI to support a series of capacity building workshops for municipal staff in France, Germany, Hungary, Slovakia and Spain. Local governments are key actors in conserving and managing biodiversity, both locally within their own administration and globally, since resource consumption within urban areas affects ecosystems around the world. This module aims at providing an overview of the vast scope for local governments'action in the field of biodiversity management and protection. Its precise objectives, expected outcomes, and target audiences are outlined below.

1.1.   Objectives and expected outcomes

In undertaking this module, participants should:

- Gain awareness of the importance of biodiversity in an urban context and the value of ecosystem services, and how these are threatened by various factors.
- Comprehend the impact on biodiversity of municipal activities and the relevance of integrating biodiversity management in local planning.
- Gain an overview of the different areas where local governments can actively engage in biodiversity protection, based on current situation and capabilities.

1.2.   Target audience

This module is designed to train the following audiences:

- Local and regional decision makers;
- City and regional managers;
- Urban planners; and
- Municipal practitioners whose activities impact on biodiversity directly or indirectly.

2. Urban biodiversity

Urban biodiversity represents the dependency of humankind on natural resources and is much more than the presence of animals and plants in our cities. Urban biodiversity is threatened to the same extent as biodiversity and ecosystems globally; however, urban areas have increasing potentials for the development and growth of biodiversity *(Bonn call for action, 2008).*

1.1.   Values and threats

Local governments that incorporate biodiversity into their local planning and development will not only contribute to its conservation, but will also benefit from a variety of other advantages.

Biodiversity:

- is essential for healthy ecosystems, which provide important goods and services to citizens and are at the basis of people's lives;
- serves as 'insurance policy', so that systems can recover more effectively from disturbances such as drought, fire and flood;
- brings economic gains to the urban area, by increasing land value and marketability; it allows costs saving by providing "free" services that would otherwise have to be implemented in a costly and artificial manner (e.g.. water purification);
- provides citizens with physical access to nature, improving mental health and social interaction, but also helping them to better understand its value and thus commit to its protection.

(see the training module "Biodiversity - an introduction" for more details)

Nowadays, biodiversity in cities is under threat from a number of factors, including increasing demand for space; water, soil and air pollution; the effects of climate change; and over-exploitation of natural resources. People in cities are disproportionally responsible for pressure on biodiversity because their lifestyles are so resource-intensive. Although they occupy only 2% of the Earth's land, urbanites account for 75% of the resources consumed by human-kind. Urban interests are often corrosive to the health of ecosystems in the proximity of cities, damaging the biodiversity in the surrounding area and in turn threatening the viability of the cities themselves. In addition, cities affect a geographical area much greater than their own surface area; an ecosystem disturbance in one area could affect other ecosystems much further away. Managing biodiversity is thus crucial for all local governments, since the benefits deriving from its protection (or the negative impacts caused by its misuse) go far beyond local boundaries.

1.2. Ecosystem services

Plants, animals and other living organisms native to a particular habitat provide certain goods and services; many of these goods and services are crucial to human existence and economic activities. This is particularly relevant in densely populated areas such as cities. Local governments must therefore feel the responsibility to protect and provide adequate habitat space and healthy environmental conditions, to ensure that nature's productivity is maintained.

The services and goods provided by ecosystems can be summarised as follows:

Provisioning services - goods *(products obtained from ecosystems)*
- food
- fresh water
- fibre and fuel
- genetic resources
- biochemicals

Regulating services *(benefits obtained from the regulation of ecosystem processes)*
- Invasion resistance
- Herbivory

- Pollination
- Seed dispersal
- Climate regulation
- Pest regulation
- Disease regulation
- Natural hazard protection
- Erosion regulation
- Water purification
- Flood regulation

Cultural services *(non-material benefits people obtain from ecosystems)*
- Spiritual and religious values
- Knowledge system
- Education and inspiration
- Recreation and aesthetic values

Supporting services *(ecosystem services that are necessary for the production of all other ecosystem services)*
- Primary production
- Provision of habitat
- Nutrient cycling
- Soil formation and retention
- Production of atmospheric oxygen
- Water cycling

(CBD 2006; Global Biodiversity Outlook)

3. The role of local governments

Local governments are responsible for implementing strategies that ensure sustainability in the urban context; the conservation of biodiversity will help them achieve these sustainability goals. World-wide, no agency is in a better position to manage biodiversity and educate citizens about its importance than them.

