Biodiversity plan 2020-2030

1. Framework and principles

Ensuring biodiversity: a major challenge!

The recent IPBES *Global Assessment* Report (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services 2019) states that the current scale and rate of biodiversity loss pose as strong a threat to human well-being as climate change. UGent honorary doctor Joh an Rockström also identified both as areas where '*Planetary Boundaries*' have been exceeded. In its *Global Risks Report* 2019, the World Economic Forum recognises that biodiversity loss poses serious risks. The Eurobarometer 2018-19 shows that two thirds of European citizens are also actually concerned about biodiversity loss. And the European Environment Agency states in its Outlook 2020 that Europe is not on the desired course to halt biodiversity loss. In Flanders, the 'Nature Indicators 2018' confirm a general trend of decline in biodiversity; more and more species and habitats are threatened in their survival. According to the recent report of the Panel on Climate and Sustainability, the ambition in the area of protected nature should be many times higher than today: our country should aim for 25% space for protected nature. Thus, there is a call at several levels to place biodiversity high on agendas.

Biodiversity not only has intrinsic value and thus legitimacy of existence and conservation. It is also the basis for the functioning of ecosystems and thus provides essential services to people and society. Food supply, clean water and air, crop pollination, pest control and natural materials such as wood are telling examples of these so-called 'ecosystem services'. But natural ecosystems also offer great potential for flood protection and for tackling climate change (adaptation and mitigation). And, of course, they are a very rich source of human well-being, with numerous opportunities for recreation, tourism and (mental) health.

Biodiversity is not only a matter of nature reserves and open, rural areas; it also has a particularly meaningful place in an urban context. Or rather, it can have that place if we work at it. This can involve a broad spectrum between 'grass instead of concrete' on the one hand and 'pearls of nature' in the midst of the city on the other.

All of the above illustrates that concern for green space and biodiversity should be an essential part of any organisation that wishes to take responsibility for a more sustainable society.

UGent and biodiversity: state of affairs today

In 2019, UGent will have some 250 hectares of land in use. About a quarter of this is paved, the rest consists of grass, woods, thickets, water and agricultural land. Some of these grounds already have a high nature value and are legally protected. The Aelmoeseneiebos on the Gontrode campus is part of a special protection zone of the European Natura 2000 network and part of the Proeftuinstraat campus is considered to be valuable forest[1]. The species-rich grasslands on the Sterre campus, a green zone on the UZ campus and part of the Tweekerken campus have been included in the preliminary draft of the City of Ghent's Spatial Implementation Plan for Green Areas[2]. This plan will ensure protection in the future. Various other green areas, such as the Botanical Garden and parts of the Sterre campus, contain valuable to very valuable natural

[1] Urban RUP green axis 4: https://stad.gent/nl/wonen-verbouwen/gemeentelijke-rups-en-bpas/bekijk-de-geldende-plannen/deelgebied-9-gent-centrum/160-rup-groenas-4-bovenschelde
[2] https://stad.gent/nl/wonen-verbouwen/gemeentelijke-rups-en-bpas/plannen-procedure/rup-169-groen

elements according to the Biological Value Map of the INBO[3]. These are important preconditions for a ban on changing the vegetation or for recognition as a nature reserve.

In a number of these areas, steps have already been taken towards more nature-friendly management; the UGent Parks and Public Gardens Department is increasingly focusing on ecological green management. Several areas are mowed more extensively, flower meadows have been added and requests from staff and students for small green elements have been met: a butterfly garden, flower bulbs in a lawn, a vegetable garden, bee hives on the roof, plant pots on a stone court, a parking makeover, etc. In Melle, a 2.5 ha climate forest was planted on a piece of agricultural land belonging to the Proefhoeve. UGent also signed the 'Green Deal Businesses and Biodiversity', committing itself to starting green projects.

Today, on a number of campuses, also together with students, work is being done on green inventories. This is the case on the campuses Ledeganck, Sterre, Gontrode and Coupure.

