

FUTURE URBAN PARKS REPORT

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In September 2015, the world united around the United Nations sustainability development goals. As a world leader in our industry, we want to contribute to reaching these targets by doing our share, and a bit more. As things around us are moving at an ever increasing speed, some factors remain the same. No matter if it is 1930 or 2030, the grass will grow and trees and bushes will need maintenance, but how it is done can impact people as well as nature.

At Husqvarna, we see a clear connection between innovation and sustainability, bringing new products and services to the market that benefit people and nature. And in our quest to be a good business partner for landscapers and reduce our carbon foot print, we need to look ahead. By understanding the direction of the future, we are better fit to develop sustainable solutions that can improve productivity in future park maintenance and well-being for green space professionals. Therefore, in our commitment to explore new possibilities, we wanted to understand how the decision makers of tomorrow view urban green spaces in 2030.

Based on the sustainability development goals, continued urbanization and the rapid technological evolution, we asked 533 students of landscape architecture in 15 countries how they envision green spaces in large cities in 2030. We asked them what role the green lungs of the city will play in the future? What will they look like? And how will they be maintained?

A first reflection from the report is that the decision makers of the future are more global than previous generations. In spite of the fact that the survey included 15 nationalities from five continents, the answers were surprisingly similar, with just smaller regional deviations.

A second reflection is the global consensus that green spaces in urban areas will increase in importance and in total size – smaller but more

in numbers, spread out over the cities to improve the health of cities and its inhabitants. Traditional parks will be accompanied by pop-up parks, roof top gardens and vertical greens and flower beds whilst abandoned railroads and streets turn into hosts of urban forests. Its thrilling as well as challenging to think about how these many green islands in the cities will be maintained.

Today, the largest cost for any landscaping organization is staff. Given the expected increase of green spaces, it is reassuring to witness students' confidence in technology as a part of park maintenance. As the report states, students foresee that in 15 years from now sensors will be a natural part of the park and will support landscaping teams, relieving them of tasks that instead can be performed by a robot or a drone. Considering the increasing acceptance of technology across the world, this scenario is perhaps only a few years away.

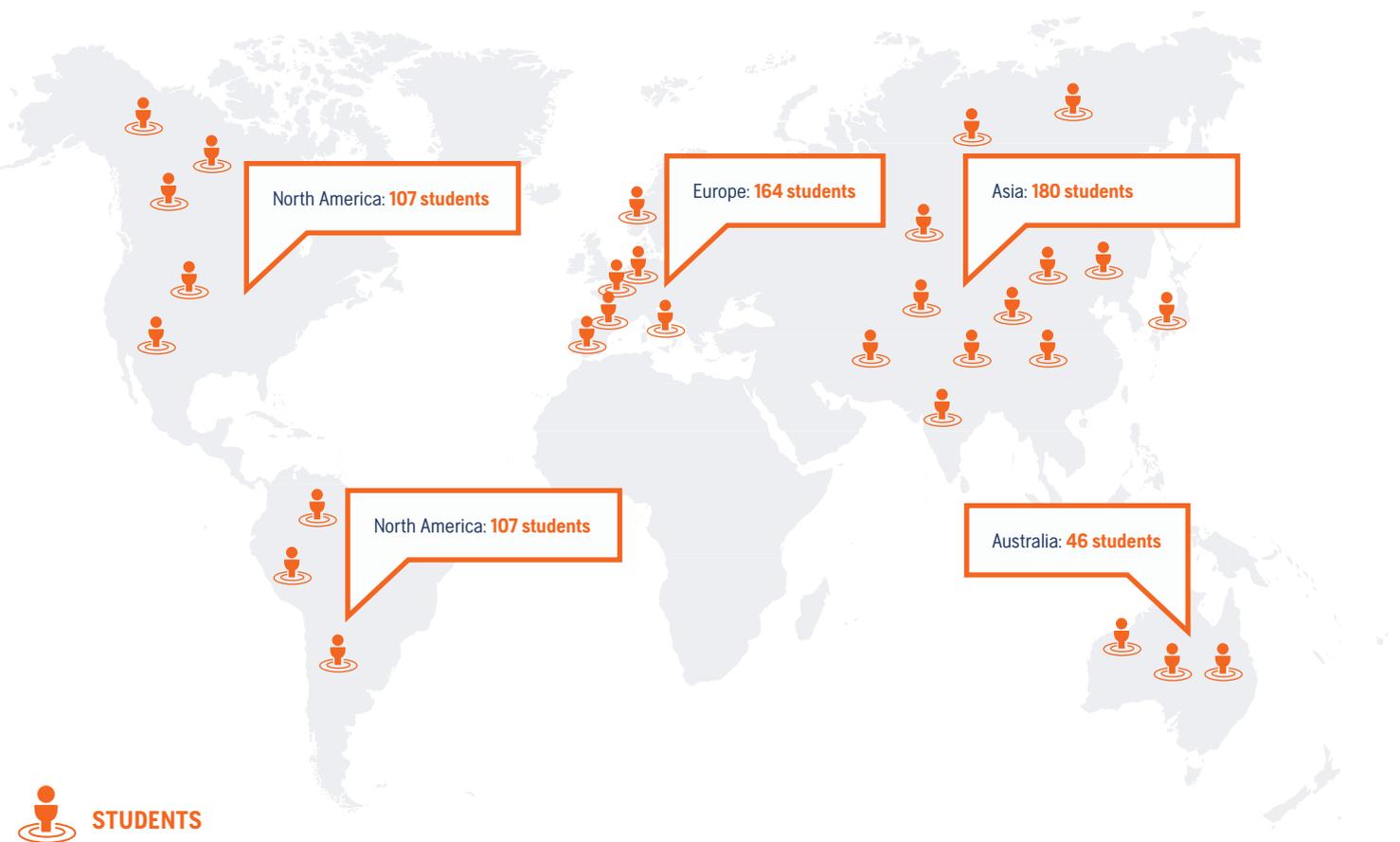
Many of the findings in the report supports Husqvarna's view of future green space management. We believe that outdoor power products and supporting solutions should meet three criteria. Firstly, they must be quiet, allowing landscaping to be done at all hours of the day, side-by-side with people. Secondly, they need to be purposely designed around the user, optimizing work-techniques and well-being. Thirdly, and the most important game changer; they need to be intelligent, empowering all within the landscaping business to work smarter, not harder.

For 98 years, Husqvarna has manufactured tools to manage green spaces. We understand the fundamental need for productivity; that every minute of uptime counts, and that every skilled movement matters. This drives us to constantly push the industry forward, a mission we are highly committed to are proud to continue.