Local governments

1. need functioning ecosystems to provide municipal services,
2. are responsible for conserving and improving the biodiversity within their own territory,
3. care for more than half of the world's population living in urban areas and are dependent on natural resources from outside,
4. can influence the awareness of their citizens which can determine behaviour as individuals and decision makers;

they are therefore in a crucial position to influence the way urban biodiversity is managed and in which citizens are exposed to it.

(LARA fact sheet #1 - Partnerships & networks for urban biodiversity)

By adopting a holistic approach to management, decision-making and planning of cities' ecosystems, local governments can promote conservation and sustainable use

of natural resources in a way that can also have great economic benefits for cities (e.g. sustainable tourism can create jobs and generate substantial revenues for the city). Awareness raising and stakeholders involvement are a pre-condition to this approach, to ensure that citizens understand and commit to biodiversity. Biodiversity conservation must then be included in the wide spectrum of local governments responsibilities, from spatial planning, development of green areas and procurement of goods, to the planning and delivery of municipal services. Cooperation and partnership on a regional, national and global level is also needed, since biodiversity goes beyond municipal boundaries and joint efforts must be made to ensure protection of larger areas.

In all these fields, specific and simple measures can help local governments to maintain and enhance local biodiversity, thus improving the health and productivity of ecosystems. The graph below gives a visual overview of how the integration of all these activities into a coherent, integrated strategy for biodiversity management can be pursued:
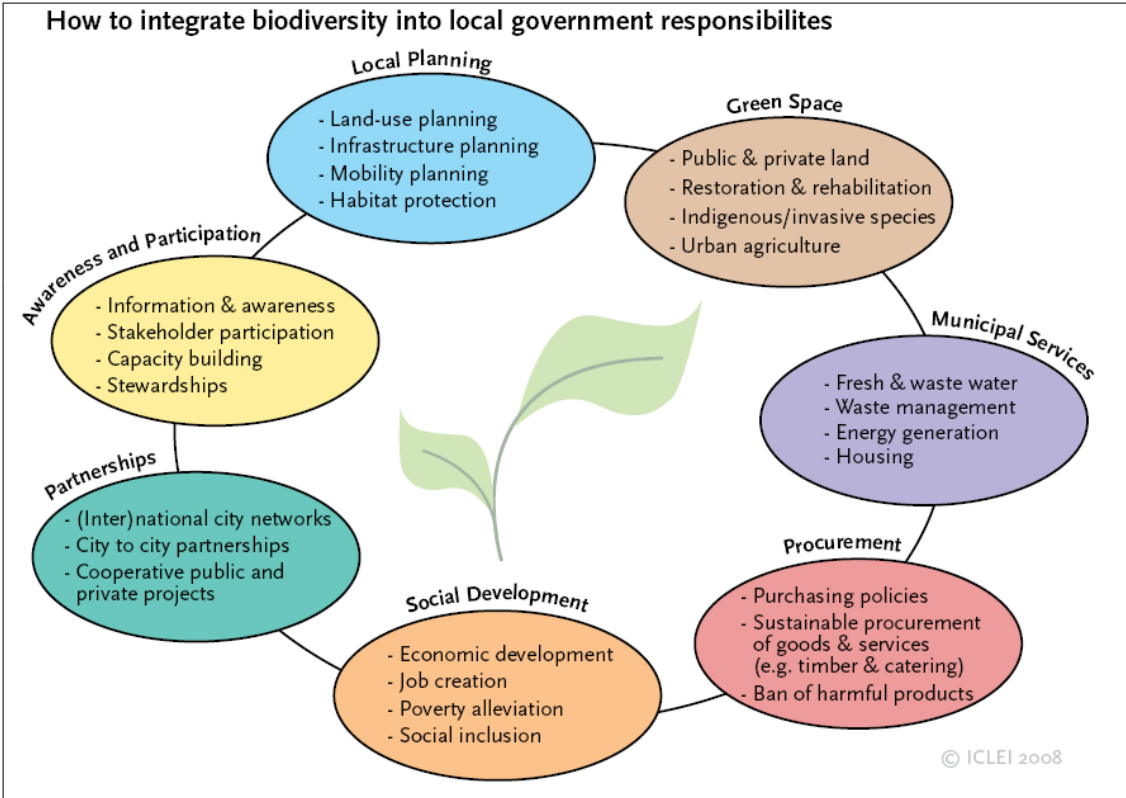

Figure 1, Integration of biodiversity into local governments responsibilities; LARA fact sheet #5 - Local authorities for biodiversity management

1.1. Awareness-raising

Because all cities and citizens depend so heavily on the services ecosystems produce for their survival, biodiversity efforts have a higher chance of success if citizens and other stakeholders are involved and fully understand that protecting biodiversity is in their interest. Local governments are in an ideal position to increase awareness about key environmental issues since they can easily reach out to the local population.

