



Husqvarna®

FROM NICE TO NECESSARY

# Re:thinking urban green spaces





# We must innovate for more sustainable green spaces

**A**s a leading provider of products and solutions to care for urban green spaces, Husqvarna recognizes that we have a key role to play in helping the industry reduce emissions and use fewer scarce resources. This largely involves using our innovation capabilities to develop the smart and low-emission tools of the future. We call it Sustainovate. We also believe we have a role to play in educating the industry and placing these questions on the agenda of decision makers. That's why we have commissioned this report, gathering the views of those we believe are best placed to predict the future – professionals and experts of the industry.

One thing is very clear from the report - urban green spaces will become even more important in the future. Undoubtedly, there is a shift "from nice to necessary", where parks and other green areas in the cities are needed to actively help combat climate change. From what we know today, we can only expect the green spaces in a city to grow, both in terms of size as well as level of importance. This in turn, means there will be more jobs to be done, as well as increased demands on green space professionals.

The development of city green spaces also puts pressure on us, Husqvarna, to provide the data, products and solutions needed to accelerate the transformation and support landscapers and tree care teams in their new setting. We know that many professionals in the industry have high sustainability ambitions for the future, but struggle on a day-to-day basis to find and retain qualified labor. Over one third of green space managers has difficulties finding

qualified staff today. In many ways, it's a challenging time for the industry, but also an exciting one.

Our ambition is to support the industry in two distinctive areas linked to our strong innovation heritage: innovate towards fossil independency by continuing to develop high performing battery powered tools, and provide a wide range of autonomous solutions to help reduce the daily stress experienced by landscaping teams.

In 2022 Husqvarna rolled out CEORA™ in the market, the first robotic lawn mower built from scratch to cater for very large green spaces. This marked an important step towards more sustainable green space management on the professional side – autonomous, quiet and zero CO<sub>2</sub> direct exhaust emission during use.

Powered by our 333 years of innovation heritage, we will continue our quest to reduce our environmental impact, making green spaces even greener.



**Yvette Henshall - Bell**

*President Global Professional Business Unit  
Husqvarna Forest & Garden Division*





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# The report in brief

This report gives an overview of the future of urban green spaces. To this end, three fundamental questions underpin the report's contents:

**What will the purpose of green spaces be?**

**What is the role of technology in green spaces?**

**What barriers are there for future green spaces?**



## Seven key insights:

### **1 TREES: THE NEW HEROES**

The planting of and care for trees is considered the most important trend – more trees in the cities, primarily serving the purposes of cooling the city and supporting a more thriving ecosystem. Trees are a long-term investment but one that will become critical for the green cities of the future. 68% of urban green space professionals say that more trees will have a great overall practical impact on sustainable green space management over the next ten years in the city where they are principally active.

### **2 BIODIVERSITY: FROM FLOWER TO ROOT**

A focus on healthy and thriving ecosystems is redefining urban green space management. The role of green space as provider for plants, insects, and other lifeforms goes beyond visual appeal. 60% of professionals see a significantly greater focus on biodiversity in the near future.

### **3 PURPOSE: SUSTAINABILITY FRONTLINE**

As cities become more crowded, green spaces rapidly become more multipurpose and land needs to be used more effectively. Mitigating heat, flooding, and carbon dioxide are three of the most common purposes cited. At the same time they remain necessary for the well-being of citizens: 38% of professionals believe there will be strict legal rights for all citizens to access green spaces within 5 years.

### **4 CITY PLANNING: A GREEN JIGSAW PUZZLE**

Smaller green spaces are becoming more popular. This incentivizes city planning that can incorporate smaller green puzzle pieces and integrate them in the urban environment in new ways. Half of urban green space professionals see smaller “parklets” as a trend significantly impacting the profession.

# 68%

of urban green space professionals say that more trees will have a great overall practical impact on sustainable green space management over the next ten years.



## 5 HEALTH: BODY AND MIND

Green spaces became more important both to the mental and physical health of citizens during the pandemic and are likely going to continue to play a part. Parks as gyms were considered an important trend among 56% of professionals, a trend which is unevenly developed across the markets.

## 6 EMISSIONS: A ROCK AND A HARD PLACE

Zero emissions are high on the agenda for the green space industry. So is lowering the usage of water. Tools, however, are not quite meeting the demands of professionals yet, making it difficult to achieve a sustainable reality for most. 44% of professionals think that gasoline-powered equipment will likely be banned in their city by 2027, but only 37% believe fully electrified equipment will be on par by then.

## 7 AUTOMATION: STILL IN ITS INFANCY

Automation is still under-utilized and new solutions in service models for tools have not yet gained traction. Most professionals believe automatic tools will develop slowly and steadily over the next 10 years. The transition is likely inevitable, particularly to deal with staff shortages. 37% of professionals cite staff shortage as a critical barrier to developing urban green spaces in their city.

# 44%

of professionals think that gasoline-powered equipment will likely be banned in their city by 2027.





# 7 keys to the future of urban green spaces

The next section of the report outlines the seven keys to understanding how green spaces are expected to shift in the future.

These keys are the conclusive results from a combination of AI-powered research, interviews with green space professionals and the data from two surveys, one directed at green space professionals, the other at members of the public. More information about the methodology is available at the end of this report.

## 7 KEYS TO THE FUTURE OF URBAN GREEN SPACES

**Trees:** The new heroes

**Biodiversity:** From flower to root

**Purpose:** Sustainability frontline

**City planning:** A green jigsaw puzzle

**Health:** Body and mind

**Emissions:** A rock and a hard place

**Automation:** Still in its infancy







# The new heroes

Urban green space professionals see the planting, and preservation, of more trees as the most important trend within the industry. Well over two-thirds believe that more trees will be one of the key changes to impact the industry over the coming ten years. Likewise, about half of professionals in the survey indicated that tree health improvement was one of the great concerns in the city or cities where they are principally active. Additionally, 61% of citizens from the public survey say they would support political initiatives to plant more trees in their city. These developments mark the greatest and among the most urgent transformations in the green space industry today.

## TREES FOR NATURAL CLIMATE CHANGE MITIGATION

Not only is there an understanding that trees contribute to biodiversity and create ecosystems of their own (ideally as part of larger green spaces or green corridors), but moreover, trees are a way to adapt to a warmer climate. Canopies provide shelter from sunshine, cooling the environment around them, and help move water out of the ground into the atmosphere, maintaining humidity. Their roots prevent erosion by binding soil, and their leaves absorb carbon dioxide as part of normal photosynthesis – all while occupying a relatively small space.

## AN INVESTMENT IN THE FUTURE

Trees are a long-term investment, as they may take many years to reach maturity. Consequently, many of the interviewed professionals speak at length about the importance of preserving trees and establishing their importance in the eyes of both decision makers and the public. If long-term planning is not considered,

tree planting efforts may end up simply wasting public resources.<sup>2</sup>

One old oak can support a far more extensive and thriving ecosystem than an entire monoculture of trees can even if there are far more trunks and canopies.<sup>3</sup> Therefore, one tree cannot simply be exchanged for another. This potentially increases the upfront cost of preserving and planting trees. On the other hand, the concept of rewilding areas is at the forefront of many green space initiatives today. Trees, from this perspective, are a tremendous asset if permitted the space and time they need.

”

*I have noticed a change in the last 5 years. People now care a lot more about trees, talk about them, and people I come across - customers or the public - something like 80% are pro-trees and want to look after them and keep them.”*

– Josephine Hedger, Climbing Arborist and Company Director, Arbor Venture Tree Care Ltd, United Kingdom.

## THE TRUE VERTICAL GREEN SPACE

Trees are naturally vertical green spaces. They have extensive living and growing root systems that interfere with piping and electricity, and that prevent anything like a parking garage from being built underneath them. Most require thriving soil uninterrupted by other infrastructure projects, and to prevent a monoculture from being established, tree roots must also not be able to strangle or overtake each other. Obviously, the leaves must be able to absorb sunlight. All this means that trees more than other forms of green spaces require vertical considerations, which influences how they are incorporated in city planning.

**3** BILLION

new trees are being planned by the European Union as part of the European Green Deal by 2030, in order to combat climate change and prevent biodiversity loss.<sup>1</sup>





## The “green wall” of Madrid

One example of trees being a priority in urban planning today is Madrid, which is planting a 75-kilometer urban forest in a circle around the city. The project will make use of abandoned sites between roads, and once finished, it's expected to absorb both heat and carbon dioxide generated by human activity. Under the canopy, temperatures are expected to be as much as 2 degrees lower. Considerations have also gone into the kinds of trees used, relying on native species with a low water usage.<sup>4</sup>



*Nagold is called the green lungs of the Black Forest. We have set a very high standard when it comes to sustainability. There is a lot of focus on creating more green spaces, but we need to conserve trees too. Transplant trees when something needs to be built instead of just sawing them down. 5500 trees today should remain just as many tomorrow.*

**– Thomas Raschenberg, Construction Depot Manager at the City of Nagold, Germany.**

**PROFESSIONALS CONSIDERING THESE TRENDS CRITICAL:**

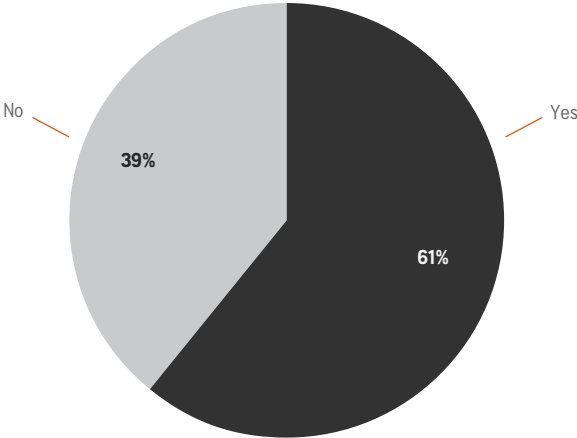
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- More trees (68%)
- Tree health improvement (51%)

FROM SURVEY OF THE PUBLIC

**Which of the following proposals would you support, if suggested by your local city government?**

**Planting more trees**





## 2. BIODIVERSITY

# From flower to root

Biodiversity is a recurring topic when the future of green spaces is discussed, and a fundamental aspect of the shift occurring in the industry today. According to green space professionals, it is a top trend in redefining urban green space. More than half of the interviewed professionals saw biodiversity as a key trend, and rewilding and the return to native plants (including trees and herbs) are highly ranked. Biodiversity is also well received by the public, with around half of urban citizens being overall positive to an increased biodiversity focus.

### ANCHORING GREEN SPACES: FROM FLOWERS TO ROOTS

Urban green space professionals consider biodiversity an important trend to designing more comprehensive green spaces that better lead to thriving ecosystems. The results of these efforts are not always easily seen by the public, however.

### REWILDING – A CHALLENGING TASK

The biggest conflict between experts and the public is seen in the rewilding trend, which almost 50% of surveyed professionals believe will have a great impact on urban green space management – but which around one-third of the public consider unappealing.

Green spaces that are friendly and welcoming to

humans have an immediate appeal, whereas green spaces designed with other species in mind can limit their recreational value. They might come in forms such as wetlands, wild grasses, or inaccessible shrub, which support ecosystem health. One quarter of citizens say that a visually unappealing green space would deter them from visiting it, and around half refuse to visit a green space which feels unsafe or poorly maintained. Such values do not necessarily clash with the effort to rewild green spaces, but mean aesthetics might have to be considered even in designing green spaces not primarily meant for humans.