Pavel Hajman, President, Husqvarna Division

ABOUT THE REPORT

This report explores how parks in large cities will look, function, be used and maintained in the year of 2030. The focus is on three macro trends that are shaping our future: urbanization, the digital and technological revolution, and the environmental challenges that urban areas face. To learn what the future holds, we turned to the very people that are going to design the parks of the future: today's students in landscape architecture. We also talked to experts in a number of fields, and enlisted one of Scandinavia's leading architectural firms to illustrate the result.



STUDENTS

533 students in landscape architecture from all over the world and that had completed at least one year of studies participated in an online survey. The survey contained both closed questions and open-ended questions where they were asked to describe how they believe parks of the future will look, be used and function using their own words. The questionnaire was aimed at exploring how students envision the urban parks of the future from several different angles: urbanization, sustainability, technical advancements and maintenance. It was developed together with the experts and architects featured in this report. The survey was conducted during April and May 2016.

SQUIRE

Squire, a Swedish tech start up focusing on testing skills and matching talent with career opportunities, conducted the survey of 533 students and has written & designed this report in cooperation with Husqvarna.



UNIVERSITIES REPRESENTED

Catholic University of La Plata - Argentina
Catholic University of Santa Fe - Argentina
Universidad de Buenos Aires - Argentina
Deakin University - Australia,
Queensland University of Technology - Australia
RMIT University - Australia
University of Adelaide - Australia
University of Melbourne - Australia
University of New South Wales - Australia,
University of Technology Sydney - Australia
University of Western Australia - Australia
Erasmushogeschool Brussel - Belgium
Hogeschool Gent - Belgium
KU Leuven, Belgium - Europe
University of Antwerp - Belgium
Universidade de São Paulo - Brazil
University of Campinas School of Civil Engineering Architecture & Urban design - Brazil
University of British Columbia - Canada
University of Guelph - Canada
University of Toronto - Canada
Shanghai Jiao Tong University - China
Tongji University - China,
Ecole Nationale Supérieure d'Architecture et de Paysage de Bordeaux - France
Ecole Nationale Supérieure d'Architecture et de Paysage de Lille - France
École Nationale Supérieure de la Nature et du Paysage - France
Ecole Nationale Supérieure du Paysage de Versailles - France
Hochschule Osnabrück - Germany
Rheinische Friedrich-Wilhelms-Universität Bonn - German
Technische Universität Berlin - Germany
Technische Universität Darmstadt - Germany
Technische Universität München - Germany
Amity University- Manesar Campus - India
CCLS College of Architecture & Design - India
CEPT University - India, Asia & Pacific
School of Planning and Architecture - Delhi, India
Politecnico di Milano - Italy
Università degli Studi di Firenze - Italy
Università degli Studi di Roma 'La Sapienza' - Italy
Hyogo University - Japan
Japan Institute of Landscape Architecture - Japan
Tokyo University of Agriculture - Japan
University of Tokyo - Japan
Amsterdam University of the Arts - Netherlands
Delft University of Technology - Netherlands
Dutch school of Landscape architecture - Netherlands
Van Hall Larenstein University - Netherlands
Wageningen University - Netherlands
Universidad Politécnica de Madrid - Spain
Universitat Politècnica de Catalunya - Spain
Universitat Politècnica de València - Spain
Lund University - Sweden
Royal Institute of Technology (KTH) - Sweden
Swedish University of Agricultural Sciences - Sweden
University of Gothenburg - Sweden
Cornell University - USA
Harvard University - USA
Michigan State University - USA
Ohio State University - USA
University of California - Berkeley, USA
University of Michigan - USA



EXPERTS

Thomas Elmqvist

*Professor in Natural Resource Management
Stockholm Resilience Center.*

Petra Sundström

*Director, Group Connectivity Division
Husqvarna Group*

Kalle Lind

*Director, Commercial Lawn and Garden
Husqvarna Group*

White Architects

White Architects, based in Stockholm and one of Scandinavia's leading architectural practices, illustrated the results from the survey, creating the 'Urban Parks of the Future'.

THE ROLE OF URBAN PARKS IN 2030

Parks of the future will serve two main purposes: to provide citizens in cities an opportunity to experience nature and to take on the role as the cities' 'lungs' in order to help tackle urban environmental challenges. Parks will be like Swiss army knives, enabling a multitude of purposes through flexible and multifunctional designs.

Image: The High Line Park, NYC

PARKS AS THE CITIES 'LUNGS'

According to the students, the urban parks of the future will need to do more than they have historically; it will no longer be enough to provide citizens with a place to stroll, do sports, relax and play. Parks in the future will also take on an additional, more important role: as large cities' environmental heroes.

The students go as far as saying that improving the environment will actually be the main role of parks in large cities in the future. Roughly nine out of ten students state that the key purpose of parks in 2030 will be to have a positive environmental impact on the surrounding cities, acting as the cities' 'lungs.'

For park designers and maintenance providers, this means that they too will have a greater responsibility. It's not enough to design and maintain pretty parks, they also need to enable parks to fulfill their full potential when it comes to improving air and water quality, reducing heat waves, managing stormwater, increasing biodiversity, and maybe even producing sustainable energy.

CONNECTING CITIZENS WITH NATURE

While parks will have a new role to play as environmental heroes, the primary use for

people living in large cities will be similar but also become a hub for strengthening the communities. Parks provide an escape from city life with recreational activities and relaxation while immersing oneself in nature. In light of rapid urbanization, students stress the importance of making sure that people in urban areas have convenient access to nature as a means to increase quality of life and to improve mental and physical health.



64% say **volunteers from the community** will be involved in the maintenance of parks in 2030.