There are several way of increasing the involvement of citizens. Awareness raising campaigns are the first step and are more suitable for simple issues or for the initial phase of biodiversity processes. More complex issues should involve a higher participation (see next section).

Examples of awareness raising actions:
- Sharing information on local biodiversity with the public through signboards, instructive displays, leaflet dissemination, instructive nature paths, botanical gardens, newsletters or local media *(see also the training module "Communicating biodiversity");*
- Educating citizens to change their daily behaviour through recreation and awareness campaigns, consumption guidelines and consumer education;
- Developing incentives, such as encouraging tree planting activities and in return providing participants with free access to public facilities (pools, zoos, botanical gardens);
- Supporting the work of local civil society groups involved in biodiversity protection;
- Educating communities about the threats facing urban biodiversity and how to alleviate them (e.g., how to reduce the potential for wildfires and how to respond if one occurs).

Box 1 - Zagreb managing biodiversity through public education

Through educating citizens from a very young age, the City of Zagreb, Croatia, hopes to ensure the survival and enhancement of areas that provide habitats for species threatened with extinction throughout Europe. The city has developed several programmes that are tailored to different school ages.

Kindergartens
Special ecological activities are implemented within the regular programme; about 6500 children regularly take part in the programme "Children in Nature", which takes place in the "City of Youngsters" in the city forest park, specially designed and managed by the city.

Elementary schools:
About 4200 elementary pupils attend "Education in Nature", a programme financed by the City of Zagreb with a strong educational component that allows nine- and ten-year-old elementary school children to spend a week in the mountains.

Elementary and secondary schools:
Nineteen schools in Zagreb have implemented the International Eco-Schools Programme, the objective of which is to incorporate environmental learning and education into all segments of the educational system, the daily life of students and school employees. An additional thirteen schools conduct the Globe Programme, promoting science education and environmental research, including field observations and measurements.

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www.zagreb.hr

1.2. Participation

Participatory processes require a clear understanding of the contribution expected by those involved and of the results of these processes and necessitate more initial efforts; in turn, however, they lead to a deeper acceptance of changes and to people taking responsibility as a consequence of their direct involvement. Stewardship and partnership projects can also increase citizen mobilisation, such as programmes that

promote the "adoption" of a particular nature reserve, habitat, forest section, stream, roadway or local species. Activities encouraged could range from keeping the area clean, to planting native species or restoring an area.

Greater results can be achieved by focussing specifically on the many different groups comprising the community, rather than talking to a general public. Directly addressing specific sectors and stakeholders of a community leads to much wider community representation, including segments that might normally have no direct connection to biodiversity, for example religious, disability and refugee groups.

A participatory process will especially help when there is the chance of arising conflicting interests over, for example, land use changes, road construction, building planning and so on (e.g., protecting a wetland that might instead be profitable as a shopping centre). The involvement of stakeholders at the initial stage of the process will allow the early identification of these conflicts and the possibility to deal with them constructively.

Box 2 - Waitakere, New Zealand, and the project Twin Streams

The project Twin Streams is an innovative partnership between the City Council's Ecowater (providing stormwater, waste water and supply services) and the public, aimed at restoring 56km of Waitakere stream banks through an integrated community development approach. The main goals are to achieve better stormwater management (thus improving water quality), help restore the natural environment in Waitekere's suburbs and cooperate with other Council's departments in creating alternative and more sustainable lifestyles. The project involves 2000 volunteers and 15 schools who work together to ensure that the streambanks are weeded, replanted with native species and maintained.

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http://www.waitakere.govt.nz/AbtCit/ne/twinstreams.asp

1.3. Integrating biodiversity into local government responsibilities

Biodiversity is affected by almost every activity undertaken by local governments. Every department implements services that have a potential environmental impact. Integration of biodiversity management across functions of local government is thus key, so that all departments in a municipality understand and are aware of the importance of biodiversity and of the difference that their contribution makes.