”

*You need to fit your urban green to their benefits. Benefits for cooling the environment, benefits for health or to fit better with our natural systems and improve biodiversity.*

**– Joeri Meliefste, Consultant Urban Green and Climate Adaption, Sweco, the Netherlands.**

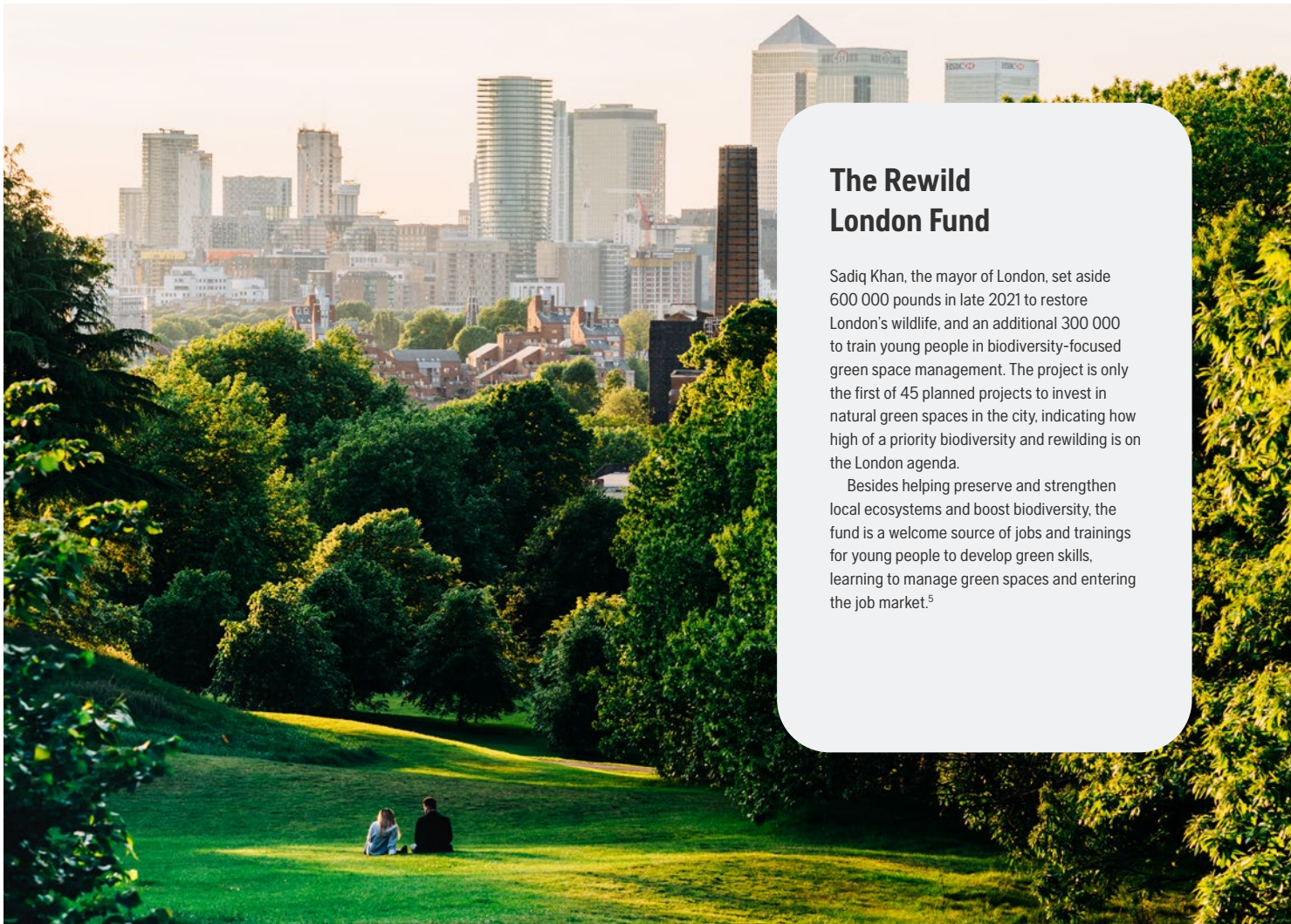
### BIODIVERSITY REQUIRES NEW SKILLSETS

The challenge of combining biodiversity with recreational or aesthetic values will require teaching employees new skills. Knowledge of biodiversity and the ability to communicate its value will be necessary to maintain these more complex green spaces alongside traditional skills like visual appeal or landscaping.

# 50%

of the general public approve strongly of an increased focus on biodiversity in the green spaces in their own city.





## The Rewild London Fund

Sadiq Khan, the mayor of London, set aside 600 000 pounds in late 2021 to restore London's wildlife, and an additional 300 000 to train young people in biodiversity-focused green space management. The project is only the first of 45 planned projects to invest in natural green spaces in the city, indicating how high of a priority biodiversity and rewilding is on the London agenda.

Besides helping preserve and strengthen local ecosystems and boost biodiversity, the fund is a welcome source of jobs and trainings for young people to develop green skills, learning to manage green spaces and entering the job market.<sup>5</sup>

### PROFESSIONALS CONSIDERING THESE TRENDS CRITICAL:

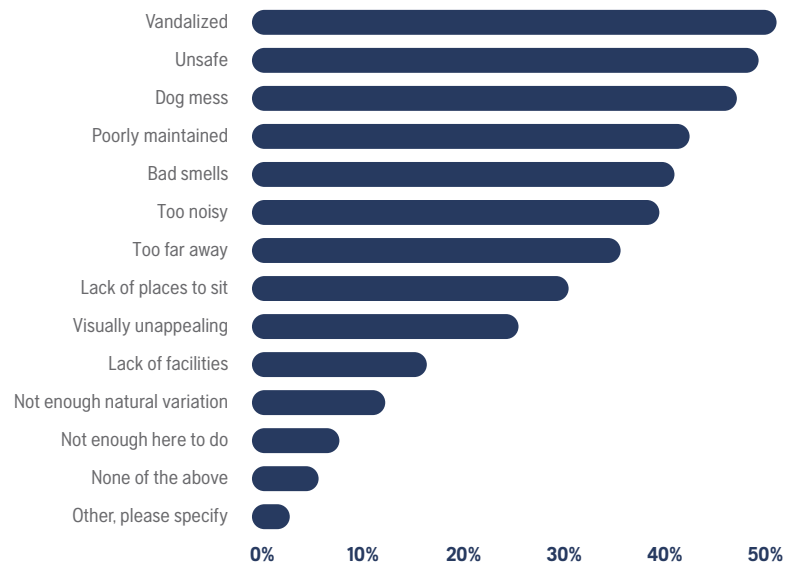
Increased biodiversity focus (60%)

More native plants (53%)

Rewilding (48%)

FROM SURVEY OF THE PUBLIC

### What are the main factors that would dissuade/deter you from visiting a park/garden?





### 3. PURPOSE

# Sustainability frontline

Defense against climate change is the chief new purpose added to green spaces. Most green space professionals state both carbon and heat mitigation as two trends significantly impacting the future of green spaces. Flood mitigation is a third such purpose, considered important by 45% – more in certain markets than others. Likewise, protection from food insecurity by means of urban farming is of importance.

#### A GREEN SYNTHESIS

Almost four in ten urban green space professionals believe that within five years, there will be strict legal rights for all citizens to have a proximity to green spaces. The only way for cities to solve this is for real estate to become greener, which is indeed happening in some places – though not yet all.

# 62%

of interviewed members of the public say one of the main reasons they visit a park or other green space is to get fresh air.

”

*From ecological sites to playgrounds, the demand for good green spaces is growing every day. We see a number of new collaborations emerge, combining values from biodiversity, shade, edible plants, and so on. People want many things from green spaces, and we have to find ways to combine them.*

– Nico Wissing, Founder, Studio Nico Wissing and Nlgreenlabel, the Netherlands.

As for the public, they agree on at least some ecological benefits of green spaces. Fresh air is the second most important reason to visit a green space for the public, so ensuring the breathability of cities is certainly of utmost importance. Citizens broadly understand the need to mitigate the release of carbon dioxide, but may not yet be aware of some of the other mitigation factors mentioned by professionals.

Competition from real estate or commercial interests hinders the development of new sustainable green spaces, as seen in the chart opposite. Likely the solution is somehow integrating citizen needs, climate mitigation, and commercial interests into well designed multifunctional green spaces, necessitating more multipurpose green spaces.

# 38%

of urban green space professionals think that there will be strict legal rights for all citizens to have a close proximity to green spaces within the next five years. Around 12% say they are already operating under similar rules within their own city.





## Urban rooftop farming in Paris

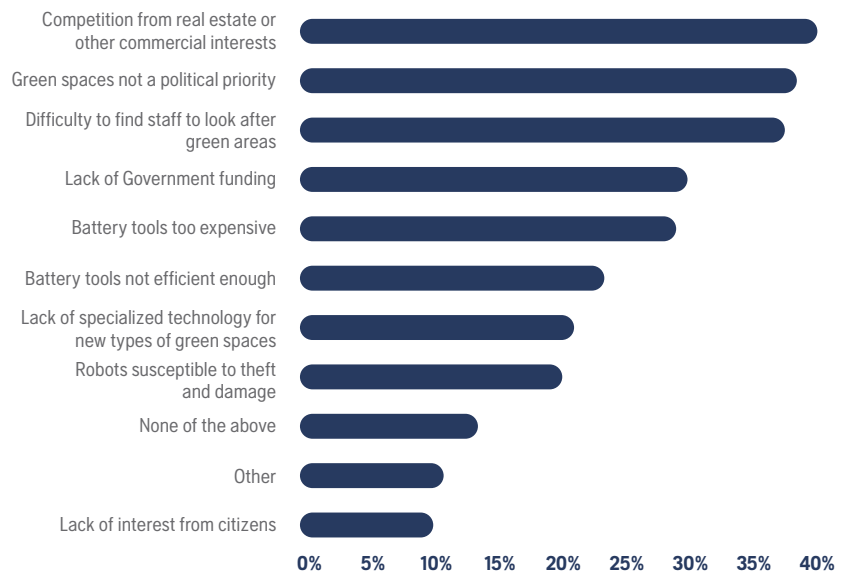
One such example is the recent expansion by French company Agropolis. They have built a six-story, 14 000 square meter garden in Paris. The garden's aims are to grow more than 900 kg of fruits and vegetables per day, with produce growing largely on trellises and supplied with nutrients via aeroponics. Founded in 2016, Agropolis runs a number of projects across France, with the Paris rooftop garden being the crowning achievement. The goal is fresher fruits and vegetables served directly to supermarkets and restaurants, or provided directly for tenants via deals with landlords.<sup>6</sup>

### PROFESSIONALS CONSIDERING THESE TRENDS CRITICAL:

- Heat mitigation (65%)
- Carbon mitigation (58%)
- Flood mitigation (46%)
- Urban farming (46%)

FROM SURVEY OF PROFESSIONALS

### What are the biggest barriers to sustainable green development in the city or cities where you are currently active?





# A green jigsaw puzzle

Urban green spaces do not have to be large to make a meaningful difference. Half of citizens surveyed reported that a green space as small as a large room – with a few trees and flowerbeds – is enough to make a meaningful difference in their own lives. One in seven reported that even a single tree or flower planter makes a meaningful difference to their own well-being. New tools and methods, combined with the constraints posed by competition for space, allow green spaces of the future to become smaller and more flexible, still providing value for the inhabitants of the city.