One way to promote personal engagement with nature is to let individuals take part in the park maintenance. 64 percent of students say that the maintenance of future parks will be accomplished by volunteers from the community. Encouraging community involvement will not only bring humanity closer to nature but also create a sense of ownership towards the park and strengthen

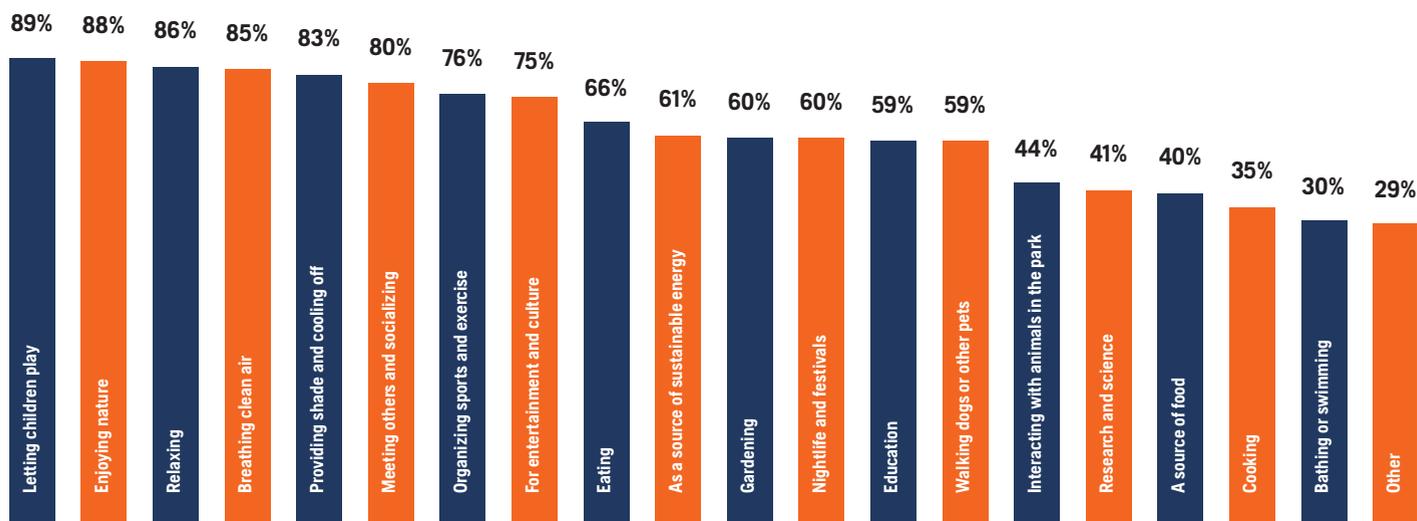
the community spirit.

THE RECREATION ROOM MOVES OUTSIDE

Enabling people to enjoy nature and having a positive impact on the environment will be far from the only functions of parks in 2030. With the decreased living space in urban neighborhoods, parks will also serve as the new recreation room, according to the students, providing a space for leisure and activities that are done purely for enjoyment, such as playing games and throwing parties. For others, parks will take on the role as the new garden, playroom, living room, or home workshop. They will be places where people enjoy arts and culture, grow food, gather for sports, work, play and socialize, among other things.

MULTIFUNCTIONAL PARKS AS STANDARD IN 2030

In order to accomplish all of these activities, parks must be designed in smart and flexible ways where same spaces can be used for a variety of purposes. Students acknowledge this with 90 percent suggesting that multifunctionality (i.e. that the same areas can be used for a lot of different purposes) will be standard in park design in 2030. This means that a sports field won't be designed



USES OF PARKS IN 2030

“ As I live in Sweden where it’s often cold and people mostly hang out in their homes, I would want the park to become a ‘second living room’ where you can stay out late and hang out with your friends. If there could be some sort of semi-indoor solution such as a public greenhouse where you could stay late without freezing that would be awesome. ”

Student in Stockholm, Sweden

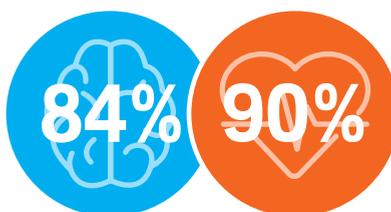
“ The park of 2030 is a multi-functional green space. One that promotes the idea of community through individual participation and interaction. A sort of urban garden that pays homage to subsistence farming that also doubles as a space for recreation and education. ”

Student in Milan, Italy

only as a sports field. It will be a flexible space that can be used for other purposes during other times of the day or year. Moreover, kinetic energy from people walking or running on tracks in the park could be harvested to produce sustainable electricity. To make the most of a space, there could even be multi-storied parks with different levels assigned



92% say that a **key purpose** of parks will be to have a **positive environmental impact on the surrounding city.**



Improving people’s health is a key objective of future parks, both mentally and physically. **84%** of students say that having a positive impact on people’s **mental health** will be a main purpose of future urban parks, and **90%** say the same about improving people’s **physical health.**

THE TOP FIVE SPACES IN A HOME THAT STUDENTS USE TO DESCRIBE PARKS IN 2030:

1. Recreation room
2. Garden/balcony
3. Playroom
4. Living room
5. Home workshop



90% say **multifunctionality** will be **standard** in park design.

THE FUTURE PARK IS GREEN AND DIVERSE

If students were given the reins to design the parks in 2030, parks would look like an 'urban wilderness.' Students envision a future where parks will occupy a larger share of urban space, like pop-up parks hidden around charming corners of the city. What constitutes a park will be a lot less clearly defined; parks will blend in within the city in innovative ways.

Image: 'One Central Park' Building, Sydney, Australia

AN URBAN 'WILDERNESS'

No matter if the students live in São Paulo, Vancouver, or Shanghai, many desire parks to embrace diversity which in turn, means being less dominated by open lawn. The most prominent material in future parks will instead be a combination of trees, bushes, and tall grass. Some students describe it as an 'urban wilderness,' incorporating a combination of non-native and native trees and plants that are resilient to local conditions and naturally interact positively with each other.

Urban parks will feature both tall and low vegetation, flat and hilly areas, and dense as well as sparse nature.



64% of students prefer a diverse nature over a more uniform design. In comparison, only 22% wish for parks to express uniformity and 14% prefers parks with an equal share of both uniform and diverse nature.

THE DEFINITION OF PARKS TAKES ON NEW MEANINGS

It's not only how parks look that will change but also what constitutes a 'park' and where

" A food forest-inspired naturalized park with a complex system of trails leading to 'hidden' recreational spaces: a playground, seating areas, clearings in the 'woods' as open spaces. The park incorporates a stormwater management system and a complex and advanced system of lights allowing for greater use in non-daylight hours. "