3.3.1. Spatial planning

Land use planning

Land use planning based on local biodiversity assessments can lead to conserving or enlarging diverse habitats, and is therefore the primary instrument for protecting and managing ecosystem, especially through the protection of endangered species and habitat types. Experience with integrated management approaches also indicate that small pockets of carefully planned urban green space can provide important habitat islands for particular species, helping them to survive even within dense urban settlements. For example, zoning for small inner-city green spaces consisting of native, locally-adapted flora will boost urban biodiversity by providing shelter for many birds and insects, which, in turn, may entice larger city-dwelling animals to live in built-up areas. Such pockets of native flora also help to increase the attractiveness

of residential areas and dense inner-city quarters. Apart from zoning, infrastructure planning is also a powerful instrument for local biodiversity management. Sound planning of traffic arteries, for example, can help reduce the fragmentation of valuable local habitats by providing green belts, tunnels and bridges that enable animals to move around.

Biodiversity maps that identify the different ecosystems in an area should be at the basis of a planning process, in order to prioritise biodiversity and ensure that the most important areas are protected (for example, areas with more endangered ecosystems, those providing relevant ecosystem services, or those serving as corridors for species movement).

Land use management

Land use management activities are also key when protecting biodiversity, to ensure that environmental degradation is mitigated and the quality and function of ecosystems at degraded sites improved. A landscape-scale view that addresses the cumulative impacts of new and pre-existing developments while maximising habitat corridors throughout the urban matrix will greatly increase the biodiversity-positive outcomes. If development is undertaken by another entity, the municipality will likely have some degree of responsibility and involvement and can thus put conditions that include the consideration of biodiversity. Within already developed areas, biodiversity can be enhanced by applying biodiversity-friendly principles (see list later in the text).

Taking biodiversity into consideration in land use planning and management not only ensures its protection, but saves also financial resources and time. Careful planning and design will reduce costs during lot creation, with less land clearance, excavation, and disturbance of watercourses. Houses with biodiverse surroundings sell faster and for higher prices than those without. Additional starting costs can thus then be quickly recovered through increased property values and marketability. The diversion of natural processes, like the modification of water-courses, is often more costly than maintaining them.

Local governments actions – examples
- Reducing when possible land consumption;
- Planning building sites so that streets and infrastructure follow the form of the landscape;
- Avoiding the fragmentation of existing vegetation and habitat and designing biodiversity corridors that link with surrounding environments;
- Developing management plans that address the protection of pre-existing biodiversity during construction, paying special attention to the protection of already endangered habitats;
- Planning for potential relocation of wildlife before starting development work, in case this would temporarily disturb their habitats;
- Including pockets of carefully planned green spaces that can provide important habitat islands for some species, helping them to survive within dense settlements (this also increases the attractiveness of residential areas and inner-city quarters);
- Avoiding building new streets when possible; planning traffic arteries so that fragmentation is reduced and constructing ecoducts where effective and feasible;

- Increasing urban biodiversity in innovative ways, including the use of rooftop gardens;
- Using native species, thus reducing maintenance costs, resources, and efforts (native species are more self-sufficient, more likely to behave like functioning ecosystems and require little irrigation because they are adapted to the climate of the area);
- Leaving water courses intact and maintaining the vegetation waterways, or replanting them; re-naturating river streams, using them as biodiversity corridors and as walking/bike paths;
- Using regulatory mechanisms such as urban land use plans for directing private investments and decisions;
- Stopping overexploitation of resources, such as logging of municipal forests and over-extraction of ground water, in favour of sustainable forestry;
- Minimising pollution, particularly nutrient pollution in soil and water;
- Minimising the extent of impermeable surfaces to aid groundwater recharging.

Box 3 - Tilburg's Green Template and Ecological Map

To ensure the protection and conservation of its natural environment and biodiversity, the City of Tilburg, The Netherlands, has developed a Green Template and Ecological Map.

Green template – an ecological network for Tilburg
The City of Tilburg, together with various agriculture and nature organisations, district water boards and the province of Noord-Brabat, initiated the Green Template, a spatial depiction of a sustainable, cohesive ecological structure around the city, that serves as a guideline for spatial urban plans. The Green Template aims at preserving and developing the natural heritage of Tilburg by increasing natural areas, improving habitat quality and increasing connectivity of biodiversity areas. As part of the same framework, the City of Tilburg is committed to compensating any loss of nature as a result of the construction of new housing or industrial estates by acquiring land to restore natural habitats.

Tilburg's Ecological Map
To monitor and safeguard the biodiversity within the boundaries of the Green Template, the City of Tilburg is developing an Ecological Map. The Ecological Map will function both as a database and as a GIS-based map. This map will provide information about nature in Tilburg for both civil servants and citizens, making knowledge of biodiversity more accessible and allowing it to be used for decision-making in planning stages of development.