On the other hand, new construction projects, such as the new homes on the Sterre and Farmacie campuses or the new buildings on the Proeftuin campus, will be placed in open green spaces. As a result, part of the existing and sometimes very valuable nature in those areas is at risk of having to make way.

UGent and biodiversity: a challenge for tomorrow

The present biodiversity plan grew out of the above framework and out of the concern and commitment of a number of UGent expert academics. The ambition of this plan is to increase the surface area of green spaces on the UGent campuses and to enhance their biodiversity in the years to come.

After all, as a large landowner, UGent bears a responsibility and can make a difference with a visionary policy on green space and biodiversity. Our university can show how biodiversity can be dealt with, whether or not in an urban context, and in this way it would serve as an important example to its students and staff, but also to society as a whole.

In addition, green spaces create more attractive campuses for students, staff and visitors/passers. Over the past twenty years, scientific literature has provided overwhelming evidence of the positive effects of green space on people's health and well-being. Views of greenery reduce stress, increase attention and improve mood. In addition, green spaces encourage exercise.

It is UGent's ambition to be climate neutral by 2050. The call - not least from our own academics who base this on scientific facts - to achieve this goal in a much shorter time frame is becoming louder. And it is clear that in order to realise the ambition, all policy areas need to be activated. Including green policy. This is not only because of the potential for carbon storage (climate mitigation), but also because green spaces can form a very important buffer against the effects of climate change (climate adaptation). For example, more frequent flooding, droughts and urban heat islands, for which '*nature-based solutions*' offer solutions.

2. Objective

UGent preserves and enhances green space and biodiversity in areas for which it is responsible. It achieves progress in both quantity and quality, at campus and institutional level, and thus uses a '*net gain*' of green space and biodiversity as a starting point.

This means that UGent:

- preserve the greenery and biodiversity present on its sites;
- is working on expanding and improving the quality of the greenery on its campuses;

[3] https://www.inbo.be/nl/belang

- green space and biodiversity as a fully-fledged guiding principle in policy decisions.

Understanding green and biodiversity

By green we mean all areas with vegetation. It is therefore an amount of green space, independent of its quality, and ranges from species-poor lawns to structure-rich well-developed forests.

Biodiversity is the variability among living organisms and the ecosystems of which they are a part; it includes diversity within species, between species and of ecosystems.

The objective of this plan is to make progress along the two axes formed by green space and biodiversity: more green space with more biodiversity.

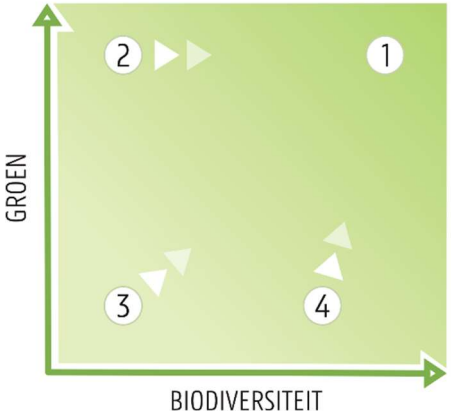

Fig. 1: Positioning of individual areas, plots or campuses along two axes: green ('area with vegetation') and biodiversity (biological 'quality'). The ambition of this plan is to shift campuses towards more and higher quality greenery (green arrows). A few examples to illustrate this: (1) large and biodiverse area such as the Aelmoeseneiebos Gontrode, (2) Campus Zwijnaarde with (for the time being) a considerable area of greenery that is, however, of low quality, (3) site with virtually no greenery and biodiversity such as Campus Aula, (4) relatively small but very biodiverse plots such as on Campus Sterre.

3. Strategic framework

In order to realise the biodiversity plan with concrete objectives and actions, five strategic pillars are put forward:

1. appropriate design and management of green spaces and biodiversity on the campuses;
2. Integration and embedding of green space and biodiversity in policy decisions on development projects;
3. measuring and monitoring;
4. communication and engagement;
5. deploying UGent expertise via a biodiversity working group.

In what follows, we describe the 5 pillars and we implement them in a series of actions. This action list is a first step. We assume that its further supplementation and refinement will be part of the dynamics that arise from the present plan and that, in any case, additional initiatives will emerge '*en cours de route*'.