Student in Guelph, Canada

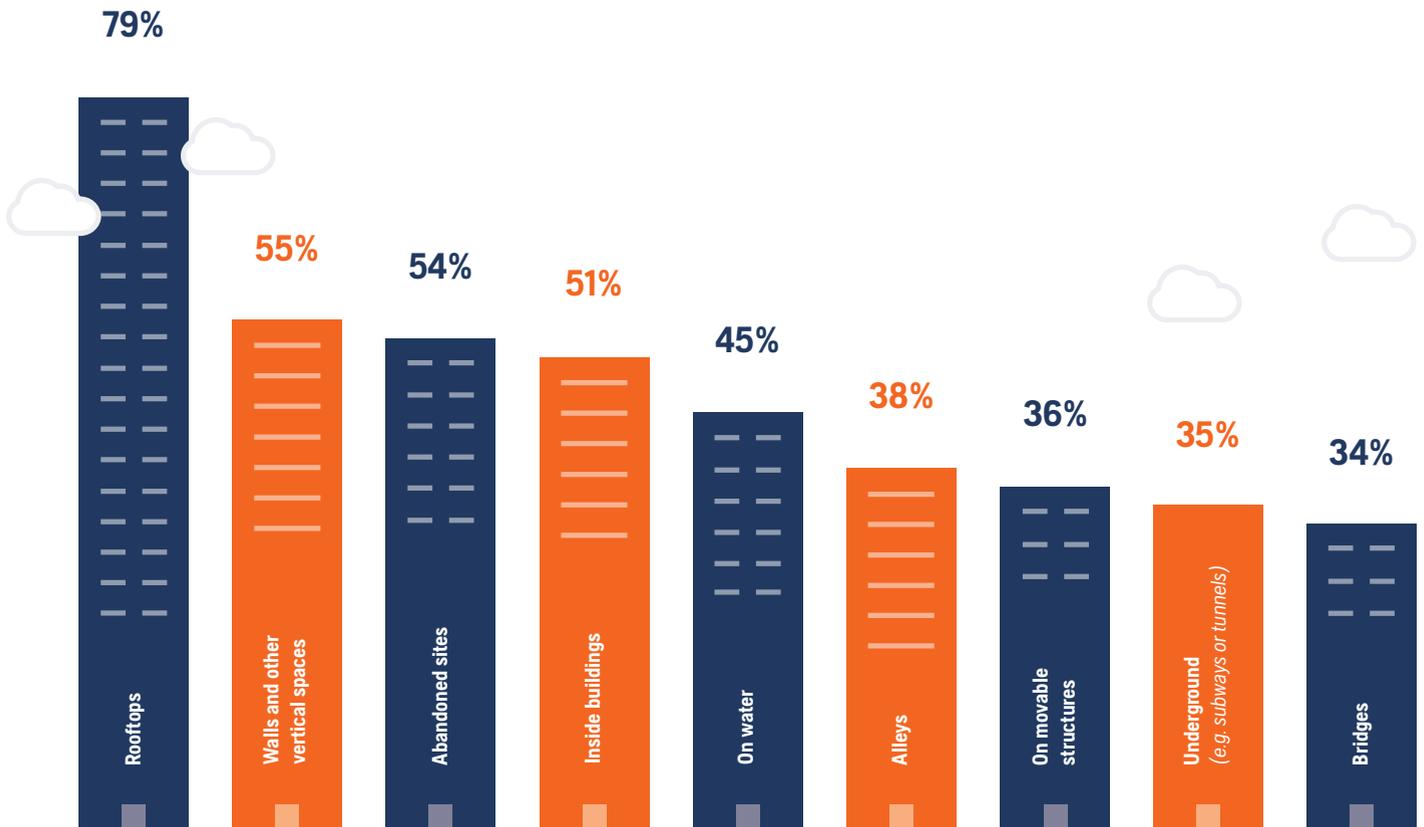
parks are located in the city. According to students, the concept of a 'park' will have an ambiguous definition. Parks will not necessarily be isolated islands in the city but rather connected through a city-wide network. 91 percent of students believe parks will be integrated with residential and

commercial architecture to a much greater extent than today.

Parks will stretch onto walls, rooftops, inside buildings, alleys, and even underground. Entirely new spaces will be developed by stretching green overpasses between multiple rooftops. One example of how unused spaces can be repurposed is the 'Lowline' which is an underground park that is currently being planned in an abandoned trolley terminal on the Lower East Side of New York City. Another is the 'High Line Park' on the Lower West Side in the same city.

All in all, students envision a future where parks occupy a larger space of urban areas, with 71 percent of students believing that parks will take up more urban space in 2030 than today. While city parks up to 50 ha – corresponding to about 71 soccer fields or just over one seventh of Central Park in New York City – are frequently seen these days, it is smaller parks up to 5 ha and pop-up parks that students predict will increase the most.

SHARE OF STUDENTS THAT THINK PARKS WILL BE SITUATED IN THE FOLLOWING PLACES IN LARGE CITIES IN 2030:



UNLIMITED ACCESS 24 HOURS A DAY

'Accessibility' is mentioned by many students as a key parameter when designing future urban parks. To encourage people to visit and

"Different parks should connect with each other; they should not be just lonely green islands. Not spots, but lines."

Student in Shanghai, China

spend time in parks, they need to be accessible in terms of proximity to public transport, free to use, and have generous opening hours due to increasingly flexible work hours. Eight in ten students see a future where parks are open 24 hours a day.

Parks also need to be visually inviting with

welcoming and open entrances. Most importantly, people need to be able to feel safe visiting parks, even at night. Well-lit parks are the security measure of choice for students while having guarded entrances or other features that decrease access is something that few would want to include.

"Parks will capitalize on any kind of free space available: roofs, walls, alleys, gutters, traffic islands, etc."

Student in Melbourne, Australia

Safety is a major concern, particularly among students in the densely populated cities of India and Brazil.



71% of students believe parks will occupy a **larger share** of large cities in 2030.

91% say parks will be integrated with residential and commercial architecture to a much greater extent than today.

The most popular vegetation in future parks will be **diverse and green nature such as trees, bushes, and tall grass**, which students prefer over open lawn.



Students stress the importance of "re-connecting" people in large cities with nature and prefer the nature in parks to be "more wild". What are your thoughts on this?

In many populated regions there is a lack of easily accessible nature as a recreational amenity. The urban park can fulfil a part of this need. 30 years of research in evidence-based-design has shown the importance of our connection to nature. Nature based design is a promising tool for enhancing the physical, psychological and social well-being of the world's growing urban population. The common environmental agreements incorporated in the UN Global Goals encourage the development of our urban environment in accordance with local ecosystems and the services they can provide. 'Green' systems live and grow with us in a complex and dynamic manner.

Parks in the future will need to serve a multitude of purposes – from saving the environment to serving as recreation areas and providing locally grown food. Do you have any good examples on how this can be accomplished?