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www.tilburg.nl/groen

3.3.2. Parks and green areas

Green space is an integral and vital element of the urban and all human populated environments. Very often urban areas are characterised by fragmented sites that have a local community importance, such as gardens, allotments, cemeteries, churchyards and school grounds. The remaining biodiversity in these urban areas can be found in small remnant pockets of habitat that have intense development pressure on them due to their urban setting. However, all areas of green, including small and intensely used patches, can be utilised to enhance a neighbourhood's

biodiversity. Even small interventions in 'sterile' urban areas can do much to prevent species from leaving or encourage them to return. Large parks are in principle better solutions than small ones because they provide more habitat and inner areas are buffered from anthropogenic disturbance. In urban settings, however, there is often not enough space to allow for large parks. On their own, small "pocket parks" generally lack biodiversity value, due to high disturbance, weed invasions, difficulty of access for wildlife, etc. Nevertheless, small patches can be of use to some species, particularly as stepping stones for insects and birds. Hence, when large parks are not an option, smaller parks and other vegetated areas are also valuable; the interconnection of many small biodiverse areas can then emulate many of the benefits of larger, more intact habitats.

Green areas also contribute greatly to several ecosystem services, by strengthening the resistance to floods and droughts, promoting healthier biological processes such as pollination and reducing air pollution by filtrating air and sequestering CO_2. Urban green space also allows to connect cities with the wider environment, creating connective corridors and belts of vital importance for species movement.

In addition, for many people, urban green is the only nature that is experienced. It is therefore equally important to make sure that all urban green spaces are known to and accessible for all citizens. Finally, bringing green space to the urban landscape will also attract tourists and businesses, leading to positive economic effects, and paying off the initial investment.

Box 4 - Montréal's Ecological Network

Montréal's Master Plan, which defines the framework for urban development, explicitly identifies commitments made to protect and promote the city's natural heritage. Under the plan, Montréal created a network of twenty parks, half of which are natural parks, with the goal of preserving them in their natural state, monitoring invasive species and raising public awareness. Ten other areas rich in biodiversity have been established and connected through ecological corridors. In addition, the city of Montréal adopted a tree policy in 2005 to provide the city with an effective vision of tree-related issues and activities; the policy established a tree inventory, public tree management programme and the adoption of regulations related to the protection of trees on private property. Following the guidelines of "planting the right tree in the right place", the city planted over 9,000 new trees in 2006.

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ville.montreal.qc.ca/biodiversity

Local governments actions – examples

- Creating green belts to increase the connectivity of fragmented habitats, for example by converting unused land within cities (such as railway siding with vegetation) into corridors;
- Favouring native plants over exotic, thus lowering maintenance costs for watering and pesticides;
- Encouraging vegetation near buildings with planting on balconies, in window boxes and on roofs;
- Promoting residential gardens;
- Engaging businesses that can play an important role, such as railway companies

that have land along tracks;

- Decreasing proportions of areas taken up by lawns in parks (mowing is detrimental to many species of plants and animals that depend on them); Forbidding the use of pesticides in allotment gardens and the use of de-icing salt (that has negative effects on soil and groundwater) in winter in favour of salt-free abrasives.

Box 5 - Redbridge Cardboard Garden project

The aim of the cardboard garden project was to enhance school grounds for wildlife. Cleveland School in Redbridge was chosen to pilot the project as it had a tarmac playground, no grassed area and was located in a built-up yet socially deprived area. The challenge was to design and construct a sustainable garden using only recycled, biodegradable materials. Planters were built using cardboard inner tubes from rolls of carpet and coffee sacks from a local Fair Trade coffee supplier. The construction was simple; the cardboard tubes were cut to size and fitted tightly inside the coffee sacks before pea shingle was poured into the tubes, which were then topped up with compost from a nearby community gardens. These structures were solid enough to stand alone and were then planted with various salad, vegetables and edible flowers.

The children had sole responsibility for these planters and when their crop was ready for harvest they decided to host a harvest meal for their teachers, Fair Trade staff and the volunteers. The designs on the coffee sacks prompted much discussion about the origins of the coffee beans and the school children decided to link up with a school in one of the coffee-growing countries and send them letters and pictures showing where the coffee sacks ended up. This project was a big success, enhanced the school grounds for wildlife, and engaged a socially deprived community where a high proportion of pupils speak English as a second language. It provided the beginnings of possible habitats and biodiversity in a previously sterile environment.