3.1. Pillar 1: Appropriate design and management of green spaces and biodiversity on campuses

The aim of this Biodiversity Plan is to preserve, strengthen and extend the greenery and biodiversity present on the campuses. In a number of places the management will have to be adjusted or development measures will have to be taken.

In the first instance, an **inventory is** needed of what is currently available (see also pillar 3): where are valuable green spaces located, where is the potential for green space and high biodiversity, where can the quality of existing green space be increased through adjusted management or development measures?

On the basis of the inventory, appropriate management measures are proposed. These can be written out in **management plans**. These plans show where one wants to go with the greenery and biodiversity at a certain site and show what function and what management is envisaged for each unit of land.

The UGent Parks and Public Gardens Department is already increasingly focusing on ecological green management: grasslands and verges are kept low in nutrients through mowing and removal, indigenous tree species have been planted, more and more plots are being managed more extensively, etc. More detailed green management plans will make it easier for the green space maintenance staff to carry out management correctly, structurally and (cost-) efficiently. It is important that the management preserves the present biodiversity as a minimum, and preferably strengthens and further develops it.

In addition, a number of **specific management measures** can yield important results in terms of greenery and biodiversity. These can often be carried out at a limited additional cost or sometimes even at a lower cost than the current usual management. It may concern, among other things

- limiting the area of lawn and converting little-used lawn into extensively managed grassland;
- specific mowing management of lawns (sinus mowing, phased mowing);
- planting of (preferably local) plant species in order to attract the fauna that depends on them;
- reuse of prunings in twigsheds;
- ensuring layering in the design of green spaces;
- creating nesting and hibernation places for insects;
- transforming existing "ornamental ponds" into more ecological ponds.

Action 1.	Draw up management plans per campus or per type of green space (or in combination), with the cooperation of students and staff (see also pillar 4)
	Required: working hours, commitment of (internal) experts
Action 2.	Create a toolbox of new/alternative forms of green management for the benefit of biodiversity; targeted application of the tools/management forms.
	Necessary: knowledge (already partly present), commitment of (internal) experts and green space manager, working hours

An inventory can be made to identify locations that currently have a low level of biodiversity, but which do have a lot of potential for the **development of biodiverse green space**. These are, for instance, areas with suitable abiotics (e.g. nutrient-poor soil) where biodiversity can be increased through sowing or adapted management. In addition, further development is also possible at locations where infrastructure works are being carried out for softening, for rainwater infiltration, for climate adaptation, etc. A number of first concrete measures that can provide for more and sustainable greenery on the campuses include

- softening of superfluous infrastructure (e.g. parking lots campus Sterre, Proeftuin, Gontrode, Pharmacy, etc.);
- freeing up parking space by directing cars towards (underground) car parks, in order to de-park freed up ground level car parks (e.g. Muinkschelde, Coupure campus, Rectoraat, etc.);

- limiting the proportion of hard surfaces to a minimum in the construction of new buildings, squares, inner gardens, etc. (e.g. UFO, Home Bertha, S11, etc.);
- Providing small green elements, such as trees, green facades, green roofs, green garlands, etc. Suggestions for these are regularly made by students and staff.

Action 3.	Developing additional green space and biodiversity on the campuses: sowing, planting trees/forests, excavating, depleting nutrient-rich soils, creating corridors, softening, developing green facades, etc.
	Required: knowledge (already partly present), commitment of (internal) experts, possibly budgets for construction

3.2 Pillar 2: Integrate and embed green space and biodiversity into policy decisions on development projects

Parallel to increasing the area of green space and biodiversity (see also pillar 1), the impact of concrete (infrastructural) development projects on existing green space and biodiversity must be limited as much as possible. Therefore, UGent applies a **mitigation hierarchy**[4] for green space and biodiversity impact in policy decisions concerning concrete dossiers in order to realise this ambition.