Designing multi-functional landscapes requires those involved to identify the natural qualities of a site early in the process. With a knowledge of a site's 'natural' potential, one can begin to identify which spaces serve which purposes and where particular functions may overlap. In dense urban environments, finding multifunctional solutions that incorporate green-blue systems with recreational space will become a fundamental way of designing. Some overlapping solutions function especially well together, for example, a sport field may simultaneously function as a stormwater management system. Others sites can provide means of filtering pollutants, habitats for local flora and fauna as well as contemplative places.



The students predict that what constitutes a "park" doesn't have to be an isolated entity in 2030, but rather that parks are connected all through the city in different ways. Do you have the same vision? How can this be realized?

We, as landscape architects, believe strongly that the park is one of the most important urban places in the city. The park provides opportunities for a multitude of activities and functions in a way no other urban space can. Though it is an effective space in itself, a park will always function best when it is well integrated into its surroundings and easy to access. The proximity of residences to a public space is a key issue when considering the park of the future. In order for everyone to have appropriate access to parks we have to re-envision the classical city park. More ways of experiencing and placing a "park" are being developed, for example, in the street, on the roof, as reuse of abandoned urban structures or as temporary spaces. Increasing urban populations demand we look carefully at what hidden potential lies around us.



WHITE ARCHITECTS' VISUAL INTERPRETATION OF THE REPORT OUTCOME.



A vision based on current urban environments where a network of green structures reinforces the public space of the urban landscape. Green areas on roof tops and terraces can be used for recreation and the cultivation of food.



A future scenario where urban parks possess an increased sense of wilderness and a greater variety of natural character. The native ecological systems are preserved of and become a part of the overall park design.

PARKS, THE ENVIRONMENTAL HERO IN THE CITY OF 2030

Designing parks that maximize the positive impacts on the environment in large cities is the number one priority for students. Parks in the future will work in the cities' favor by helping reduce air and water pollution, reduce effects of heat waves, lower noise levels, and increase biodiversity. An important way of making a lasting sustainable impact on cities is to get people involved by educating them about nature and sustainability.

TACKLING ENVIRONMENTAL PRESSURES

According to students, the number one purpose of 2030 parks will be to have a positive environmental impact on the cities that surround them. Parks will reduce the negative impacts of urbanization – reducing air and water pollution, mitigating urban heat waves, and lowering noise levels – as well as producing positive outputs in terms of sustainable energy, clean drinking water, and increased biodiversity.



61% say future parks will produce sustainable energy (e.g. sun or wind).

REDUCING HEAT WAVES IN WARMER CLIMATES

Reducing the effects of heat waves is a key concern among students. Globally, 71 percent

“ The park will have areas which specifically mitigate urban heat island effect for users, by providing shade, water, and rest. This will lower the risk of heat strokes during heatwaves in the summer. ”

Student in Guelph, Canada

“ Rainwater purification processes using all the elements in the park. The park becomes a whole aesthetic and experimental rainwater system, improving the water quality in the city and used in public education. ”

Student in Shanghai, China

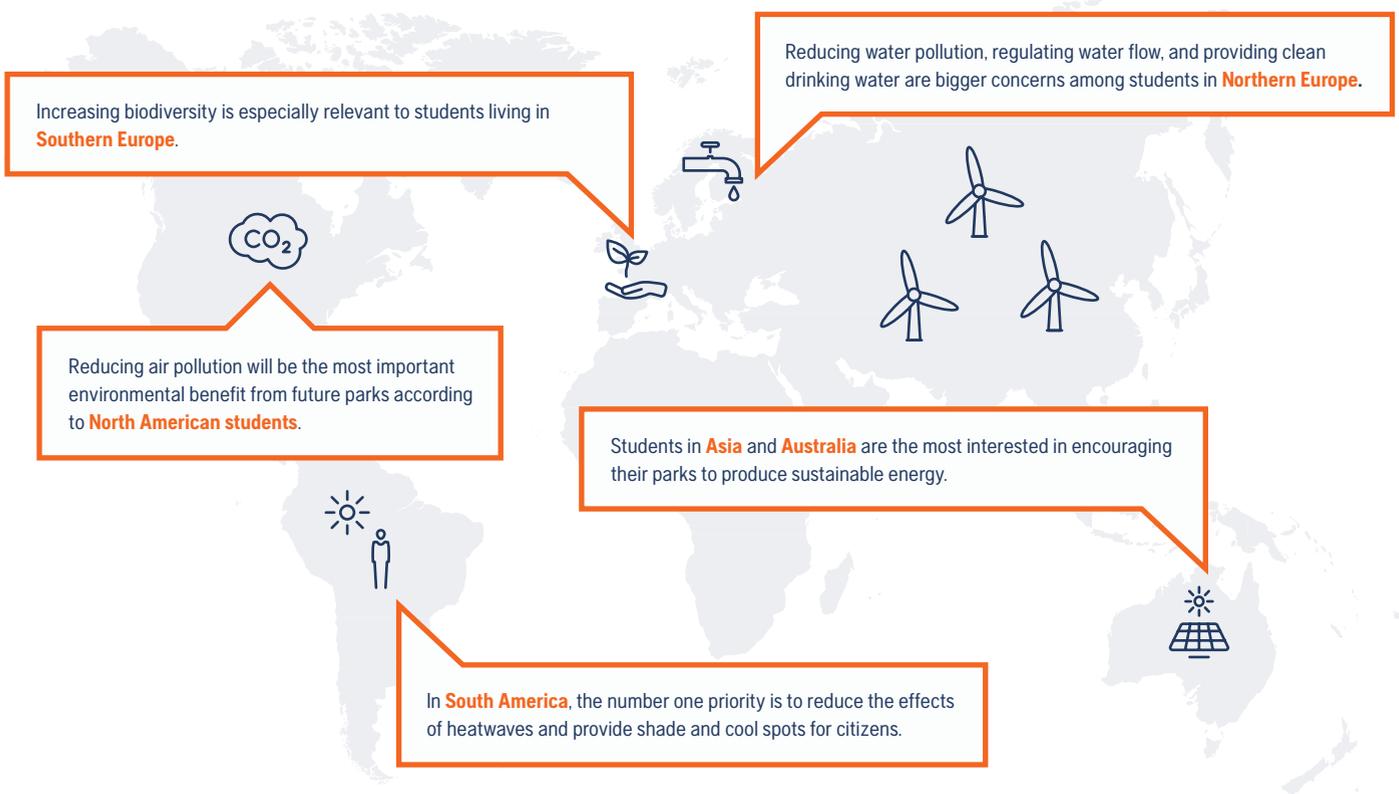
of all students say this is an important feature in their future park, and it's an even higher priority in warmer climates such as Brazil, Argentina and India. Trees and other plants will be chosen on the basis of whether vegetation can reduce the overall temperature in cities, thus lowering the risk of people suffering from heat strokes in the summer months.