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3.3.3. Municipal services

Local government is the main agency responsible for service delivery and healthy ecosystems help local governments to provide these services. Therefore, the more nature's services are facilitated, the easier the delivery of some municipal services becomes.

Water supply and wastewater treatment

Nature provides humans with two important ecosystem services that are directly linked to the corresponding municipal services: water supply and water purification. Effective biodiversity conservation facilitates water management and the delivery of these services.

Intact ecosystems can provide clean drinking water at low cost, avoiding large efforts and investments into water purification. The water that we drink from our taps very often comes from mountain catchments around our cities. Catchments that are covered in natural vegetation allow water to flow into rivers and then dams without eroding soil or causing siltation of those dams. Without this vegetation, erosion can be severe and costly artificial filtration and purification procedures might be needed

to clean the water. Similarly, riverside vegetation filters impurities out of water; it also plays the very important role of limiting the effects of flooding, slowing the speed of water and acting as a sponge by absorbing some of the water that comes down the river.

Water is also used as the medium for the disposal of a lot of household, commercial and industrial waste. This results for example in nutrient overload, one of the most common causes of decline in biodiversity, as many plant species do not tolerate high nutrient levels, nor a high variability in nutrient levels or chemical water pollution. Vegetation can also be used in the filtration of waste water and again this can result in the increase of area for biodiversity.

Local governments actions – examples
- Ensuring healthy catchments areas, preserving their natural vegetation, avoiding soil erosion and limiting pollution from local sources;
- Imposing land use restrictions in watersheds and ban pesticides and fertilisers;
- Enforcing effective waste water collection, treatment and nutrient retention measures, to avoid nutrient overload in soils and streams;
- Preferring natural waterways with abundant native vegetation to concrete canals; converting concrete canal back to their natural state where possible;
- Ensuring that the healthy state continues along the waterways' length, linking with neighbouring authorities and with the public.

Box 6 - The Cheonggyecheon Restoration project

The Cheonggyecheon Restoration Project created a 5.8km landscaped green pathway that runs alongside the revitalised Cheonggyecheon stream in Seoul, South Korea.

The river had been routed underground in the mid 1950s and an elevated freeway was later built above most of the underground stream. At the beginning of 2000, the Cheonggyecheon area had become a shabby industrial area, badly in need of improvement and hindered by the presence of the freeway.

In 2003, the Cheonggyecheon Restoration started. The project included the dismantling and demolition of the highway and the uncovering of the historic 5.8 km waterway that ran underneath. This was transformed into an ecologically sensitive green pedestrian corridor. In 2003, Seoul began constructing its first Bus Rapid Transit line, which serves the route of the freeway and was designed to accommodate the drivers of the 120,000 cars that used the road every day. The number of vehicles entering downtown Seoul has thus shown a decrease of 2.3%, with an increasing number of users of buses (by 1.4%) and subways (by 4.3% - daily average of 430,000 people) as a result of the demolition of the two highly-trafficked roads

Data show that the ecosystem along the Cheonggyecheon has been greatly enriched, with the number of fish species increasing to 25 from 4. Bird species have multiplied to 36 from 6, and insect species to 192 from 15. Analysis of ground level temperatures in the vicinity of the stream indicates that the stream has reduced temperatures by approximately 3.5°C.

http://www.terrapass.com/blog/posts/seouls-river
http://www.urbanphoto.net/blog/2007/02/08/cheonggyecheon-the-flow-of-progress/
http://www.preservenet.com/freeways/FreewaysCheonggye.html
http://www.cabe.org.uk/case-studies/cheonggyecheon-restoration-project/description

Solid waste treatment

Waste refers to the excess of undesirable and persistent substances in the environment; it can be in solid, liquid or gas form and it impacts on soil, water and air quality, with severe implications for biodiversity. In nature, waste does not exist because everything produced by one component of an ecosystem is a valuable resource for another. Household or industrial compounds, on the contrary, contain components that are so synthetic that they take years to decompose into something safe or usable; some chemicals cannot be broken down at all. Cities consume most of the world's resources and therefore produce most of the world's waste. The first necessary step is to decrease the amount of waste and production of harmful substances. Secondly, protective measures need to be put in place to avoid heavy impacts on biodiversity. Biodiversity itself can sometimes be used to mitigate effects of waste; as mentioned before, plants contribute to reducing air pollution by absorbing CO_2 from the atmosphere, filtering other gasses that are risky for human health and producing oxygen.

