

Towards dialogue in urban planning to benefit health and biodiversity

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KEY POINTS

▶ **Restoring nature to cities as a deliberate health promotion strategy requires pro-biodiversity actions that take public health strategies into account – and vice-versa. There are synergies between these two fields that would help multiply the health benefits for the whole urban ecosystem, including humans. Tools are currently under development to help local authorities combine their commitment to health with environmental action.**

Public policies on health and the environment often take the approach of reducing risk factors (air pollution, noise, urban heat islands, etc.). Yet urban nature spaces and the ecosystem services they provide can be part of a more ambitious disease prevention and health promotion strategy [1]. A review of the scientific literature carried out in 2021 by the non-profit organisation Plante & Cité (Plant & City) identified 300 publications that demonstrated the benefits of natural spaces on physical and mental health [2]. Restoring nature to urban areas is an effective way to improve the living environment and well-being of city dwellers, especially as biodiversity loss in cities has accelerated in recent decades [3].

However, the compartmentalisation of different policies and the lack of cross-departmental working within local authorities appear to be an obstacle to dealing effectively with social, health and environmental issues. Since the early 2000s, “Nature in the City” plans have influenced the practices of many French local authorities¹ (differentiated management², use of plant protection products, greening). The public health benefits of these initiatives have yet to be fully assessed. Regarding biodiversity, strategies for greening public spaces to improve the well-being of city dwellers can prove superficial, focusing on decorative green spaces and overlooking the essential requirements for living creatures (soil quality, diversity of strata and habitats, ecological connectivity³) [4]. Health policies suffer from a lack of crossover between ecological and health issues, which can favour a medical approach to prevention, with local authorities sometimes reducing this to a question of sanitation.

Developing synergies between health and biodiversity policies would multiply the health benefits for the ecosystem as a whole, including humans, as recommended by the “One Health” approach [5]. So how can we reconcile the objectives of preserving biodiversity and protecting human health?

Non-allergenic plants: A crucial choice

One area that clearly demonstrates the difficulty of finding such synergies is the management of plants in cities. There are a number of guides available to help local authorities

with their nature and greening projects [6-8]. Public health professionals often want to restrict allergenic plants, instead favouring cultivated varieties or exotic species that are unsuited to local conditions. Ecology professionals defend using flora that grows spontaneously because it is adapted to the local climate and soils, plus it is wildlife-friendly (host plants for larvae and caterpillars, flowers that attract adult insects, fruit for birds and mammals, etc.). Certain practices, such as the creation of urban grasslands to replace lawns, can increase the risk of grass allergies. Local authorities therefore have to make trade-offs to reconcile different uses or choose to maximise one service over another for local residents. When aiming to tackle pollinosis⁴, decisions should be made in consultation with the various stakeholders.

An example of this approach is the Paris Biodiversity Plan [9], which sets out to “*make biodiversity an asset for the health of Parisians*”. It aims to improve consideration of the health issues linked to allergenic pollens in the management of existing parks and gardens and future urban projects. The plan was set up by the Department for Green Spaces and Environment with input from the local Environmental Health department, which must check that the living environment does not present any health risks for residents. With the goal of reducing plants that cause allergies, developers and managers of green spaces were given recommendations to apply in the medium term (choice of plants, species banned in schools and nurseries) and the long term (strategy for gradually replacing allergenic species

with substitute species). In addition, the city has created the Sentinel Pollinarium®, a garden that contains the main allergenic species of the region, identified by a group of allergy doctors and botanists. This site provides healthcare professionals and allergy sufferers with real-time information on when pollination begins and ends. It also has an educational role to play by informing those who suffer from allergies about specific risks and raising awareness of biodiversity among residents.

Nature that works for ecology and health

Developing nature in cities means integrating several functions (ecology, social, health, etc.) while taking into account the thoughts and perceptions of residents. Failure to do so can be an obstacle to the success of a project and can even reinforce social inequalities. The green and blue networks⁵ initiated following the 2007 Grenelle Environment forums illustrate this complex balance: some interpret their purpose as simple greenways, obscuring their primary function as an ecological network for the movement of species; or, on the contrary, others view them as ecological corridors, overlooking the recreational needs of residents (sport, gentle mobility). Mapping software and geographic information systems (GIS) can be used to reconcile these objectives by combining ecological data (regional ecological coherence plans, landscape graph modelling⁶) with social data (accessibility of green spaces, income and resident surveys) [10].

The case of urban brownfield sites is another example of these parallel visions. The public can easily judge areas of untended wild biodiversity as abandoned or neglected wasteland, contributing to a feeling of insecurity; yet certain studies highlight the social role of such areas as places to spend time, pass through or create art⁷. A number of ecological studies have shown that brownfield sites are home to a greater variety of birds and plants than well-tended green spaces. They also contribute to ecological connectivity in urban areas. As a result of the No Net Land Take (NNLT) target,

these brownfield sites are coveted for urban housing projects, despite the fact that they enhance nature in the city and contribute to better quality of life and health.

A study carried out in Paris [12] showed that ecosystem services provided by the spontaneous vegetation that grows in places like brownfield sites, e.g. surface run-off and temperature regulation, are generally inversely proportional to the income of residents. In the centre and west of Paris, which are densely built-up and financially well-off, the benefits are low, whereas the opposite is true in the east of the city and its outskirts, where working-class households live in less dense or more varied neighbourhoods, often with brownfield sites. In these areas, dialogue can reveal solutions that are compatible with biodiversity management and social issues. Gaining an awareness of the value and richness of nature is not a theoretical or abstract exercise, it is an understanding largely passed on through experience and education. This work is an essential part of the Green Plan for the Île-de-France region [13], where 935 municipalities have been found to lack green spaces.