### PARKLETS POPPING UP

Parklets are “microparks”, small green spaces that can be either temporary or permanent, growing where there is space and when there is a need to fill it. Survey data points to this being a modest but still important trend when it comes to impacting the urban green spaces of the future. Around half of professionals surveyed believed parklets would have a significant impact on the future of their profession – less than many other trends, but still important. Especially given how well this trend seems to be received by the public, where many find value even in very small green spaces to break up the monotony of the urban environment.

### A THREE-DIMENSIONAL PUZZLE

Rooftop green spaces are gaining traction in many cities. France being the pioneer with new legislation concerning green roofs.<sup>7</sup> Though more limited in

impact, green spaces on walls and rooftops can nevertheless have a significant positive impact. Almost half of citizens are in favor of rooftop gardens. Though frequently associated with prestige and beauty, rooftop gardens cannot absorb water or support ecosystems as well as spaces grounded in soil – but they can perform some functions, such as heat mitigation or serving as parts of vital green corridors allowing safe passage for insects or other wildlife. They can certainly serve a recreational purpose, leaving more space on the ground for more comprehensive, multi-purpose green spaces discussed in earlier chapters.

”

*We are going to request the city to break the concrete wherever possible, with the aim of unsealing the soils and planting massively. The objective is to re-equip the landscape structure, to develop ecological corridors, to fight against heat islands... Green spaces have become a structuring and foundational element of the city which carry strong ecological and wellbeing potential by addressing public health concerns, particularly in a context of global warming*

**– Damien Butin, Director of Strategy and Project Management for the Natural Heritage, Bordeaux Métropole, France.**

### A CHALLENGE TO MANAGE

Smaller green spaces can be difficult to manage and require transportation of equipment from one point to another. This makes them inherently dependent on smart systems not to waste transport time. Simple functions like watering can be locally automated, making many of these small green spaces relatively self-sufficient with the right systems.

# 47%

of citizens interviewed find green rooftops appealing or very appealing, and would be in favor of more green roofs.





## Copenhagen's decade-old green rooftops

The city of Copenhagen has required all new buildings to have green roofs since 2010. This already has had a clear and visible impact on the greening of the city, with many solutions intersecting – the green roofs are connected to the water supply and thus catch 80% of all precipitation, proving that urban green spaces – or indeed, smaller green spaces – can also be multifunctional, and contribute to the health of the city in a variety of ways.<sup>8</sup>



Gray water runoff systems on the roof are a selling point for businesses now, particularly in the last two years. Investment and reputation come from sustainability. It's quite a big selling point!

– Dave Taylor, Midlands Regional Manager, the Nurture Group, United Kingdom.

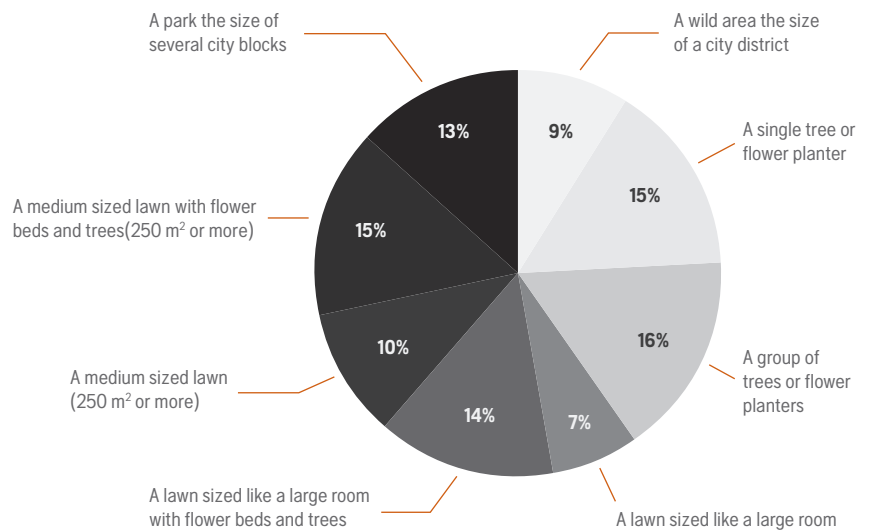
### PROFESSIONALS CONSIDERING THESE TRENDS CRITICAL:

Parklets (49%)

Green roofs (41%)

FROM SURVEY OF THE PUBLIC

### What is the smallest green space that you feel creates a positive impact and value on your own life?





# Body and mind

The most important reason to visit a green space for the average citizen is to go for a walk, selected by over six out of ten. About one-quarter of citizens say they visit green spaces for exercise, and over half seek out parks and green spaces to get some peace and quiet. The importance of parks for health is very important, both physically and mentally. Parks as a means of exercise shot up in importance over the pandemic according to professionals, and they are a vital component in keeping people well – a fact which is often overlooked by city planners. Every health issue prevented by access to a green space is money saved on healthcare.

### **PANEDMIC OUTDOOR LIVING ROOM**

The covid-19 pandemic changed overnight almost every aspect of society, and green spaces are no exception. Many interviewed professionals report an increase in the number of visitors to parks and green spaces. Another important purpose green spaces serve is thus as an “outdoor living room”, providing entertainment and a place to celebrate, socialize, eat, and drink. This has posed a challenge for urban green space professionals who see green spaces having

become more crowded, causing wear and tear on lawns and footpaths.

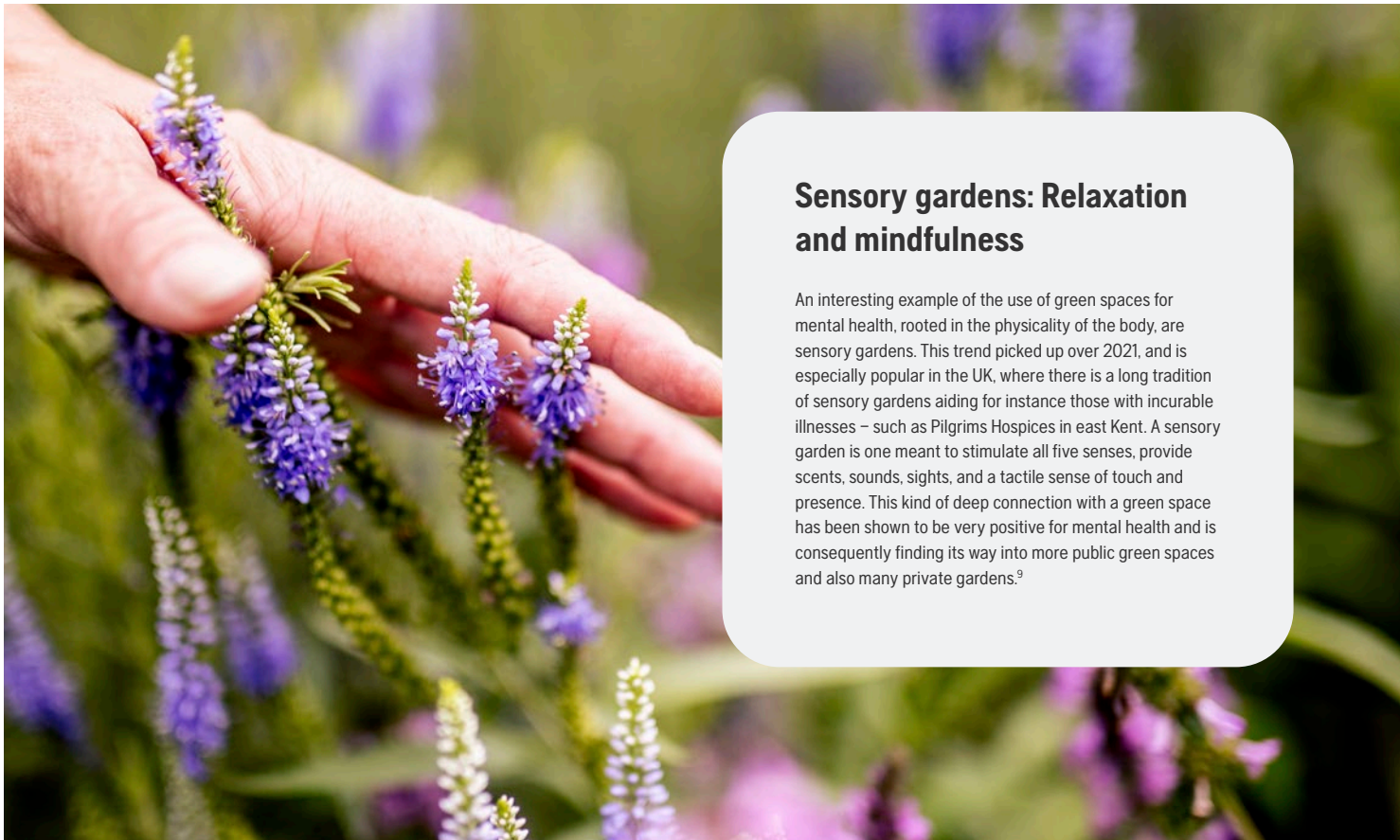
### **THE VALUE OF GOING OUTSIDE**

Green space professionals today see the impact of more outside play since the pandemic, particularly in the form of outdoor gyms. Among professionals, one third think that parks as gyms will have a significant impact on green space management in the coming 10 years, and many say that in their city outdoor gyms have already become much more popular. More and more citizens will rely on green spaces to keep healthy, relieve stress, and get proper exercise.

### **CHEMICAL ANXIETY**

Related to health consciousness in the general population is growing anxiety about chemicals. Well over half the population say they support a ban on pesticides and chemicals in public areas, and a further 45% wish to also ban chemical fertilizers. While this is not necessarily based in an understanding of green space management in practice, it is still something that can come to influence the image of the industry.