Mitigation is understood to mean all measures aimed at reducing the impact of development projects on green spaces and biodiversity. Priorities can be assigned to these principles and associated measures by placing them in a hierarchy, whereby maximum efforts are first made to take measures from a higher category before finally opting for less desirable options. It is an established tool in the *good practices* of environmental legislation and action. The successive steps in the hierarchy are as follows (see fig. 2):

1. *Avoidance*: Measures that have an impact are simply avoided through careful spatial planning of development projects. For example, preference is always given to building on what is already paved rather than cutting green spaces. Large stretches of green space with a lot of biodiversity are irreplaceable and so the hierarchy stops right here, at avoidance. Knowledge of the current value is therefore important (see also pillar 3).
2. *Minimisation*: The area, intensity and duration of the impact during the works of a project are limited, insofar as they cannot be avoided. This concerns, for example, site equipment that falls outside the area of the final built infrastructure, such as access routes and storage of (demolition) materials. This must be worked out in the specifications.
3. *Restoration*: The negative impact on green space and biodiversity that could not be avoided or minimised is restored within the footprint of the development project itself. Measures focus on restoring the pre-impact composition, structure and functioning of green space. This therefore requires knowledge of the state of the green space before the start of the works.
4. **Compensation** (*offset*): Measures are taken to compensate for the residual negative impact on green space and biodiversity. This step therefore comes explicitly **only after making maximum use of steps 1 - 3**. It is a last resort. The ultimate goal is to realise a *no net loss* of green space and biodiversity. Where possible, compensation will take place on the same campus, if necessary elsewhere. Examples are the upgrading or restoration of degraded pieces of greenery or the creation of extra greenery, such as softening.

[4] *Bull et al., 2016. Seeking convergence on the key concepts in 'no net loss' policy. J. Appl. Ecol. 53, 1686–1693.*
Maron et al, 2016. Taming a wicked problem: resolving controversies in biodiversity offsetting. BioScience 66, 489-498.

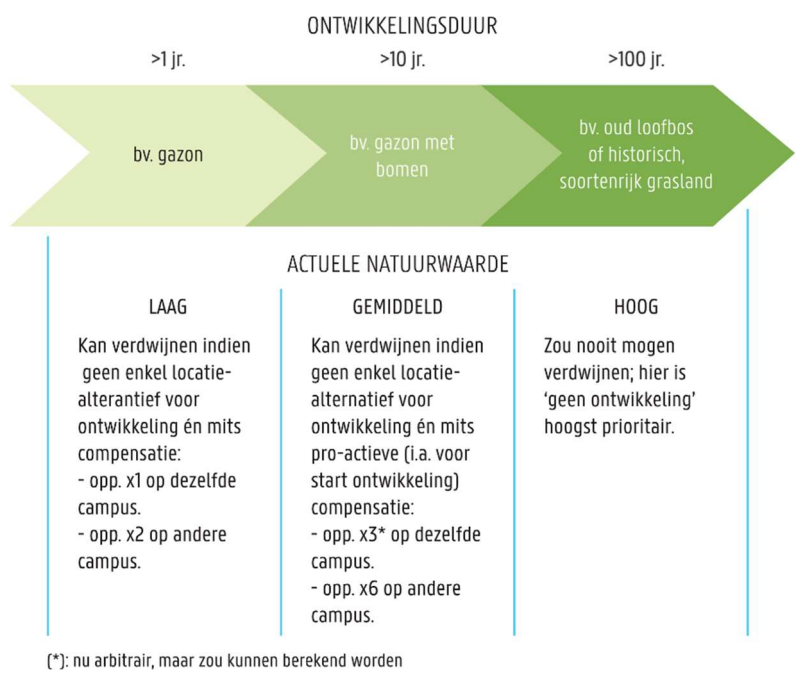

Fig. 2. Some challenges for operationalising a mitigation hierarchy are linked to the development time and current value of green spaces and the biodiversity found there.

The figure illustrates with examples how such challenges can be translated into concrete measures. This plan proposes to further elaborate such operationalisation at the level of UGent.