Box 7 - Richmond: Don't rubbish our sculpture

This innovative project involved working with EcoAction (the recycling section of Richmond Council), a local artist and school children at Hampton Wick Infant School to create a biodiversity sculpture that was made entirely out of recycled materials. The sculpture was designed to include most of the habitats and species within Richmond's Biodiversity Action Plan in order to raise awareness about their decline and their local importance in the borough, as the materials used included batteries, waste bins, bike helmets, sun glasses, wheel ties, plastic spoons and an assortment of different materials to make the different species.

The work at the school included educating children about recycling and how materials such as plastic spoons could be used to create ants. It educated them in a different yet creative way about how habitats and species can be affected by dropping litter. The children actively got involved in cutting out material to make the leaves and weave threads and wools onto a mat to make the 'woodland floor'.

The sculpture is publicly displayed and used at fairs and events across the borough all year round to demonstrate to people what can be achieved with recycled materials and also to raise awareness and educate people about Richmond's Biodiversity Action Plan in a new and innovative way. The sculpture is currently on display at Richmond's Council offices and has been used at other stakeholders' (who are involved in the BAP) offices such as Richmond Park and London Wetland Centre. It also was used at the Richmond Park Open Weekend, which gained a lot of attention and was of particular interest to children.

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Local governments actions – examples
- Ensuring an appropriate waste management;
- Restoring buffer zones around landfills to promote biodiversity or using old landfills as renatured area, e.g. covering full landfill sites with a layer of soil and growing trees on top of a it (a process known as 'phytocapping'), thus limiting the production and release of greenhouse gases coming from

decaying waste, reducing the percolation of water into the landfill and groundwater supply, and at the same time providing new green spaces and biodiversity corridors;

- Setting up recycling initiatives and ensuring that recycling facilities are widespread and accessible;
- Educating citizens on how to reduce waste and reuse;
- Supporting distribution of more environmentally friendly products (see "procurement" section).

Box 8 - Nagoya's "Emergency announcement for garbage reduction"

In 1999, the Fujimae Tidal Flat was at risk to be converted to a landfill site; the area has a very high biodiversity value since it has a water purifying function and serves as one of the largest stopovers in Japan for migratory birds. Therefore, the City of Nagoya, Japan, launched the "Emergency Announcement for Garbage Reduction", a call for substantial reduction of garbage, in cooperation with citizens, corporations and government.

The whole city worked to reduce garbage by expanding the separate collection of empty bottles and cans to cover the whole city and starting the recycling of containers and packaging (paper and plastic). By 2005, the amount of solid waste was reduced by 30% and the volume of recyclable waste collected increased by 260 percent.

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http://www.city.nagoya.jp/global/en/

Transport

The integration of biodiversity conservation in the field of transport relates mostly to infrastructure planning, which has a significant effect on biodiversity. For example, roads act as barriers to the dispersal of animals (and the plants that use them as "transport" to move around): animals usually avoid them (thus limiting their dispersal), or try to cross, often getting killed.

The construction of new roads should be avoided, new means of mobility encouraged and the presence of walking and bike paths enhanced. When roads are necessary, they need to be planned in a way that fragmentation is reduced, avoiding to split fragile ecosystems. Offering different means of public transport can also reduce the need for more and wider roads, in addition to reducing air pollution.

When possible, underground tunnels or green bridges should be constructed, allowing animals to cross safely.

The vegetation next to roads and rails has a very important biodiversity value: it may be the only original native vegetation remaining in districts that have been extensively cleared, it may provide the last refuge for some species in that locality, it often contains rare plant species and is an important source of local seed for revegetation projects. Road and rail reserves also provide natural habitat corridors for the movement of birds and other fauna.

Native vegetation in transport corridors provides also the following benefits:
- protects the soil against wind and water erosion
- provides shelter to crops or grazing animals on adjacent land

- prevents or suppresses weed growth and therefore reduces long term road maintenance costs
- easier to maintain and often less fire-prone than introduced vegetation such as weeds
- helps delineate curves along roads for motorists

Finally, using a diversity of native vegetation next to roads and rails contributes also to the beautification of the area and to cleaner air.