## Sensory gardens: Relaxation and mindfulness

An interesting example of the use of green spaces for mental health, rooted in the physicality of the body, are sensory gardens. This trend picked up over 2021, and is especially popular in the UK, where there is a long tradition of sensory gardens aiding for instance those with incurable illnesses – such as Pilgrims Hospices in east Kent. A sensory garden is one meant to stimulate all five senses, provide scents, sounds, sights, and a tactile sense of touch and presence. This kind of deep connection with a green space has been shown to be very positive for mental health and is consequently finding its way into more public green spaces and also many private gardens.<sup>9</sup>

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*I insist in particular on the gains in terms of health (improvement of the air, reduction of heat islands, development of physical activity...) and in terms of social ties (gentle circulation, meeting place, conviviality...)*

– **Anonymous French landscaping manager, from the survey.**

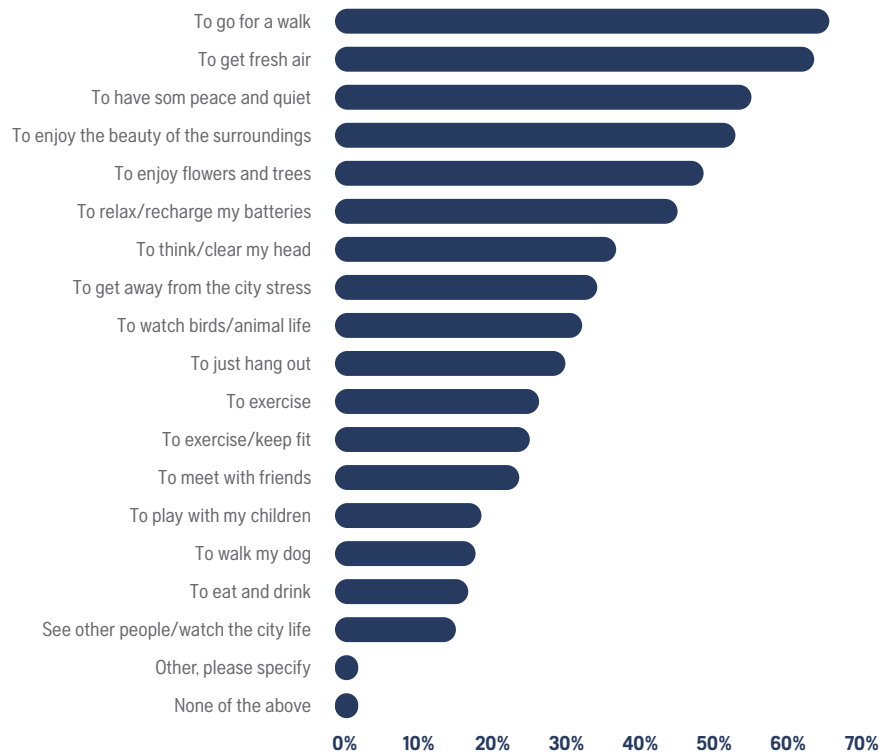
### PROFESSIONALS CONSIDERING THESE TRENDS CRITICAL:

Parks as gyms (56%)

15-minute distance (46%)

FROM SURVEY OF THE PUBLIC

### What would you say are the main reasons why you visit green spaces?





## 6. EMISSIONS

# A rock and a hard place

Transitioning away from fossil fuels is high on the agenda of nearly every business and government today. Green space professionals see these changes coming, but most feel that the demands for sustainability are not easily matched by the tools and technologies available today. 44% of green space professionals believe gasoline will be banned in general gardening tools by 2027, which leaves very little time to make the transition to zero emissions equipment. Only 37% believe that all green space management equipment will be fully electrified by then, even though electric products are already available for many purposes. The question is how to make this transition in such a short time span. Many green space professionals feel caught between a rock and a hard place, as requirements tighten quickly.

### CHALLENGES AHEAD

Many green space professionals regard battery tools as too expensive and think that the infrastructure is not good enough to rely on this kind of equipment (though rising fuel costs may change priorities in the future). Nearly one-quarter of professionals report that battery tools are simply too expensive, and almost as many say they aren't efficient enough. Compounding these challenges, 39% believe that by 2027, all green space management equipment will be legally required to contain mostly recyclable or reusable components.

### WATER AND FUEL

Tied to the challenges of zero emissions are also challenges of water and fuel usage. Half of green

space professionals believe lower water usage is something which will impact their work situation within the next ten years – and just as many emphasize emissions regulation.

”

*It's frustrating having to invest heavily in one manufacturer's batteries. Especially when the cost of the batteries is so high. The focus of the cost is now more reliant in the battery rather than the engine/machine. The reliability of the battery technology needs to be robust as we have had several expensive batteries fail after 2 years of use. A recycling scheme needs to be employed to recover the cost of these failures. Also the repairability for these batteries is very important too.*

**– Phil Ashby, Senior Horticulturist, Royal Botanic Garden Edinburgh, United Kingdom.**

### ARE SMART CITIES THE SOLUTION?

Smart cities (cities using sensor networks to collect and analyze data<sup>10</sup>) are often discussed in media. But according to green space professionals, this utopian vision is still distant – 52% believe it will take more than 5 years for smart cities to directly impact their own line of work. Over 95% believe that smart cities will have only modest impact over the coming ten years. The infrastructure solutions for reducing emissions, water usage, and waste are not quite here yet. With tight budgets and many green spaces being of low priority, all technological solutions – big and small – to manage the coming challenges require consideration to reach a zero emissions future.

## Artificial lake at the SoFi stadium

Water management means resilience against both dry and wet conditions – both the handling of storm water and the prevention of floods, and the lowering of water usage for green spaces. A possible solution to this problem is the construction of artificial lakes, as was done at the SoFi stadium in California in 2021. The lake collects stormwater and mechanically filters runoff from the surrounding greenspaces. This method of recycling water will be critical for the drier climate in the American southwest, conditions which are also seen across Europe. Artificial lakes and reservoirs are likely to become a feature of many green spaces in the near future.<sup>11</sup>

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Over the last 3-4 years we have invested nearly a £1m in electric power tools and equipment within Idverde's UK operations but are finding that like electric vehicles one of the biggest hurdles is suitable infrastructure which is able to support this change.

– Angus Lindsay, Group Head of Assets and felt - "Fleet Management", Idverde, United Kingdom.

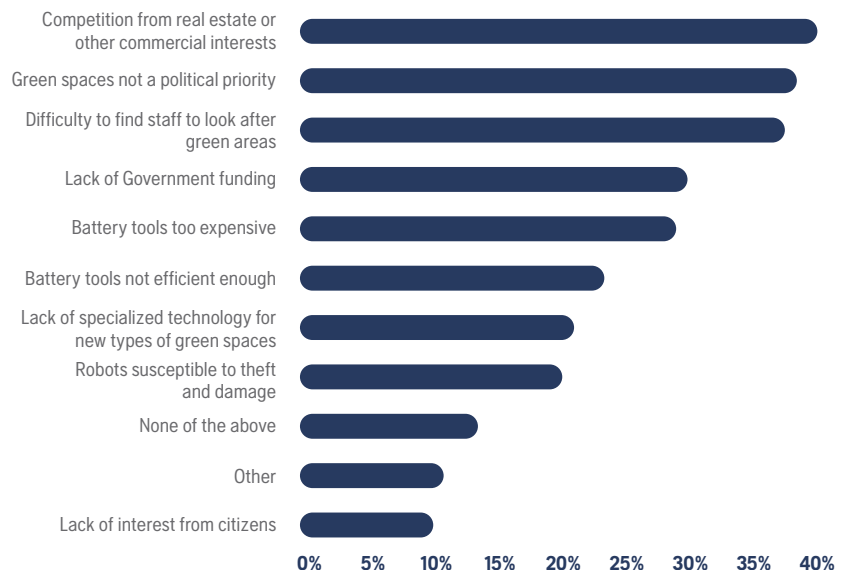
### PROFESSIONALS CONSIDERING THESE TRENDS CRITICAL:

Lower water usage (51%)

Emissions regulation (51%)

FROM SURVEY OF PROFESSIONALS

### What are the biggest barriers to sustainable green development in the city or cities where you are currently active?





# Still in its infancy

As simple tasks are automated, staff is freed up to handle more complex and involved work. Chief among short-term impactful technologies is battery powered tools, which almost half of professionals cite as being the top priority in the coming 10 years. On a longer horizon we see smart systems and more advanced automation changing the field of green space management, a journey which is beginning now and whose transformative power is still in its infancy. Today, few professionals see short term gains from automating their workflows – in the longer term, however, the automation trend is inevitable, and growing steadily year on year. If professionals are to be believed, the true transformative power of automation will be unlocked across the field by the 2030s, with advantages for those ready to make early investments.

### NECESSITY IS THE MOTHER OF INVENTION

As seen in the previous chapter, sustainability concerns place many green space managers in a tough spot. To meet the targets imposed by governments and officials, green space management professionals will need more sophisticated tools. One path towards solving this problem could be a tools-as-a-service model, something considered of importance by about one-third of respondents. Many have yet to embrace this concept,

but may find closer collaboration with suppliers key to meeting the higher demands of the future, especially with a horizon of ten years or more. The same can be said for broader automation: While 39% see no great impact of it in the near term, broader trends mean it will likely become established as a key solution by 2030.

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*We're using automation and it hasn't replaced people but removed a repetitive task from the operative who can then concentrate on other tasks. The repetitive task of cutting the grass is done by the robot, but all the improvements and grounds maintenance is completed by a maintenance operative.*

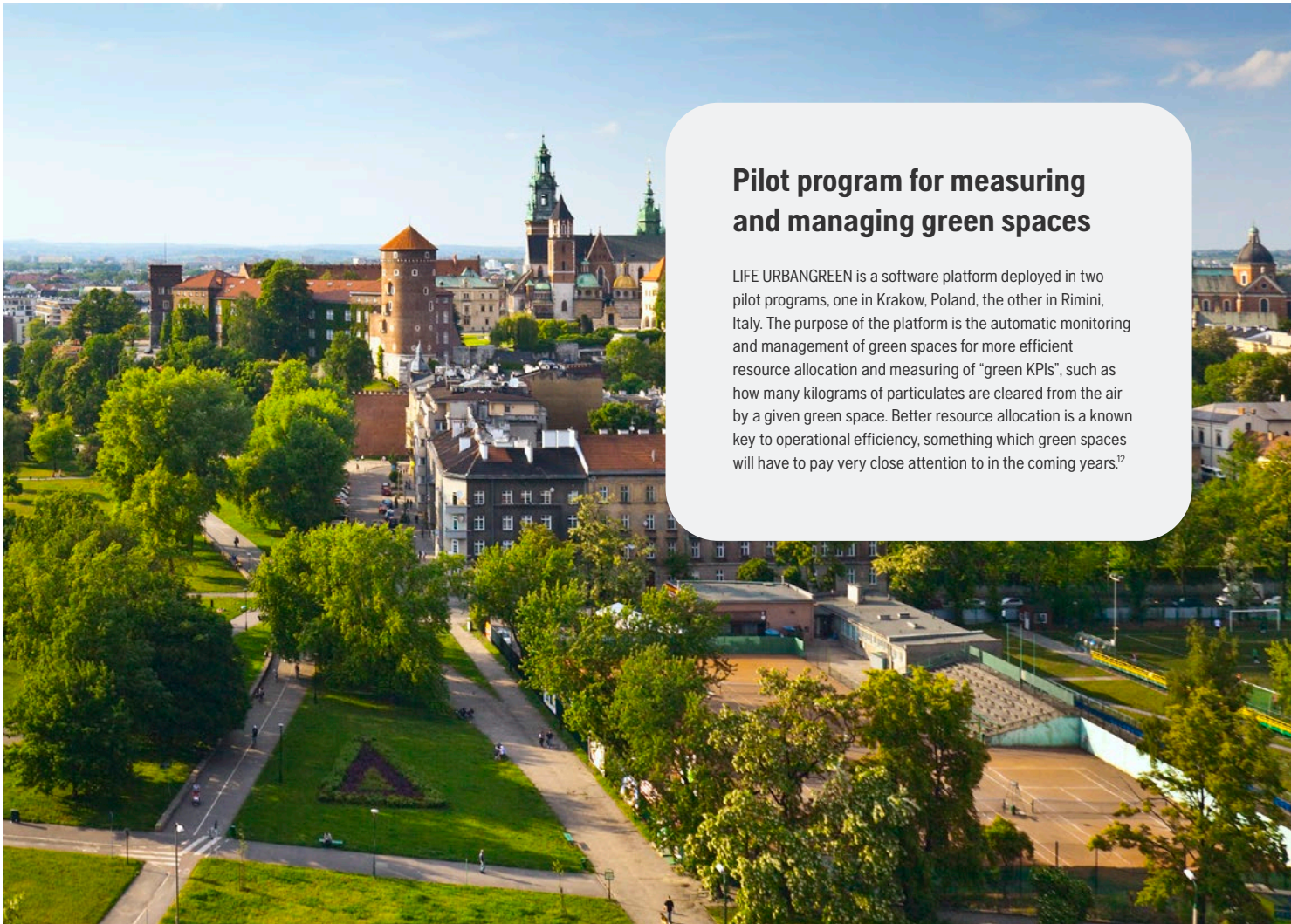
– **Graham Bird, Director Ground Control Ltd, United Kingdom.**

### STAFF SHORTAGES DRIVE THE NEED FOR AUTOMATION

In the near term, automation is valued less for its transformative ability and more as a compensation for lack of skilled workers. Automating tasks means more efficient use of employee time, and can also simplify many tasks that otherwise would require more extensive training. One way to counter the staff shortage as a barrier to green space development is through automating the dull, monotonous, or dangerous tasks, leaving more sophisticated and interesting work for the human employees.

