IFLA EUROPE
INTERNATIONAL FEDERATION
OF LANDSCAPE ARCHITECTS

The role of Landscape Architects in Circular Economy and Climate Change

IFLA EUROPE
POSITION PAPER
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COLOPHON

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IFLA EUROPE POSITION PAPER 2021

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INTERNATIONAL FEDERATION OF LANDSCAPE ARCHITECTS

This Paper on Circular Economy is part of a series of position papers planned by the Professional Practice Committee of IFLA Europe and Vice President for Professional Practice Dr Katerina Gkoltsiou.

In preparing this paper we followed a structure that we wish to establish as a template and so provide some thoughts and guidance on issues that evolve with changing conditions on our regions and overall, on our planet. The document is being developed in several parts (or stages). It is to be considered a 'living document' and will require monitoring and updating as required to ensure the maintenance of technical knowledge in the chosen topics.

The IFLA EUROPE Climate Change Working Group
and colleagues of IFLA EUROPE
2021

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IFLA EUROPE INTERNATIONAL FEDERATION OF LANDSCAPE ARCHITECTS

FOREWORD

by **Katerina Gkoltsiou**
IFLA EUROPE Vice President for Professional Practice

Over the past decades, the European Union has put in place a broad range of environmental legislation to give more long-term direction towards a healthy environment stemming from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably. Among European Commission' s goals is *A new Circular Economy Action Plan - For a cleaner and more competitive Europe* which states that "scaling up the circular economy from front-runners to the mainstream economic players will make a decisive contribution to achieving climate neutrality by 2050 and decoupling economic growth from resource use, while ensuring the long-term competitiveness of the EU and leaving no one behind"(European Commission Communication COM(2020)98)

Consequently, the European Region of International Federation of Landscape Architects (IFLA EUROPE), – embraces the above goals in the new circular economy model and aims to present **the contribution of Landscape Architects to Climate Change adaptation and mitigation in relation to circular economy**. The particular position paper is the first from one series to follow, to present the value of landscape architecture profession, and to promote Landscape Architects' position in relation to Climate Change and Circular Economy.

This position paper has four (4) aims:

1. to clarify and analyse the crucial role of Landscape Architects in implementing holistic circularity concepts and the technical, analytical and scientific skill sets to serve and implement the Circular Economy model in landscape projects.
2. to present the importance of adopting the principles of Circular Economy in design and management of our landscapes.
3. to reveal our ideas about how we as Landscape Architects could influence policy mechanisms for implementing Circular Economy at European and global level and
4. to promote our positions in relation to the role of Landscape Architects in circular economy model.

In the 21st century, Landscape Architects are one of the most competent and eligible:

- to improve health and well-being,
- to understand and consider natural processes and as result to support Green Deal initiatives,
- to apply the principles of social, economic and environmental sustainability to landscape projects, seeking to avoid climate change and to manage microclimates,
- to enhance the value of the environment and implement resource management policies appropriately, utilising natural resources,
- to account for social context of landscapes including visual, environmental, access/use and heritage.

It is the right time to show our value and make the difference.

1. What is Circular Economy?

Many definitions exist for Circular Economy and as Landscape Architects, perhaps it is those definitions which inform us of our tasks as designers which are most relevant. The following provide some definitions as they relate to European and Global policy makers. We interpret our own meanings from these definitions and include the principles in our design, construction—and operational/maintenance plans for our designed, managed and associated natural or anthropogenic landscapes.

The European Parliament defines Circular Economy[1] in terms aligned to the Green Deal and the efforts to reduce our consumption of valuable resources and achieve a more responsible economic model.
In order to fulfil the ambitions of the Climate Change plans and Green Economy, Europe needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade.

The UN emphasizes the value of reusing products by giving the following definition of the Circular Economy "A circular economy entails markets that give incentives to reusing products, rather than scrapping them and then extracting new resources. In such an economy, all forms of waste, such as clothes, scrap metal and obsolete electronics, are returned to the economy or used more efficiently. This can provide a way to not only protect the environment, but se natural resources more wisely, develop new sectors, create jobs and develop new capabilities". (UNCTAD[2], 2021)

"The goods of today are the resources of tomorrow at yesterday's resource prices"

[1] https://ec.europa.eu/environment/strategy/circular-economy-action-plan_en
[2] https://unctad.org/topic/trade-and-environment/circular-economy

2. Landscape Architecture and its relation to Circular Economy

Landscape Architects plan, design and manage **natural, rural and built environments**, applying **scientific and aesthetic principles** to address the sustainability, quality and health of landscapes, collective memory, heritage and culture, and territorial justice. It is important to realise that as Landscape Architects we don't just individually deal with built environments, and their aesthetic but have **an inclusive vision to produce and build on behalf of the inhabitants**. We achieve this through the design processes and the management of the various ecologies according to scientific and social principles.