A mitigation hierarchy requires clear agreements and solutions to a number of theoretical and practical **challenges**. Challenges include:

- **Additionality:** Measures taken in the context of concrete development projects come on top of the ambition concerning more green space and more biodiversity. In other words, compensation cannot be used to realise the ambitions of pillar 1. The development of a new area of green space within the framework of greening cannot also serve as compensation, because it would not lead to a net increase in green space and biodiversity. **Pillar 1 and 2 are therefore explicitly separate**.
- **Compliance and monitoring:** Structural monitoring is needed to ensure that agreements on minimising, repairing and compensating are met. This also requires, for example, binding provisions in specifications.
- **Equivalence:** The compensation must produce equivalent green space (area and biodiversity) compared to the losses caused by the development project. Scientifically substantiated indicators can be developed for this.
- **Substitutability: Consideration** must be given to the extent to which certain forms of green space or biodiversity can be exchanged for alternatives. An old deciduous forest is by definition irreplaceable, but is it acceptable to replace a lawn that is to disappear with a young plantation of trees? Such a question can be considered with substantiated valuation methods, for example.
- **Time window:** Restoration and/or compensation shall take place within an acceptable period of time. This period will depend on the type of ecosystem. While in some cases a herbal grassland can be realised within a few years, forests often need several decades to reach an optimal status. This criterion is, among others, important to avoid that restoration and compensation measures are pushed far ahead and accumulate. Open "green and biodiversity debts" are thus to be avoided.

In order to further operationalise the above principles and challenges and translate them into UGent policy (see fig. 2), the following concrete actions are already proposed:

Action 4.	Make the mitigation hierarchy (fig. 2) operational in a *hands-on* decision support tool. There are examples of this that can be translated into a workable UGent version with the help of academic UGent expertise.
	Required: working hours, knowledge of (internal) experts
Action 5.	Integration of a 'biodiversity check' in the planning phase of the construction process that should ensure the application of the *hands-on tool*, green compensation and *net gain*. This biodiversity check can be done by the biodiversity working group (see pillar 5, action 19).
	Required: working hours
Action 6.	Draw up a procedure for restoring impact on green spaces and biodiversity during works: prior consultation, limiting impact and restoring.
	Required: working hours, knowledge of (internal) experts

3.3. Pillar 3: Measuring and monitoring

There is a need for a thorough inventory of what is present in the field of green space and biodiversity on the UGent campuses. This is needed as a guideline for certain decisions on conservation and management, but also to evaluate the evolution of green spaces and biodiversity in the future. To establish this initial situation, one does not have to start from scratch. The City of Ghent has drawn up its own Biological Value Map (BWK) for green structures in the city. This provides the campuses in Ghent with a basis for the quantification of biodiversity. For some sites, additional data on biodiversity are available thanks to earlier inventories. It is interesting to take into account not only plants, but also other organisms such as insects, fungi, mosses, birds and mammals.

The inventory allows us to assess the biodiversity value per campus, after which specific targets can be formulated (e.g. measure every five years and there must be x% progress).

The following concrete measures are proposed:

Action 7.	Thorough inventory of existing greenery and biodiversity per campus.
	*Necessary: working hours, together with the Parks and Public Gardens Department, academics and students (*both for intra-curriculum (activating learning!) and extra-curriculum activities); one biodiversity coordinator/contact person per campus
Action 8.	On the basis of a refinement of the BWK and additional inventories (see action 7), a measuring method for biodiversity will be worked out so that the evolution can be followed up. A scale of 0-10 could be used (e.g. 0 = parking, up to 10 = biologically very valuable).
	Needs: working hours, together with the City of Ghent Green Service, academics and students

3.4. Pillar 4: Commitment and Communication

Involvement

This biodiversity plan originated from a constructive engagement of UGent citizens and was further shaped in the participatory context of 'Transition UGent'. The further roll-out and realisation of this plan in concrete actions must also take place in a strong co-creative mindset, with maximum effort

being put into the active involvement of administrators, academics, policy staff, technicians, students,... and external partners, such as the City of Ghent, civil society organisations, local residents,... Social cohesion, a sense of community and co-ownership are central to what we want to achieve: planning together, planting together, gardening together, maintaining together, picking together, relaxing together, thinking together, realising together. Incidentally, various green projects that have already been implemented were initiated by committed members of staff and students: a butterfly garden, bulbs in a lawn, a vegetable garden, bee hives on the roof, plant pots in a stone courtyard, a parking makeover, etc. Green and biodiversity bring people together. We want to continue in this vein. With a broad commitment, a number of things can also be realised without having to pay much. For example, the 'living lab' philosophy of the City Academy can be applied and students can make inventories, refine measuring methods, propose plans, etc. via master's theses or within courses.