THE ESSENCE OF H2O

Stormwater management systems, which filter water and work as a buffer during rainfall, are another feature seen as essential in future parks. The access to clean and readily available water is threatened in some parts of the world. Purified stormwater can be used both as drinking water and a solution to water shortages.

A monitoring system for water use will have the ability to sense when irrigation is needed so that water is recycled and not wasted. In turn, water maintenance will be kept to a minimum and water recycling will

REGIONAL DIFFERENCES



be consistent with corresponding monitoring systems. The ultimate goal is to make urban environments self-sustaining.

COMMUNITY TIES

Parks will act as a means to educate the local population on environmental issues, either

“ The park will start to shift social dynamics and promote new ways of thinking. It becomes evident how effective sustainable solutions are. Why not try this idea at home or work? ”

Student in Melbourne, Australia

passively through everyday interaction or actively through orchestrated community involvement. By highlighting environmental benefits achieved through sustainable solutions, visitors will be inspired to live more

sustainably. 86 percent of students say an important role of parks will be to encourage people to live in more environmentally sustainable ways.

While urban gardens and urban farming are already present in many cities around the world, this will have become a common feature in parks in 2030. Among the surveyed regions, Northern Europe is especially interested in encouraging citizens to cultivate food in city parks.



86% say one of the most important purposes of parks will be to **encourage people to live in more environmentally sustainable ways** (e.g. prioritizing locally produced food, composting).

TOP 5 THINGS THAT STUDENTS' FUTURE PARKS WILL DO TO IMPROVE THE ENVIRONMENT IN CITIES:

1. Reduce air pollution.
2. Reduce the effects of heat waves and provide shade and cool spots for people.
3. Reduce water pollution.
4. Reduce noise levels.
5. Increase biodiversity.



Image: Downtown Melbourne, Australia



COMMENTS FROM EXPERTS - *Thomas Elmqvist, Professor in Natural Resource Management Stockholm Resilience Center.*

Students envision future parks to solve quite a few of large cities' environmental challenges. Is this feasible?

To be realistic, some challenges are too large even for parks to solve. The role of green urban spaces in reducing CO2 from the atmosphere is insignificant, to take one example. However, green spaces will play an increasingly important environmental role in reducing air pollution, urban heat island effects, flooding risks and as sources of inspiration, for example when it comes to urban food production. The role of green urban spaces for improving health is already significant and will be even more so in the future.

What other trends do you see in this area?

Beyond traditional parks and green spaces, we will also likely see much future innovation in how living systems may be combined and integrated with many built systems to better address challenges, such as adaptation to climate change. Here I view green roofs and green walls as the rather primitive beginning of an exciting area of development..

Do you know of any cities that have come a long way in making truly sustainable parks happen?

The City of Genk, Belgium has transformed from a former mining city into a vibrant innovative city with investments in nature based solutions where they are using living systems to create water retention buffer zones, thermal comfort zones through the city, a green-blue social connector linking ethnically diverse neighborhoods and nature preserves and multiple important ecological sites within the city. Melbourne is today ranked as the most livable city in the world largely due to investments in new green spaces and good management. In New York, the innovative transformation of an old railway line into a highly visited and popular linear park is an example which many cities around the world are following.

According to you, what's the most critical environmental challenge that large cities face that parks can help tackle?

The largest challenge is how climate change will affect people's health, particularly in large cities, and here I think that urban green spaces in many different forms, shapes and designs will be crucial to be able to reduce negative impacts on health and well-being.



Image: Gardens by the Bay, Singapore

THE ROLE OF TECHNOLOGY IN THE PARK OF 2030

Using innovative technical solutions in parks is essential, but only as long as it is incorporated in a way that doesn't disturb nature or the visitors of the park. Technology will be used to enhance the park in different ways, primarily as a tool for increasing its positive environmental impact and to inform and educate visitors. Sensors will help make park maintenance more efficient and largely automated.

A TECHNICAL HELPING HAND

Students see technical solutions in future parks as a useful means to fulfilling the most important purposes of the park: improving the environment and connecting people with nature.

Sensors are considered a helpful tool that does not intrude on visitors park experience. The main advantage students see in collecting data through sensors is to get access to real-time information about the environment in the park and the surrounding city, such as air and water quality. Two out of three students would like to include sensors to track the park and city health.

Sensors can also collect data about visitors' movements and activities in the park, which can be analyzed and used to continuously optimize the park to people's needs and behaviors.

"Sensors that keep track of people's movement can detect exactly which areas of the park get the most traffic and understand how to better maintain it. Ignored areas of the park can be streamlined for better usage. They will also help with maintenance of the park, as well as the safety of the general public."

Student in Delhi, India

"The technology will be used to ensure the park not only looks good but is healthy. It will also be used to reduce maintenance costs and increase outputs from the park."

Student in Bonn, Germany

SELF-SUFFICIENT PARKS

In 2030, park maintenance will become more efficient and thus less frequent according to students. Real-time data from sensors around the park will save energy and water by allowing maintenance to be performed only when needed by tracking the weather. In addition, a maintenance system will be able to monitor the health of plants and trees.



47 percent say robots and drones will be an important part of the maintenance work in the future

Almost half of the students want to use robots or drones to conduct park maintenance – 47 percent say robots and drones will be an important part of the maintenance work in the



Relief cut complete
in sector 23

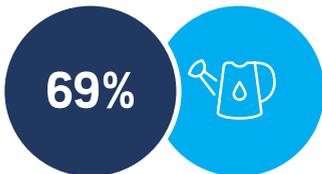


Machine maintenance
needed in sector 75

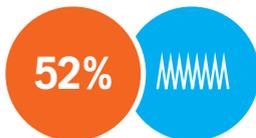


Sector 101 all done!

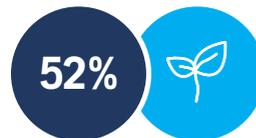
What kinds of new solutions and tools in maintenance would you be interested in using in your park? (Select as many as you want)



Water sensors and
automatic sprinklers



Automated
lawn care



Sensor based automatic
weed control



Sensor based
automatic fertilizing



Automatic hedge
care and shaping

“Have exhibitions on crucial ecosystems and allow people to learn and take part. For example, show how much rainwater the park has infiltrated, how many flowers the bee hives have pollinated, how the air would look without the park.”