# 37%

of urban green space professionals cite a difficulty of finding staff as a serious barrier to green space development.

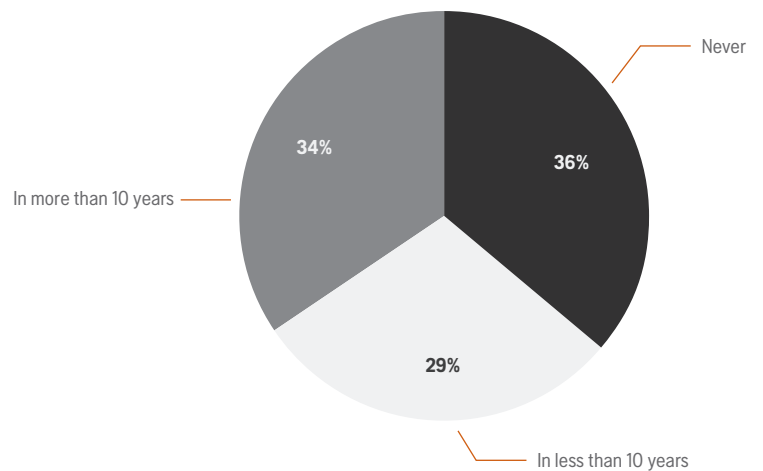


## Pilot program for measuring and managing green spaces

LIFE URBANGREEN is a software platform deployed in two pilot programs, one in Krakow, Poland, the other in Rimini, Italy. The purpose of the platform is the automatic monitoring and management of green spaces for more efficient resource allocation and measuring of "green KPIs", such as how many kilograms of particulates are cleared from the air by a given green space. Better resource allocation is a known key to operational efficiency, something which green spaces will have to pay very close attention to in the coming years.<sup>12</sup>

FROM SURVEY OF PROFESSIONALS

When will a majority of all green space management activity be performed by robots and autonomous technology?



### PROFESSIONALS CONSIDERING THESE TRENDS CRITICAL:

Tools-as-a-service (36%)

The use of automatic green space management (35%)



# Future roadmaps

Green spaces are expected to undergo seismic changes. But when exactly will these changes occur? The professionals surveyed were asked to give their best estimate of a timeline. Based on their responses, this section outlines two future road maps. The first concerns the immediacy and urgency of the trends discussed earlier in the report. The second outlines the emergence and establishment of new technologies impacting the field of urban green space management.

In the roadmap of trends for the future, the key question is *when these trends will begin to impact professionals in the industry* to a serious degree. Some of these are already happening, or imminent; the increased use of parks, for instance, began already during the first pandemic years.

## HORIZON 1: THE NEAR FUTURE

The present day is dominated by the needs of the public, still recovering from the first pandemic years, being attracted to parks and green spaces. Community adoption (citizens caring for green spaces themselves) and increased attraction factors (parks having a higher impact on property values) are high on the agenda here. There are also concerns in the immediate future about lower water usage and tree health improvement, both trends that tie into more significant changes within a few years.

Towards 2025, the health of flora and fauna become more significant. Rewilding, green roofs, and urban farming make their entrance in most cities, if professionals are correct in their assessments. By 2025, it is likely concerns outlined under the chapters about biodiversity and city planning will be addressed by most cities.

## HORIZON 2: THE LATE 2020S

The late 2020s will see climate change mitigation become a much greater concern. Here, more and

more professionals expect that their work will revolve around heat mitigation, flood mitigation, carbon mitigation, and other attempts at limiting climate change and lessening its impact on cities and their inhabitants. By 2031, all these forms of climate change mitigation will have left their mark on urban green spaces – and so too with a biodiversity focus, which will be established by 2028. Parks as gyms is the last remaining trend relating to the human visitors, which is diversely spread across the markets – Swedish, German and Dutch professionals say this trend is already strongly impacting their work in 2022, France and Belgium see implementation coming later.

## HORIZON 3: THE 2030S

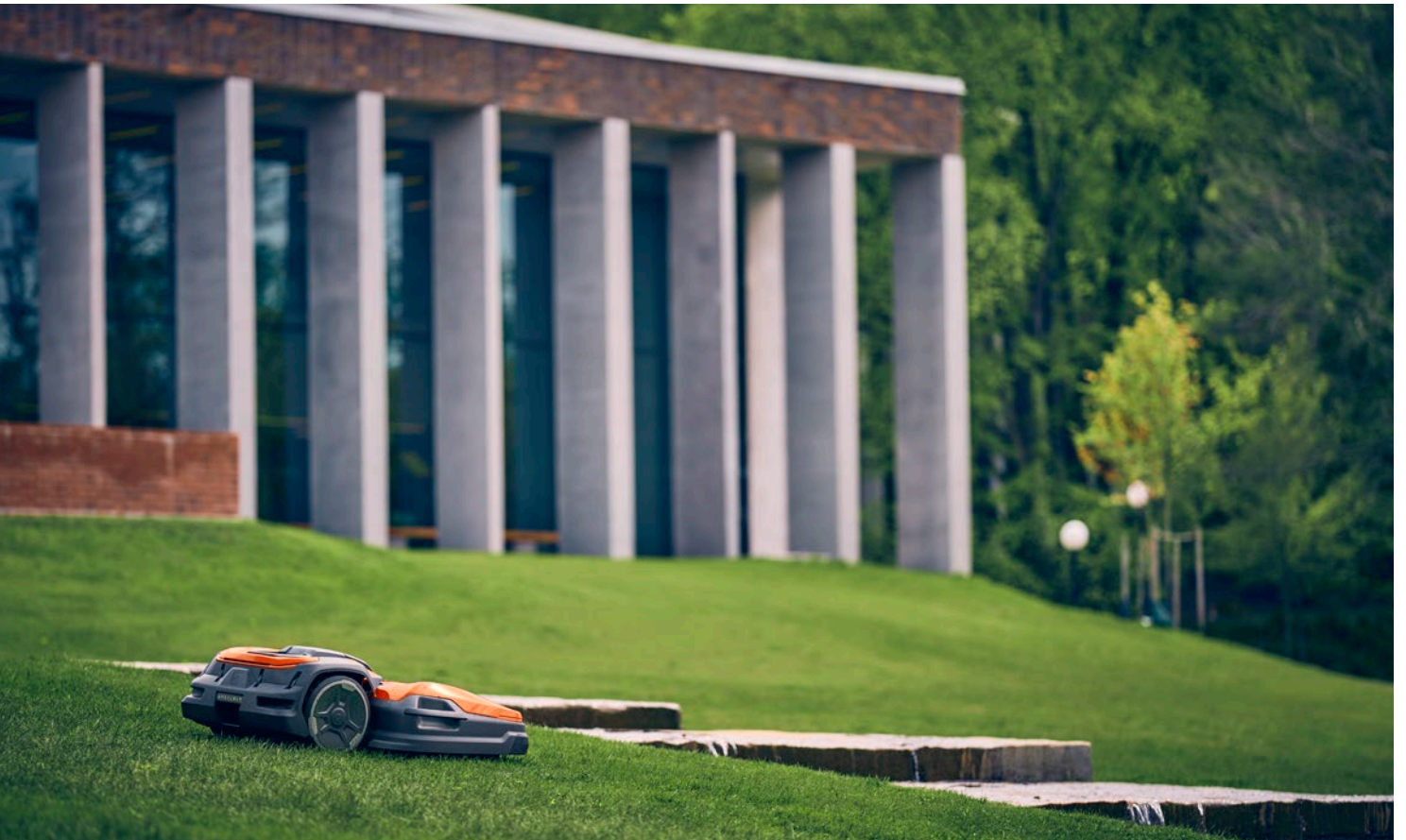
The next decade sees technology finally catching up to the demands of today. As it stands, most urban green space professionals believe it will be around 10 years before trends such as tools-as-a-service are established, and likewise with automatic green space management and more silent tools obeying future noise regulations. All in all, the technological changes are slower to arrive than the more demand- and skills-driven trends occurring in horizon 1 and 2. Technological change takes time to establish itself, but by around 2035, one can expect automation in green space management to be well established.

# Trends shaping the future

TECHNOLOGY	YEAR
Increased use of parks	2022
<b>Tree health improvement</b>	<b>2022</b>
<b>Lower water usage</b>	<b>2022</b>
Community adoption of green spaces	2023
Parklets	2023
Increasing attraction factor	2023
Green roofs	2023
Urban farming	2024
Rewilding	2024
<b>Heat mitigation</b>	<b>2024</b>
15-minute distance	2025
<b>More native plants</b>	<b>2025</b>
<b>More trees</b>	<b>2026</b>
<b>Parks as gyms</b>	<b>2026</b>
<b>Carbon mitigation</b>	<b>2027</b>
Vertical green spaces	2028
<b>Increased biodiversity focus</b>	<b>2028</b>
<b>Emissions regulation</b>	<b>2029</b>
Flood mitigation	2031
Tools-as-a-service	2032
Increased noise regulation	2033
Automatic green space management	2035

*Especially important trends according to the professionals are listed in orange bolded text.*





In the roadmap of future technologies, the key question is *when will these technologies have a significant impact on urban green space management?* As with the trends, some of these are already having a significant impact.

#### HORIZON 1: THE NEAR FUTURE

The immediate technological concern is sustainable business practices, primarily in the form of battery driven tools and sustainable materials. Many professionals believe that green space management tools will have to be made more durable and recyclable. During 2022, concerns of these immediate “sustainability fixes” dominate the technological concerns. Once these issues are addressed, the early 2020s will revolve around basic sensors, such as tree health monitoring and space data access, allowing for more optimal planning and resource allocation. Perhaps the 2020s will also see some amount of citizen engagement, via early versions of digital green space management platforms.