The following concrete measures are proposed:

Action 9.	Co-creation of green plans by policy officers, students and teachers, within and outside existing learning pathways.
	Required: working hours, commitment, knowledge of (internal) experts
Action 10.	Inspire teachers to initiate the planning, creation and monitoring of green spaces, both within and outside existing learning pathways (e.g. practicals on their own sites, case studies). Green and biodiversity initiatives can be part of education in general and of 'activating learning' in particular.
	Required: working hours, commitment
Action 11.	Set up collaborations with external partners (City of Ghent, Natuurpunt Gent, GMF,...) for inventorying and managing the biodiversity on our campuses.
	Required: working hours
Action 12.	Involving students and staff in the effective construction and maintenance of more biodiverse spaces; encouraging them to propose and develop small-scale green projects (extra trees, extra flowers, pop-up gardens on pavement, green garlands, façade greenery, etc.); organising competitions and polling.
	Required: working hours
Action 13.	Open up green spaces on UGent campuses for soft recreation, especially in neighbourhoods where public green spaces are scarce (e.g. walking track on Sterre campus, benches and picnic tables), obviously taking into account the carrying capacity of the existing green elements.
	Required: working hours, possible cost of equipment
Action 14.	Creating frameworks and space in which own, bottom-up initiatives can be realised. Actively encourage staff and students to launch proposals to green up their campus with small green elements and to start doing so themselves.
	Required: working hours

<u>Communication</u>

Not all UGent citizens are aware of the importance of biodiversity yet; either they do not understand why certain forms of management are implemented, or they do not know the value of specific biotopes and their associated biodiversity. A specific task therefore lies in strengthening this knowledge and awareness among the broader UGent public. In this way, targeted communication (with a recognisable, recruiting style) will also be crucial to realise the hoped-for involvement in (and therefore the effective realisation of) the biodiversity plan.

The following concrete measures are proposed:

Action 15.	Regular communication about biodiversity on UGent sites via newsletters, social media, etc. (e.g. "flowering bee orchids on the Veterinary Medicine campus", "new species of mushroom on the Sterre", "rare species of bird in the Aelmoesenijenbos", photos of the climate forest in autumn colours, organisation of a biodiversity walk at noon on a campus...).
	Needs: working hours, contact person per campus and at communication staff
Action 16.	Attractive communication in situ: where action is taken to maintain or increase biodiversity and green space, this is made visible and clarified with information boards. It is explained why this is important for employees and students.
	Required: working hours, cost of information boards
Action 17.	Annual reporting on biodiversity progress (integration into sustainability report).
	Required: working hours
Action 18.	Communication to and involvement with surrounding campuses (residents, schools, etc.).
	Required: working hours

3.5. Pillar 5: Internal expertise

UGent has a lot of expertise on biodiversity and green space (management). However, this expertise is insufficiently used in green and biodiversity policy and management at UGent sites. This now happens on an ad hoc or voluntary basis, such as within the think tank Transitie UGent. A working group on biodiversity that brings these experts together with policy staff and the UGent administration can function as an advisory body and take on the following tasks:

- evaluating proposals from the green space department, faculties, staff and students concerning the organisation and management of green space and biodiversity and testing them against the UGent Biodiversity Plan (see also pillar 1);
- formulate own proposals on the design and management of and communication about green spaces and biodiversity;
- advising on policy decisions within UGent that have an impact on biodiversity and green space (see also pillar 2);
- Follow up on the progress of the biodiversity plan.

Action 19.	Establish and operationalise a biodiversity working group
	Required: working hours, deployment of internal experts