Student in Stockholm, Sweden

SURROUNDING ONESELF IN EDUCATION

Real-time data and information about the park and its contents can also be made available to visitors, for example via their phones or other personal devices in 2030. This will enable people to learn more about what kinds of plants and animals exist in the park, how the ecosystems work, and how the park contributes to a better environment in the city.



98% are positive towards using new technology when designing a future park of their own

THE TOP FIVE DIGITAL INNOVATIONS STUDENTS WANT TO IMPLEMENT IN A FUTURE PARK OF THEIR OWN:

1. **64%** want to track the city health using sensors, e.g. by measuring air and water quality.
2. **63%** wish to track the park health using sensors, e.g. on trees and plants.
3. **56%** hope to collect data on people's movements in the park, to improve the park according to how people move in it.
4. **54%** desire to track the weather to see when maintenance is needed.
5. **48%** want to use activity based lighting that turns on when there's movement in the vicinity.

future. When asked to choose only one option from a list of professionals, volunteers, animals and robots and drones to do all of the park maintenance in 2030, as many as 29 percent of the students answered robots and drones.

Robots and drones, performing for example watering, lawn care, fertilizing, or weed control can be connected to systems keeping track of the sensor collected data and activated automatically when maintenance is needed.



This drone is a collaboration between developers at Sweden based company Pitchup and the Husqvarna design team. The drone can be equipped with a high resolution camera or a claw that can carry up to 4.5 kilo and has a maximum reach of 10 km or 35 min. The drone will be used by Husqvarna to evaluate new possibilities to improve professional landscaping.



COMMENTS FROM EXPERTS - Petra Sundström, Director, Group Connectivity Division, Husqvarna Group

Students want parks in the future to be technologically advanced, connected and intelligent – while at the same time being kept as “natural” as possible. What are your thoughts on this apparent contradiction?

I totally agree with them. I find no contradiction here as the technology we use every day now gets smaller, cheaper, more power efficient, flexible, more sustainable – even printable. Solar cells are improving, and innovative materials that are more sustainable and energy efficient are being developed. The technology in 2030 will be a lot more advanced, more sustainable and a lot smaller, meaning it will be able to blend in with nature to a much greater extent than today.

Students are very positive towards sensors and all that they can achieve, especially when it comes to tracking the health of the park and surrounding city. Is this an opinion that you share? Will everything be tracked in 2030?

In 2030 I totally agree that everything we today understand can be tracked also will be tracked, to which extend depends on the maturity and acceptance of citizens. We need to understand that the future does not just happen, and suddenly becomes something we didn't see coming. Researchers are years into our upcoming future already and by peeking into their world, we can get a hint of what our future will look like. Today researchers are looking at all kinds of new materials, sensors and system technologies. Looking ahead, we will for sure see smaller, cheaper, and more power efficient materials and sensor technologies, but we are very far from the computer master mind that will understand our every move and seamlessly adapt to our every wish and need.

Do you have any good examples of parks that really take advantage of the new possibilities that technology can bring, such as connectivity and using intelligent products? Why?

The robotic mowers that manage the lawn at Jönköping airport is a great example not at all farfetched for any park owner/care taker to pick up upon. But then of course the more and more pervasive technologies as used in attraction parks like Disney World. Also Pokémon GO is in fact a great example of how technologies such as Virtual Reality is now meeting the everyday consumer and connecting them to the world and parks they live in and near. Then of course there are also the giant solar parks now emerging, but that is a slightly different topic.



 Image: Park in financial center of Hong Kong, China

THE URBAN PARK OF THE FUTURE

533 students in landscape architecture and related fields were asked to describe their ideas for parks in large cities in the year of 2030. We combined their answers about how parks will be designed and used this information to envision the Park of the Future together with White Architects, one of Scandinavia's leading architectural firms.





A VISIONARY FORMULA FOR PARK MAINTENANCE



An important part in reaching the sustainable, inviting and productive parks that students envision for 2030 is developing and using the right maintenance tools and solutions. A one-size-fits-all solution won't be enough: the future of park maintenance needs to be as flexible and versatile as the parks of the future themselves.

Since the students that have contributed to this report were chosen due to their expertise in park design and landscape architecture, and not park maintenance, their input is limited on what new maintenance solutions and tools will be necessary to make the future parks they've designed become a reality. However, it is clear that they expect the park maintenance of the future to be silent, non-disturbing, effective and sustainable. Their park designs also demand solutions that are innovative in terms of which surfaces and environments they're meant to care for, since parks will be situated in new spaces and their nature will be increasingly diverse.

Considering the insights presented in this report, there are five important conclusions regarding how park maintenance will function in 2030.

MAINTENANCE SOLUTIONS NEED TO BE SILENT

77 percent of students want a future where parks are open for visitors 24 hours a day,

which means that parks will rarely, if ever, be completely empty of people. At the same time, a slight majority (53 percent) wish for park maintenance to be performed whenever it's

"Maintenance would be a community thing, either done by employed locals or volunteers. This would add to the community's sense of land stewardship."

Student in Guelph, Canada

"Volunteers should be able to pick up tools and help maintain the park at any time of day."

Student in Ithaca, New York

needed, to make it more sustainable and efficient. Visitors that are trying to enjoy nature and relax will have to co-exist alongside park maintenance, making it crucial

that maintenance tools do not disturb people or animals nearby. Since students prefer most areas of future parks to be silent rather than noisy, maintenance tools also need to be quiet.

SPECIALISTS WILL BECOME MORE IMPORTANT

In 2030, parks will look different than today and contain more diverse nature – both tall and low vegetation, hilly and flat areas, and dense as well as sparse nature. The most prominent material in future parks will be diverse and green nature such as trees, bushes, and tall grass. This suggests that park maintenance will require more specialists rather than generalists to be able to care for the increasingly varied nature in parks. A challenge will be to create a feeling of 'urban wilderness' which remains accessible, safe and inviting to visitors.

VOLUNTEERS WILL PLAY A LARGER ROLE

64 percent say parks will be in part maintained by volunteers from the community. To make

Who should perform the maintenance of your park? (Select as many as you want)

	Professionals	Volunteers	Robots, drones, etc.
Argentina	57%	64%	29%
Australia	59%	63%	39%
Belgium	69%	62%	31%
Brazil	68%	55%	23%
Canada	82%	66%	22%
China	68%	62%	66%
France	62%	57%	71%
Germany	62%	69%	79%
India	70%	69%	35%
Italy	76%	72%	55%
Japan	74%	66%	71%
Netherlands	64%	76%	32%
Spain	56%	56%	33%
Sweden	79%	50%	46%
United States of America	75%	56%	54%



this vision a reality, a number of questions need to be answered: What does this demand in terms of education and safety measures? Will everyone be able to take part in maintenance or only people living in the community surrounding the park? Where will the tools be stored and how will they be accessed by the volunteers? How can volunteers, professionals, and automated solutions work together?