3.3.4. Procurement

Many municipal services are provided through public procurement mechanisms; local governments have a very large purchasing power and can therefore exert a great influence on producers while setting an example to others. Procurement is thus an important municipal instrument that affects biodiversity. Many of the raw goods (such as construction timber, cleaning and other maintenance products, food products for public canteens, pesticides for parks and other green spaces), are based on resource extraction that could destroy ecosystems and harm biodiversity. Favouring the use of goods produced in an ecologically sustainable way (by using certified environmentally friendly products) can decrease the pressure on biodiversity in the country of origin.

There are several indirect ways of including biodiversity in procurement, such as purchasing more energy-efficient IT equipment, thus lowering the rate of carbon emissions, contributing to climate protection and ultimately reducing damages to biodiversity. These and other examples can be found in the LEAP toolkit (http://www.leap-gpp-toolkit.org), that provides purchasing guidelines that favour sustainable producers and service providers. As in the above example, the link between procurement and biodiversity is not direct, but increasing the share of ecologically sustainable produced goods can decrease the pressure on global biodiversity.

Procurement is a good example of how the impact of biodiversity-friendly policies can be beneficial not only to biodiversity within local governments but also outside, e.g. timber procurement can protect forests miles away from the city, even abroad, by preferring certified timber, sustainability harvested timber and so on.

Box 9 - Barcelona purchasing sustainable timber

Barcelona has been one of the first cities in Spain to introduce sustainable criteria for public timber purchasing. The city was aiming at encouraging more sustainable use of forest resources and the exclusion of the purchase of wood coming from illegal forestry; guarantying the protection of ancient forests and those of interest in the preservation of biodiversity, recognising the rights of indigenous populations, improving the social and labour conditions of timber industry workers, avoiding the purchase of timber from illegal operations and clandestine logging. The Council's timber procurement policy was implemented first as a Government Measure and then as a Mayoral Decree approved in July 2004.

The Decree established that in tendering and purchasing criteria, it is always necessary to request certification of origin in order to avoid imports from countries in conflict and to ensure that certified timber is always favoured. As a result, 2,310 m^3 of certified timber have been purchased for several uses within the city such as funeral services, parks and gardens and the Barcelona zoo.

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1.4.   Partnerships

Very often the biodiversity of one city extends or has impacts well beyond the city boundaries. Partnering with other local governments or institutions can thus contribute to the overall goal of protecting biodiversity. Local government can partner up with neighbouring authorities to work jointly on the protection of a larger biodiversity area. They can form a network of local governments, for interaction and knowledge transfer.

Box 10 – Local governments networks and knowledge transfer: the Local Action for Biodiversity

Local Action for Biodiversity (LAB) is a global urban biodiversity initiative coordinated by ICLEI – Local Governments for Sustainability. The LAB Pioneer WorkNet began in 2006 with a selected group of local and regional authorities from around the world, representing over 54 million citizens. Referred to as the 'LAB Pioneers', these local authorities are currently international leaders in managing and conserving biodiversity at the local level.

The LAB Initiative is an accessible and enabling platform for committed, leading local governments from around the world. This is achieved by profiling and promoting the importance of urban biodiversity and the role of local governments in its management, as well as by sharing the experiences, successes and challenges of urban biodiversity management in the participating cities and local authorities. Furthermore, technical support, networking opportunities and advocacy are provided. LAB offers different WorkNets to local government with different starting points and needs, focussing on general biodiversity management, the link between climate change and biodiversity and communication and awareness activities.

www.iclei.org/lab

Good communication between the spheres of government (local, regional and national) is also likely to facilitate biodiversity management. Finally, other benefits can be obtained through partnerships with academic institutions, community organisations, schools and the public. Considerable local knowledge of biodiversity often exists in the minds of the public, which can provide valuable input to your biodiversity management plans.

Box 11 - Île-de-France working in partnership

Since 1999, the region of Île-de-France has been active in the field of biodiversity management and conservation, starting with a major study in cooperation with all relevant stakeholders that resulted in the implementation of various activities in partnership with other actors. Between 2003 and 2007 the Region of Île-de-France and its partners implemented more than 130 activities, focussing on increasing the knowledge of regional biodiversity, improving the management of natural resources and increasing public awareness about including biodiversity in land use planning. In December 2003, the Region Île-de-France launched a Regional Charter for Biodiversity and Natural Areas to formalise its commitment. All partners signing the Charter commit to recognise the importance of biodiversity in the city, promote a better management of it, protect forests and work together to achieve these goals. By 2007, 200 among businesses, local authorities and regional parks have signed the Charter.

LAB case studies series – www.iclei.org/lab
http://www.iledefrance.fr

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