Cooperation between services at local level

In 2019, the North-East Béarn group of municipalities decided to take action towards preserving biodiversity that would also improve the health of its residents [14]. Equipped with a health impact assessment (HIA) of the natural heritage – an innovative decision-making tool for health-promoting policies and projects to reduce health inequalities – they brought together the various parties involved and started breaking down the barriers between issues. The outcome was several concrete recommendations based on an environmental and health analysis of the area, a study of the initiatives envisaged and a consultation with local stakeholders. For example, be it planting hedgerows in private and public spaces (supported by maps showing the lines of identified hedgerows), integrating a biotope area factor⁸ in the inter-municipal urban planning regulations (PLUi)

or restoring wetlands (supported by maps), all of these actions take health determinants into account in order to maximise the beneficial effects on people's well-being and minimise their negative impacts. The East Béarn local health contract, the North-East Béarn Regional Climate, Air and Energy Plan, the Strategy and Action Plan for Natural Heritage and the inter-municipal urban planning documents are all committed to the same goal: preserving the health of the natural environment and its inhabitants. For local authorities to adopt an ecosystems approach to health⁹, they need to rethink their working practices by involving all concerned departments and stakeholders.

Seeing the potential of nature

Cities are full of areas that are unnecessarily covered with asphalt or concrete. Although at present poorly quantified, these sites could be a resource for the expansion and linking of natural areas, the reopening of urban rivers and the restoration of wetlands. Local authorities and their public and private partners need technological support. As part of the European Regreen project, which aims to promote nature-based solutions to support the ecological transition of cities together with residents [15], the Île-de-France Regional Biodiversity Agency (ARB) has developed a method for identifying urban areas with a high potential for renaturing projects that would benefit biodiversity, support adaptation to climate change and improve population health. The Regaining Biodiversity strand targets areas that are lacking biodiversity by studying the size of areas of vegetation, the percentage of vegetation cover and the presence of rare habitats (old trees, wetlands). The Adapting to Climate Change component looks at areas exposed to flooding, run-off and urban heat islands (UHIs). The Improving Health and Quality of Life strand identifies areas that are vulnerable due to a lack of green spaces, air pollution and health problems linked to UHIs.

The analysis produced using the Regreen method is made available to stakeholders through an interactive



The greenway in the town of Ris-Orangis.

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mapping application entitled “Où renaturer en Île-de-France ?” (“Sites for renaturing in Île-de-France”)¹⁰. Local authorities can use this tool to achieve the NNLT objective or define zones for renaturing in their urban planning documents, such as their local consistency plan or inter-municipal local urban development plan. Looking beyond one-off initiatives (e.g. greening school grounds), this method can encourage local authorities to adopt more coherent renaturing strategies in their areas, in conjunction with public health.

At a time when a large number of local authorities are working to expand nature in their cities, there is a need to pool expertise and bring together ecological and health strategies. The One Health approach comes into its own here: it demands that we move beyond compartmentalised operations to act for the benefit of all living beings, both human and non-human. ■

1. See the Territoires Engagés pour la Nature (Communities Invested in Nature) scheme run by the French Office for Biodiversity (<https://engagespourlanature.ofb.fr/territoires>) and the Capitales Françaises de la Biodiversité (French capitals of biodiversity) project (<https://www.capitale-biodiversite.fr/>).

2. The principle of differentiated management involves a compromise between the relatively strict and constrained management of communal areas and the naturalistic management of reserves, aimed at protecting the natural environment. Online: <https://www.arb-idf.fr/article/gestion-ecologique/>

3. Ecological connectivity reflects the physical relationships between elements of the landscape (including the marine landscape) that promote a full range of natural processes, such as species migration or simply interaction between sub-populations. Connectivity is a parameter that measures the processes by which sub-populations of organisms are interconnected within a functional demographic unit.

4. Name given to the various allergies caused by pollen from trees, herbaceous plants and grasses. (Editor’s note.)

5. The green and blue networks are a measure to support the inclusion of biodiversity and ecosystems in land-use planning, particularly in urban areas. These networks aim to “reduce the fragmentation and vulnerability of natural habitats” and “identify, preserve and link important areas for the preservation of biodiversity through ecological corridors”.

6. Landscape graphs are one of the most widely used approaches for modelling ecological networks

and measuring landscape connectivity from an operational standpoint. A landscape graph is made up of a set of nodes (the habitat spots for a species or group of species) connected by links representing potential movement paths. Online: https://www.trameverteetbleue.fr/sites/default/files/fiche1_graphab_introduction.pdf

7. Project Wasteland, a study of the diversity of plants, birds, butterflies, people and their tracks in the urban brownfield sites of Seine-Saint-Denis, carried out with ecologists, anthropologists and artists. Online: <https://www.arb-idf.fr/nos-travaux/publications/terrains-vagues-en-seine-saint-denis/>

8. The biotope area factor (BAF) is an equation that describes the proportion of surfaces favourable to biodiversity (ecologically effective surface area) in relation to the total surface area of a plot. By calculating the BAF, it is possible to assess the environmental quality of a plot or block of land, a neighbourhood or a larger area. Online: <https://multimedia.ademe.fr/catalogues/CTecosystemes/fiches/outil11p6364.pdf>

9. The ecosystems approach to health recognises that there are close links between humans and their biophysical, social and economic environment, and that these links have repercussions for the health of individuals. (Editor’s note.)

10. cartoviz2.institutparisregion.fr/?id_appli=re-green



The new Saint-Martin-du-Touch district in the Toulouse metropolitan area.

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