AUTOMATED MAINTENANCE IS ESSENTIAL FOR SAVING RESOURCES

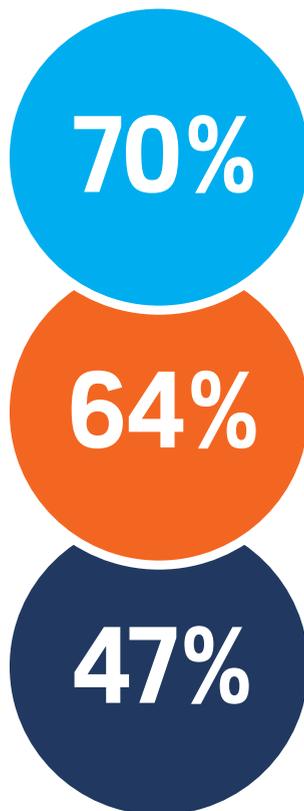
47 percent state that maintenance should be in some way automated and performed by robots and drones – 29 percent say that if they had to chose, maintenance should only be performed by robots and drones. There's an immense belief that sensor based automated maintenance solutions can save water and energy by only performing maintenance when needed.

The most important purpose of parks in the future will be to have a positive environmental impact on the surrounding city (92 percent of students express that it is key). How can technology and automated maintenance solutions be used to make park maintenance more efficient and sustainable? What maintenance tools exist at present that have the ability to tackle environmental issues in

the future? What technological developments are we lacking today? What new solutions are needed?

PARKS IN NEW PLACES DEMAND INNOVATIVE SOLUTIONS

90 percent of the students say that multifunctionality (i.e. that same areas can be used for a lot of different purposes) will be standard in park design. 91 percent claim parks will be integrated with residential and commercial architecture to a much greater extent. Parks will be situated on rooftops, walls, narrow alleys and even underground. New spaces require innovative maintenance tools that can be used on different surfaces.



70% say parks will be maintained by professionals together with volunteers from the community (64%) and automated maintenance solutions (47%)

“ Every space in the park will be monitored and notify staff if there is any maintenance that needs to be conducted. Automated watering of plants, automated cleaning of the park, etc. ”

Student in Delhi, India

“ The introduction of high-tech products, to reduce manpower, the use of artificial intelligence so that all continue to run automatically. ”

Student in Berlin, Germany



Image: The High Line Park, NYC



COMMENTS FROM EXPERTS - Kalle Lind, Director, Commercial Lawn and Garden, Husqvarna Group

What kind of implications will the future parks described by the students have on products and solutions? For example, they talk about creating an accessible “urban wilderness” with a very diverse nature, and parks in new spaces, such as rooftop gardens.

This will require more know-how and training for the Landscapers and Municipalities to establish and design the actual habitats, especially to do the right maintenance tasks at the right time. The maintenance frequency will be more extensive and mirror bigger more dramatic events in nature such as a droughts, wild fire or storms, which could mean complete renewal or regeneration. This could be left completely up to nature to manage, but it will of course require some new tools or work-techniques compared to the “light” monthly or quarterly maintenance tasks that are typical today.

How can technology and automated maintenance solutions be used to make park maintenance more efficient and sustain

The majority of all green space and park maintenance work today is done with tools and technologies from 1900-century, i.e labor or machine intensive solutions. Future green spaces will have autonomous and novel technology incorporated already in the design and physical planning when choosing the plants. This will simplify things and create a foundation for low maintenance techniques while enabling new automated technology to conduct some of the remaining maintenance tasks. And with sensors out in the field or as part of the infrastructure, the caretakers can gather data on both what and when the right maintenance needs are. Autonomous technology could even eliminate the need for caretaker oversight as it responds to changing conditions automatically. This could reduce and streamline the maintenance and energy consumption significantly. Areas where this will be rolled out first will be lawn cutting, fertilization and irrigation, but also potentially weed control. Considering that labor makes up around 60% of the maintenance costs for green spaces, the automatization of labor intensive tasks that are frequent and simple will go a long way towards reducing costs. Regarding the actual products and services, there’s a major potential to improve the uptime and customer performance with connected products and services.

Given the automation of park maintenance and intelligent maintenance products that the students envision, how will the landscaping work of 2030 have changed and evolved?

Firstly, we need to understand that a great part of current and existing green infrastructure is several centuries old, so that legacy will always be with and around us. However, the new parts and areas in the urban environment will make up and play a significant role in the bigger ecosystem, both in terms of generating clear air and also absorbing noise, dust, water, etc.

Over time will we face the same challenges as society as a whole, natural resources are scarce and the chemical substances and pesticide used to control weed growth will be banned. Future trends and opportunities will be aimed at managing the increased labor and space costs by utilizing the new technologies. Supplier will improve their customers’ performance and uptime with more responsive preventive services and training. The tools will develop to be more autonomous and energy efficient, but there’s also a great part of the infrastructure that still will require manual labor.



Image: Kowloon park, Tsim Sha Tsui district, Hong Kong



ABOUT HUSQVARNA



Husqvarna is a brand within Husqvarna Group. Since 1689, Husqvarna has manufactured high performing products and delivered industry-changing innovations such as anti-vibration and automatic chain-break on chainsaws, as well as the world's first commercial robotic mower. Today, Husqvarna offers a broad range of high performing outdoor power products for parks, forest and garden, and represents technological leadership in the key areas; chainsaws, trimmers, ride-on mowers and robotic mowers. Husqvarna products are sold in more than 100 countries, mainly through servicing dealers.

ABOUT HUSQVARNA GROUP



Husqvarna Group is a world leading producer of outdoor power products including chainsaws, trimmers, robotic lawn mowers and garden tractors. The Group is also the European leader in garden watering products and a world leader in cutting equipment and diamond tools for the construction and stone industries. The Group's products and solutions are sold under brands including Husqvarna, Gardena, McCulloch, Poulan Pro, Weed Eater, Flymo, Zenoah and Diamant Boart via dealers and retailers to end-customers in more than 100 countries. Net sales in 2015 amounted to SEK 33 billion, and the Group had more than 14,000 employees in 40 countries.