#### HORIZON 2: THE LATE 2020S

Automation is believed to become more important from 2025 and onward. It is in this timeframe that

technologies such as automated green space management and gardening drones fully enter the picture. Even though the late 2020s will see the rise of platforms for both park creation and park management, they will not be very significant before 2032. It may be that the late 2020s are dominated by an era of experimental projects slowly growing to realization, with greater impacts visible only in horizon 3.

#### HORIZON 3: THE 2030S

The 2030s show an abundance of sensor- and platform-driven digital technologies. This is the era when the “smart city” truly becomes impactful on green spaces according to professionals, and the era when sensor optimized greenspace management becomes truly viable and when automation is well established in the green space industry, though first movers will secure advantages long before then. The 2030s conclude with AI supervision, in which AI technology can be used to automatically handle many of the daily tasks of managing an urban green space.

# Technologies shaping the future

TECHNOLOGY	YEAR
<b>Battery powered tools for urban green space management</b>	<b>2022</b>
<b>Sustainable materials</b>	<b>2022</b>
Citizen engagement platforms	2023
Space data access for green space actors	2023
<b>Advanced storm water handling</b>	<b>2024</b>
Tree monitoring technology	2024
Automated green space maintenance	2025
Drones	2026
Smart park management platforms	2027
Park creation software platforms	2028
Hydroponics	2030
Vertical green space maintenance	2031
Smart cities	2033
Sensor optimized greenspace management	2035
Digital learning platforms	2037
AI supervision	2040

*Especially important trends according to the professionals are listed in orange bolded text.*



# Green spaces of Europe

The next and final section of the report studies the differences between the six markets surveyed, highlighting which trends are expected to be more impactful in certain countries, and how citizens in the different markets perceive the value of green spaces.









# Belgium

Belgium broadly follows the trends mentioned in this report. Biodiversity and other practical benefits of green spaces, however, are lower on the agenda, making the Belgian market somewhat of an outlier with regards to the shift from nice to necessary. It seems in this market, the recreational benefits of green spaces remain the higher priority. Of all surveyed markets, Belgium has the most citizen engagement for green spaces. Almost one-fifth of the public cite green spaces as their top political priority. They are also unusually keen to advocate for more spending on green spaces and have a great appetite for parks and urban green spaces as areas for recreation, reflected in the popularity of parks as gyms.

The requirements for green space size is relatively modest. One-half of Belgian respondents said an urban green space needs be no bigger than a large sized room, with flowerbeds and trees. This means the recreational and beautiful aspects of green spaces need not occupy a large footprint in this market, leaving room for more “invisible” practical green spaces as well.



**A MAJORITY OF BELGIAN  
CITIZENS SAY THEY WOULD  
BE SATISFIED WITH:**

**A lawn sized like a large room with  
flowerbeds and trees.**

50% of Belgian citizens say they would be satisfied with a green space of this size or smaller.

Percent of the public who consider green spaces the top political priority:

**19%**





### TOP GREENSPACE TRENDS FOR CITIZENS

15-minute distance	<b>32%</b>
Parks as gyms	<b>27%</b>
More spending on green spaces	<b>27%</b>

*Percent giving this trend a score of 7 on a scale from 1 to 7 measuring appeal*

### BIGGEST BARRIERS ACCORDING TO PROFESSIONALS

Competition from real estate or other commercial interests	<b>25%</b>
Difficulty to find staff to look after green areas	<b>25%</b>
Battery tools too expensive	<b>25%</b>

### MORE IMPORTANT IN BELGIUM ACCORDING TO PROFESSIONALS

Tools-as-a-service	<b>100%</b>
Increased use of parks	<b>100%</b>
Urban farming	<b>100%</b>

*More important in this country relative to other markets surveyed.*



# France

France is the only market where citizens consider carbon mitigation the most appealing trend happening in green spaces right now. However, emissions regulation and noise regulation have a relatively small impact on the French market according to professionals. All in all, this indicates perhaps a greater faith in the ability of vegetation to absorb carbon dioxide than a willingness to transition to more silent tools with lower emissions overall. Professionals looked instead to lower water usage and automated green space management. Parks as gyms are also unusually popular in France, indicating an especially high interest in using parks for the health of the population.

Over half of French respondents say they would be happy with a green space of about 250 square meters or so for recreational purposes. This aligns with a public that is eager for carbon mitigation, asking for green spaces to occupy larger areas.



**A MAJORITY OF FRENCH  
CITIZENS SAY THEY WOULD  
BE SATISFIED WITH:**

**A medium sized lawn.**  
250 square meters or more. 54% of French citizens say they would be satisfied with a green space of this size or smaller.

Percent of the public who consider green spaces the top political priority:

**17%**



### TOP GREENSPACE TRENDS FOR CITIZENS

Carbon mitigation	<b>33%</b>
Increased biodiversity focus	<b>30%</b>
15-minute distance	<b>30%</b>

*Percent giving this trend a score of 7 on a scale from 1 to 7 measuring appeal*

### BIGGEST BARRIERS ACCORDING TO PROFESSIONALS

Competition from real estate or other commercial interests	<b>43%</b>
Difficulty to find staff to look after green areas	<b>37%</b>
Lack of Government funding	<b>37%</b>

### MORE IMPORTANT IN FRANCE ACCORDING TO PROFESSIONALS

Lower water usage	<b>87%</b>
Parks as gyms	<b>86%</b>
Automatic green space management	<b>74%</b>

*More important in this country relative to other markets surveyed.*



# Germany

The German market sees the greatest disparity between leaders and the public in prioritization of green spaces. Most consider green spaces important to citizens, but very few report any similar sentiment among building developers or local politicians. Apart from that, the trends presented in this survey broadly hold in the German market.

The interest in the 15-minute distance concept is highest in Germany, where four in ten citizens express that they would like no more than 15-minute walking distance to the nearest green space. Demands are higher in this market than others regarding green spaces, though only one in ten consider it the top political priority. The most significant barrier to expanding green spaces is, according to the experts, a staff shortage, with as many as 70% of surveyed professionals reporting a difficulty of finding staff. Despite this, automation is not high on the agenda yet. This indicates that while the German market is not yet ready, automation may become increasingly necessary soon, ensuring a faster transition to automation than German professionals are prepared for today.



**A MAJORITY OF GERMAN  
CITIZENS SAY THEY WOULD  
BE SATISFIED WITH:**

**A lawn sized like a large room with  
flowerbeds and trees.**

56% of German citizens say they would be satisfied with a green space of this size or smaller.

Percent of the public who consider  
green spaces the top political priority:

**10%**





### TOP GREENSPACE TRENDS FOR CITIZENS

15-minute distance	<b>41%</b>
More native plants	<b>40%</b>
Carbon mitigation	<b>38%</b>

*Percent giving this trend a score of 7 on a scale from 1 to 7 measuring appeal*

### BIGGEST BARRIERS ACCORDING TO PROFESSIONALS

Difficulty to find staff to look after green areas	<b>70%</b>
Competition from real estate or other commercial interests	<b>40%</b>
Lack of Government funding	<b>40%</b>

### MORE IMPORTANT IN GERMANY ACCORDING TO PROFESSIONALS

Tree health improvement	<b>89%</b>
Community adoption of green spaces	<b>78%</b>
Vertical green spaces	<b>67%</b>

*More important in this country relative to other markets surveyed.*



# The Netherlands

Like in neighboring Belgium, the Netherlands show a very high prioritization of green spaces for recreational purposes. Almost one-fifth of the public call more green spaces their top political priority, but the most appealing trends revolve around the 15-minute distance to a park, as well as the usage of parks as gyms, or green spaces on rooftops. The appetite for green spaces used for biodiversity and carbon mitigation is, relative to the other markets, a little lower. Even the experts agree with this sentiment, with interviewed professionals reporting a much higher importance for the increased attraction factor of parks and green spaces, meaning parks raising attractiveness and the value of a location.

Dutch citizens request more sizable urban green spaces, with a majority being satisfied with 250 square meters or more, but relatively few satisfied with less. The biggest barriers to making this happen are, according to professionals, a simple lack of funding and political prioritization, as well as staff shortages. The Dutch market, as such, sees the greatest need for a political awakening to the many benefits green spaces provide, monetary and otherwise.



**A MAJORITY OF DUTCH  
CITIZENS SAY THEY WOULD  
BE SATISFIED WITH:**

**A medium sized lawn.**

250 square meters or more. 59% of Dutch citizens say they would be satisfied with a green space of this size or smaller.

Percent of the public who consider  
green spaces the top political priority:

**18%**



### TOP GREENSPACE TRENDS FOR CITIZENS

15-minute distance	<b>34%</b>
Green roofs	<b>31%</b>
Parks as gyms	<b>30%</b>

*Percent giving this trend a score of 7 on a scale from 1 to 7 measuring appeal*

### BIGGEST BARRIERS ACCORDING TO PROFESSIONALS

Difficulty to find staff to look after green areas	<b>58%</b>
Green spaces not a political priority	<b>42%</b>
Lack of Government funding	<b>33%</b>

### MORE IMPORTANT IN THE NETHERLANDS ACCORDING TO PROFESSIONALS

Tree health improvement	<b>58%</b>
Increasing attraction factor	<b>50%</b>
Automatic green space management	<b>45%</b>

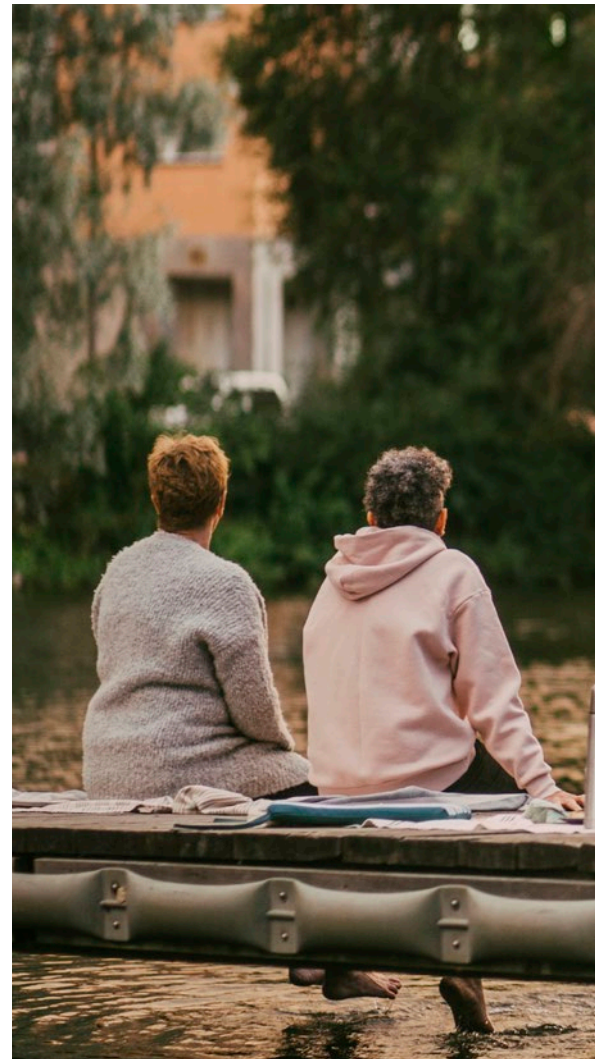
*More important in this country relative to other markets surveyed.*



# Sweden

Sweden is the market with the least public interest in green spaces, by a wide margin. Only 6% of the urban public say green spaces are their top political priority, and less than half consider green spaces prioritized at all, whether that be among citizens, politicians, or developers. Perhaps unsurprisingly, professionals also cite the lack of political priority and government funding as the biggest barriers for green space management, alongside competition from real estate and commercial interests. Put simply: The appetite for more and healthier green spaces is very low in Sweden. The concept of a 15-minute distance is relatively popular, and so is the idea of spending more on green spaces. It seems clear that other priorities are more important for the average Swedish citizen, perhaps due to widespread satisfaction with access to green spaces as it is today.

Consequently, both the community adoption of green spaces and an increased use of parks are considered relatively unimportant trends by professionals. The hope is instead for cost-saving measures such as automatic green space management and tools-as-a-service, reducing the overhead of running and managing an urban green space. These are extremely popular in Sweden compared to other markets, possibly indicative of more optimism around technology in general. Noise regulation and more quiet tools is another major concern.



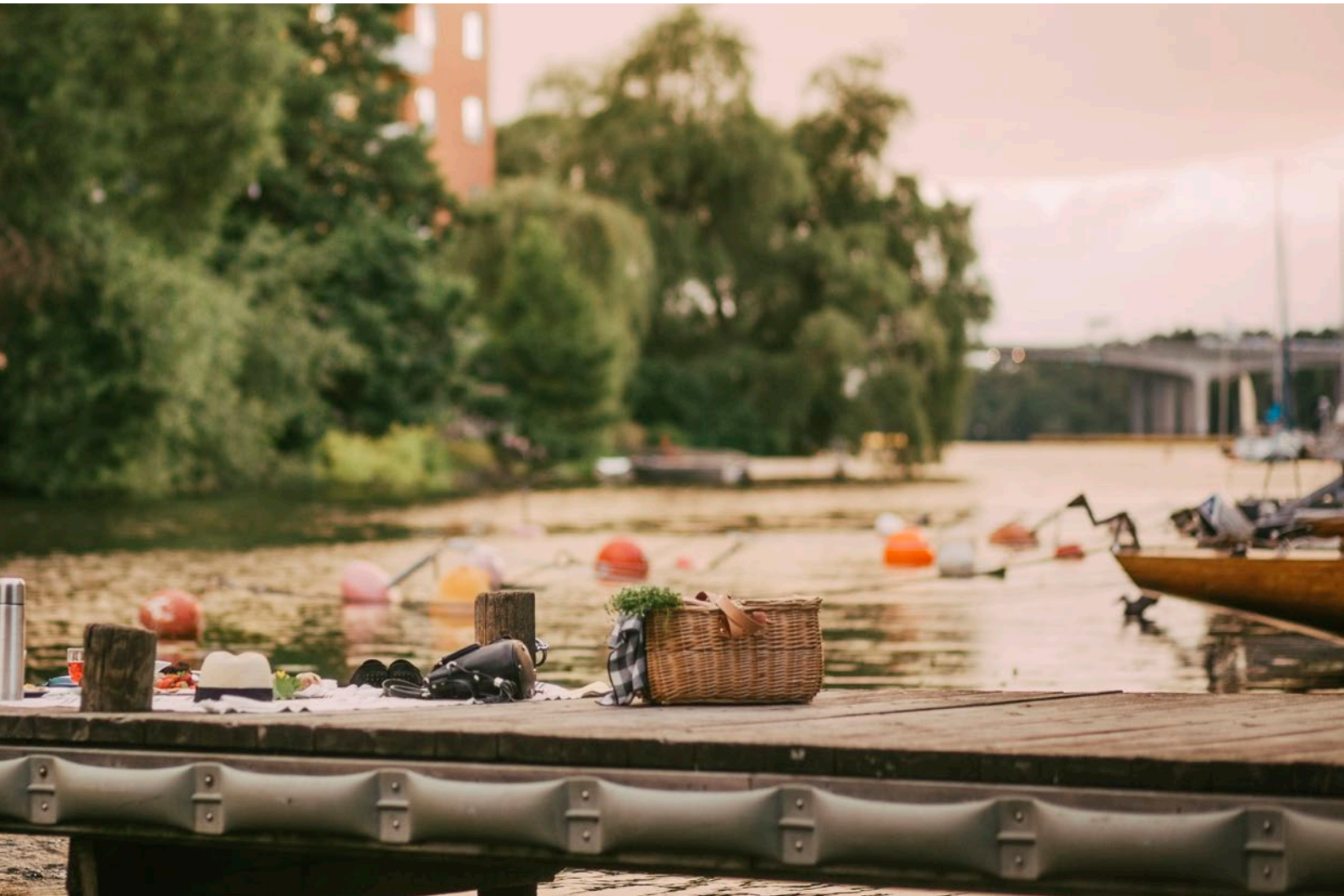
**A MAJORITY OF SWEDISH  
CITIZENS SAY THEY WOULD  
BE SATISFIED WITH:**

**A lawn sized like a large room with  
flowerbeds and trees.**

51% of Swedish citizens say they would be satisfied with a green space of this size or smaller.

Percent of the public who consider  
green spaces the top political priority:

**6%**



### TOP GREENSPACE TRENDS FOR CITIZENS

15-minute distance	<b>37%</b>
Carbon mitigation	<b>32%</b>
More spending on green spaces	<b>29%</b>

*Percent giving this trend a score of 7 on a scale from 1 to 7 measuring appeal*

### BIGGEST BARRIERS ACCORDING TO PROFESSIONALS

Competition from real estate or other commercial interests	<b>74%</b>
Green spaces not a political priority	<b>58%</b>
Lack of Government funding	<b>26%</b>

### MORE IMPORTANT IN SWEDEN ACCORDING TO PROFESSIONALS

Increased noise regulation	<b>100%</b>
Tools-as-a-service	<b>95%</b>
Automatic green space management	<b>90%</b>

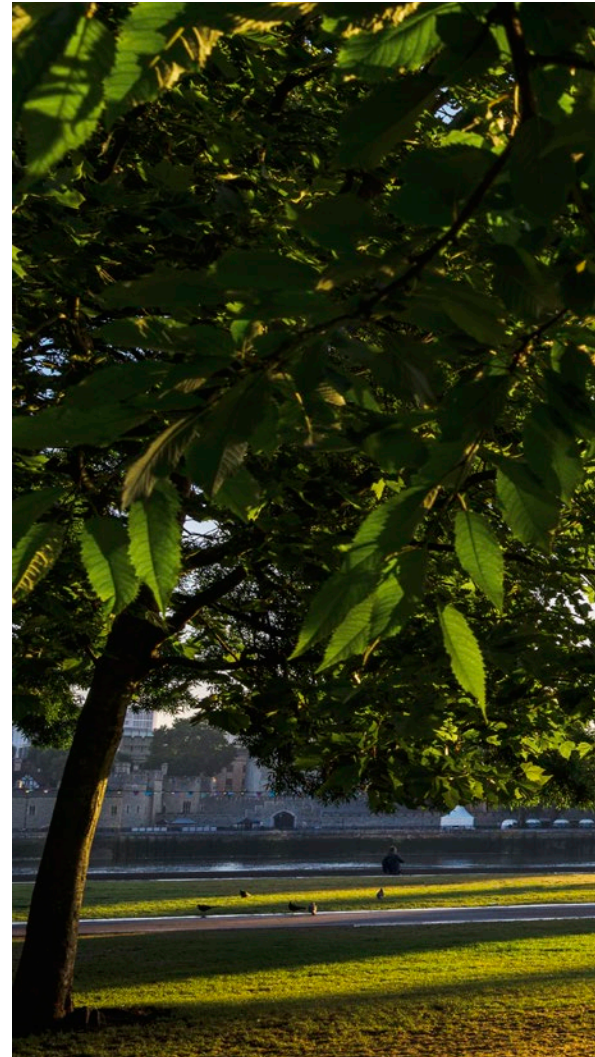
*More important in this country relative to other markets surveyed.*



# The United Kingdom

The United Kingdom is unique among the markets surveyed in that it places rewilding and a return to natural ecosystems very high on the agenda, even among the public. One-third of the public wants to see more native plant species in urban green spaces, and among professionals, rewilding is tied for first place when it comes to important trends impacting the profession right now, relative to other markets. The biggest barrier is a lack of funding – but interestingly, professionals cite expensive battery tools as one of the more major hurdles for managing green spaces. This indicates that perhaps cost saving electric tools or tools as a service could be the path forward for this market.

UK citizens place an unusually high importance on flowers and trees in their urban green spaces but are otherwise satisfied with relatively modestly sized parks and green areas. A full two-thirds of the population say that a green space sized like a large room is sufficient to provide value in their daily lives, so long as it has diverse vegetation.



**A MAJORITY OF UK  
CITIZENS SAY THEY WOULD  
BE SATISFIED WITH:**

**A lawn sized like a large room with  
flowerbeds and trees.**

66% of UK citizens say they would be satisfied with a green space of this size or smaller.

Percent of the public who consider green spaces the top political priority:

**13%**



### TOP GREENSPACE TRENDS FOR CITIZENS

15-minute distance	<b>37%</b>
Carbon mitigation	<b>34%</b>
More native plants	<b>33%</b>

*Percent giving this trend a score of 7 on a scale from 1 to 7 measuring appeal*

### BIGGEST BARRIERS ACCORDING TO PROFESSIONALS

Battery tools too expensive	<b>40%</b>
Green spaces not a political priority	<b>40%</b>
Lack of Government funding	<b>40%</b>

### MORE IMPORTANT IN THE UK ACCORDING TO PROFESSIONALS

Increasing attraction factor	<b>78%</b>
Rewilding	<b>78%</b>
Carbon mitigation	<b>78%</b>

*More important in this country relative to other markets surveyed.*



# Drivers shaping the future of urban green spaces



The shift from Nice to Necessary is not happening in a vacuum. It is driven by or interlinked to other societal processes. In short, there are seven external drivers influencing the shift from Nice to Necessary, shaping the industry from outside. These drivers have been identified through interviews with 23 professionals within the industry in combination with extensive AI-supported research on social media, news media, start-up databases and other data sources. Finally, they have been discussed and modified in a round-table session with professionals.

## Climate change

Climate change and reduced biodiversity impacts life in cities. The greatest challenges are higher temperatures, more common extreme weather, greater risk of flooding, and local ecosystem collapse. Green spaces present an affordable, healthy, and obvious answer to many of these concerns.

It becomes increasingly necessary for cities to manage issues as diverse as absorbing storm water, cooling urban areas, and reducing the CO<sub>2</sub>-footprint of the city. Climate-driven and ecological change acts as a constraint in that it encourages city planners to rely on organisms better suited to the local climate and ecosystem.

### INFO

At COP26, there was a marked commitment to protect precious natural habitats, with 91% of the world's forests covered by a pledge from 141 countries to end deforestation by 2030 in the Glasgow Leaders' Declaration on Forests and Land.<sup>13</sup>

According to the Goddard Institute for Space Sciences, the average global temperature on Earth has increased by 11 degrees Celsius since 1880, with the majority of that change occurring since 1975.<sup>14</sup>

# Sustainability as prestige

Sustainability is increasingly associated with prestige. Where the tallest skyscraper was a status symbol ten or twenty years ago, today cities compete by being the greenest – from Paris aiming to be Europe’s greenest city by 2030, to Saudi Arabia’s ambitious projects of greening the desert. Of course, there is a risk of “greenwashing” in which only token efforts are made,<sup>15</sup> but with greater transparency, green spaces can genuinely benefit from the increasing prestige value of sustainability.

As the rates of homeownership have increased across Europe over the past decades, so too has the investment of ordinary people in real estate – and real estate value is also linked to sustainability. Properties surrounded by sustainable green spaces increase dramatically in value, and sustainably built properties with access to green spaces are good investments both on a financial, ecological, and social level.<sup>17</sup>

## INFO

NEOM is a massive prestige project aimed at building a sustainable, self-sufficient city in the desert of Saudi Arabia. Whether the project succeeds or not, it is indicative that sustainability is now a key part of the PR platform, even for an oil producing country.<sup>16</sup>

ESG (environmental, social and governance sustainability) funds now account for 10% of fund assets, worldwide. In 2021, well over half a trillion dollars poured into ESG-focused funds. Likewise, the stock value of sustainable companies overall rose in value more in 2021, compared with the MSCI World Index.<sup>18</sup>

# City pedestrianization

Cities are increasingly built for pedestrians and less for cars. European cities were originally designed for pedestrian traffic, and many are now seeing a return to this logic – which means new forms of city planning. Most important as far as green spaces are concerned is the removal of parking space, which frees up plenty of land for greening in whole or in part.

The pedestrianization of cities also means more walkable areas and more bicycle lanes where green spaces can be easily enjoyed by citizens, making them simultaneously more prevalent and more accessible. The removal of parking lots also means more options for permeability when it comes to water drainage, further driving the shift towards green spaces as a necessary utility.

## INFO

The Slovenian capital of Ljubljana has, through strategic city planning, increased pedestrian traffic in the city center by around 620% since 2007. Approximately 10 hectares are not available for car traffic. The consequence has been a healthier, happier city, with approval ratings for the project ranging around 90%.<sup>19</sup>

In the survey, over three quarters (77%) of the public surveyed across European markets found the concept of a “15-minute city”, with walking distances no longer than a quarter of an hour and greater accessibility to green spaces appealing or very appealing, this indicates an appetite for more walkable cities among the public.



# Electrification

Electrification is a key component of a zero-emissions future, and consequently a top priority across industries and nations. For green space management this mainly means batteries that last longer, or infrastructure that reaches further in electrical vehicles and tools. California, for instance, has already begun the process of outlawing gasoline-powered lawn mowers, phasing them out by 2024.<sup>20</sup>

Regulations and legislation are rapidly pushing this forward. Though there are some other solutions available over a ten-year span, none can compete with batteries just yet when it comes to achieving zero emissions in a practical sense.

## INFO

The European Parliament voted in June of 2022 to forbid the sale of new combustion engines in Europe by 2035, to speed the shift towards electric vehicles.<sup>21</sup>

62% of the interviewed green space professionals believe that all green space management equipment will be fully electrified before 2032. The trend is strongest in Belgium, where all professionals believe this will be the case, and weakest in the UK, where 44% agree.

# Automation

Whatever we think of it, automation is the future in most industries, and green space management is no exception. Automatic lawn mowers have been around for decades and other types of robots are on the radar, but automation is now also entering realm of planning, monitoring, and managing of spaces. Entrepreneurs and public officials talk about the smart city, and various forms of smart city solutions have been implemented in cities across the planet – though to varying degrees, and none as all-encompassing as the early visionaries imagined.

However, automation will not happen all at once. More likely it will be a slow process, where robots and automated solution will enter and expand within different domains and change the way green space professionals work. Automated tools will not take over human work entirely in the next decade or so, but assist humans by gathering and comprehensively displaying information, or by handling monotonous, repetitive tasks with occasional input from a human handler.

## INFO

Almost 50% of experts surveyed rated automated green space maintenance as having a significant impact on the future of sustainable urban green space management.

The EU is planning for there to be 20 million employed ICT (information and communications technology) experts working across Europe by 2030, a growth of jobs related to managing complex information systems. Such information systems underpin automatic management platforms, including but not limited to green space management.

# Skills shortages

Shortage of skilled labor poses a problem for the green space industry. It is difficult to attract both low- and high-skilled employees to work in the field. Even as the work becomes more sophisticated, challenges remain in raising the attractiveness factor of the profession and recruiting new staff.

Technological changes involving more complex technology, such as automated management platforms and care for robots, also creates a need for upskilling and educating existing staff, whether that is in the use of new tools or new ways of working.

## INFO

According to McKinsey & Co, 87% of companies worldwide are dealing with a skills gap, or expect to within a few years, indicating just how wide the shortage of skills is across many industries.<sup>23</sup>

# Green accounting

The value of a healthy ecosystem is to a greater degree being factored into budgets and KPIs by city planners and property owners. Living plants, such as trees and tall grass, clean the air of CO<sub>2</sub>, regulate humidity, and reduce temperatures. They also provide homes for insects and other animals serving as the backbone of a healthy ecosystem. These “ecosystem services” are activities that require little human input but provide tangible benefits for a city.

Professionals are increasingly able to measure the benefits of green spaces in the forms listed above (temperature and CO<sub>2</sub> levels being two obvious metrics), to the benefit of the industry – “what gets measured gets managed”. This means green spaces are today easier to justify in budgets than in years prior, but there is still much work to be done.

”

*Over the long term, environmental, social and governance (ESG) issues – ranging from climate change to diversity to board effectiveness – have real and quantifiable financial impacts. At companies where ESG issues are handled well, they are often a sign of operational excellence”*

**- Larry Fink, BlackRock CEO**

## INFO

41% of interviewed professionals reported that the use of trees for heat mitigation will have a significant impact on the profession in the coming 10 years, indicating one tangible benefit of green spaces that can be clearly measured in degrees Celsius.

i-Tree is a tool that assigns monetary values to tree canopies, by calculating the amount of carbon dioxide, ozone, particulate matters and other pollutants removed from the air by trees annually. This is then converted into money saved for local governments, incentivizing tree planting and care.<sup>24</sup>



# Methodology



The insights in this report are based on both qualitative and quantitative research. An initial phase of qualitative research was conducted in which 23 professionals, both external and internal to Husqvarna were interviewed about key trends and transformations they see happening in the industry today. This was complemented by an AI-supported literature review of hundreds of thousands media and social media posts, search for patents and mining of start-ups in the field and research on other reports on trends influencing and impacting green spaces. The AI-supported data-mining was made using the text analytics platform Dcipher Analytics ([www.dcipheranalytics.com](http://www.dcipheranalytics.com)). Through this process we identified a large set of trends, phenomena and examples of innovative urban green space activities, and an equally large number of green space technologies.

Based on this qualitative research, two surveys were designed and distributed. The first, targeted at urban green space professionals across the six markets

outlined in the report, collected 100 responses. That survey was aimed to capture the perceptions of key trends and technologies that will impact urban green space and green space management.

The second, less technical survey, was distributed to the public, and collected a total of 3315 responses, roughly evenly distributed between the six markets. Results were compared to a similar survey distributed in 2012, allowing for some comparison over time. The estimated 95% confidence interval of the professional survey questions lies consistently below 10 percentage points, while for the survey directed at the public, the 95% confidence interval is below 2 percentage points for all questions.

Once data had been collected, the insights of the report were once more checked with a panel of professionals both external and internal to Husqvarna.

Quotes appearing in the report are taken from the initial interviews, as well as answers given by the surveyed professionals.

# Acknowledgements

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# Definitions of trends and technologies

## Trends

**Rewilding:** The reintroduction of wild plants and insects into urban spaces

**Parklets:** Smaller but more frequent green spaces

**15-minute distance:** Shorter distance and greater accessibility to green spaces

**Green roofs:** Roofs covered with living plants

**Vertical green spaces:** Gardens growing vertically on walls or trellis-like structures

**Increased biodiversity focus:** More focus on a broad variety of species thriving in green spaces

**Flood mitigation:** Green spaces such as salt marshes mitigating flooding and sea level rise

**Heat mitigation:** Trees designed for providing shade, absorbing heat

**Carbon mitigation:** Green spaces designed for absorbing carbon dioxide

**Lower water usage:** Plants requiring or wasting less water for maintenance and management

**More native plants:** Greater use of plants native to the local climate and ecosystem in public green spaces

**Urban farming:** Growing of edible plants, herbs, fruits, nuts, and vegetables in cities

**Community adoption of green spaces:** Communities and individuals taking responsibility for individual trees, plants, or green space areas

**Increasing attraction factor:** Green spaces as more critical for place attractivity and raising tangible values of a location

**Tools-as-a-service:** More renting or leasing of tools for green space management, as opposed to purchasing

**Increased noise regulation:** Lower tolerance for noise levels from lawmakers and citizens

**Emissions regulation:** Lower tolerance for CO<sub>2</sub> or other emissions by tools and vehicles used in green space management

**Increased use of parks:** More citizens and visitors in green spaces during peak hours

**Parks as gyms:** More use of green spaces for exercise, sports, and health purposes

**Automatic green space management:** AI and autonomous robots used in conjunction with sensors for green space care

**More trees:** Increase in the number of trees in urban areas, and keeping or protecting older trees

**Tree health improvement:** More care for trees in urban environments

# Technologies

**Smart cities:** Connected cities where traffic lights etc are connected to a smart central system

**Park creation software platforms:** Software platforms aiding in the creation and planning of parks and green spaces to e.g. ensure sustainability or biodiversity

**Smart park management platforms:** Software platforms aiding in the daily management of parks and green spaces to e.g. ensure sustainability or biodiversity

**Battery powered tools for urban green space management:** Tools powered by batteries rather than hydrocarbon fuel

**Space data access for green space actors:** Access to city data, satellite data or other external data for use in green space management

**Tree monitoring technology:** Technology to monitor trees based on satellite data, using AI to predict safety risks, maintenance work etc

**Drones:** Drones for use in inspection, maintenance, and data collection in green spaces

**Automated green space maintenance:** Robotic lawn mowers, sprinkler systems, and similar

**Sensor optimized greenspace management:** Sensors on plants, soil monitoring and similar

**AI supervision:** AI capable of identifying e.g. invasive species, fungal infestations, and similar

**Automated transportation of green space equipment:** For instance, autonomous vehicles, drone deliveries, and similar

**Nanotechnology:** Heavily miniaturized robots capable of physically entering plants and soil for e.g. monitoring, plant care

**Extended Reality:** Virtual or augmented reality displays used to overlay information in green space management technology, displaying e.g. plant health

**Advanced storm water handling:** New drainage, measuring and channeling technologies for storm water and flooding

**Hydroponics:** Plants grown in hydroponic solutions for more efficient urban farming

**Digital learning platforms:** Digital platforms for onboarding workers, such as simulators for advanced equipment

**Citizen engagement platforms:** Platforms for citizens to report issues or review and give feedback on green spaces

**Sustainable materials:** Sustainable materials used in green space maintenance

**Vertical green space maintenance:** Technologies used to maintain, trim and keep vertical green spaces





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