It is our mission as designers to assist in setting ***the Vision for a city or a region.***

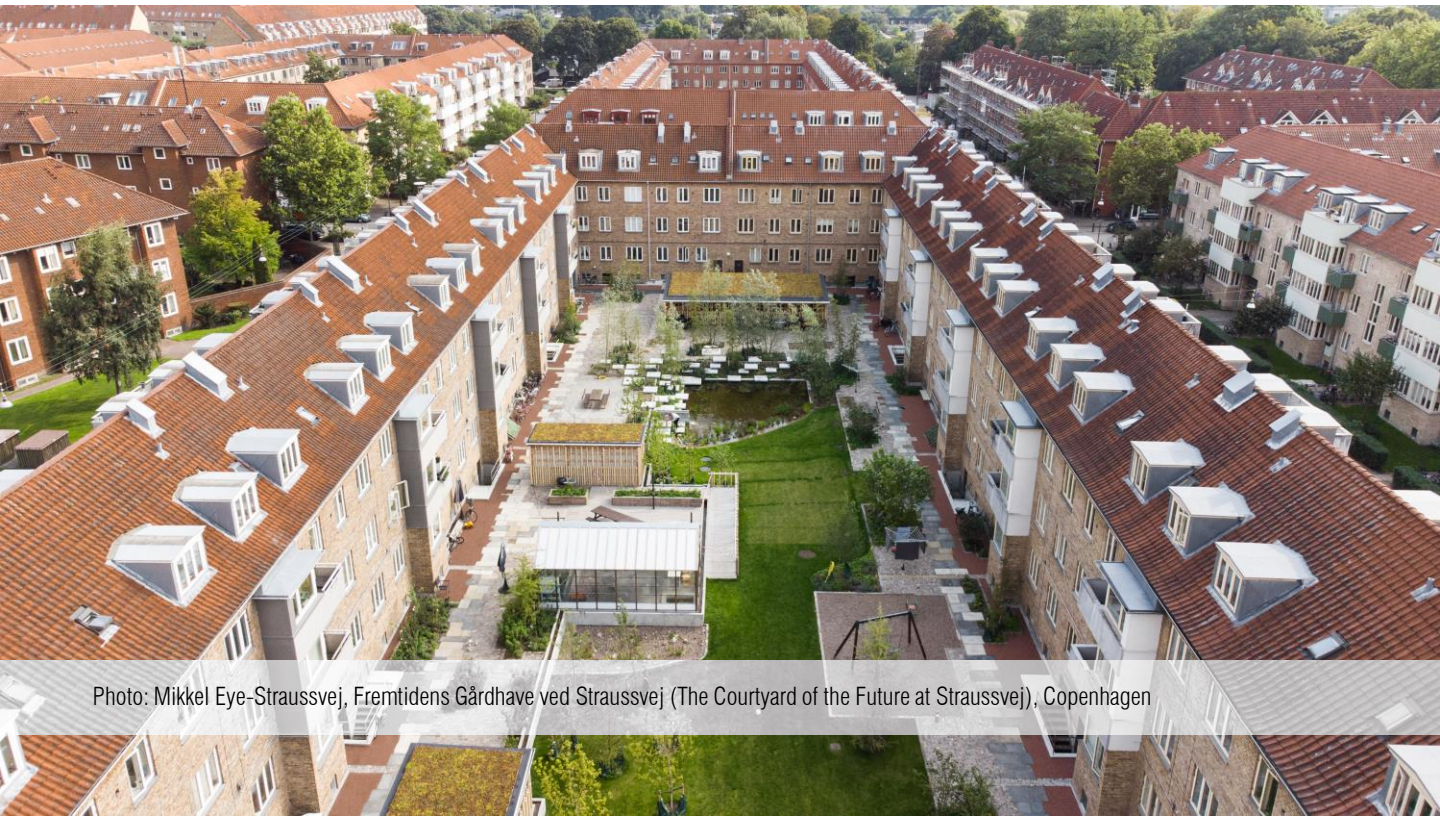

Photo: Mikkel Eye-Straussvej, Fremtidens Gårdhave ved Straussvej (The Courtyard of the Future at Straussvej), Copenhagen

So, as Landscape Architects we are able to assimilate the various components of our design and the receiving landscape/area/place and provide the 'tools' for realising the visions and needs of the population living with our designs. **Using materials in a creative and responsible way** is key to achieving these aspirations.

Though there are many materials 'at hand' and we may usefully summarise them for this initial Paper in the following categories:

Component	Forms	Expression in the landscape
Water	Freshwater/Seawater	Watercourses and reservoirs
Biological life	Plant, Animal, Fungi, Soil and variations	The visible 'Natural World'
Hard materials	Natural (Stone, Timbers) and manufactured (Pipes, Aggregates, Resins, etc.)	The built environment whether rural or urban
Other	Materials in all natural and manufactured forms including plastics, ceramics etc.	

These materials in a variety of forms are integrated in our anthropogenic landscape and appear throughout all forms of natural and built landscapes and seascape.

Our task includes the careful arrangement and use of these materials to serve both the needs of humanity but also of the other natural world.

The definition of Circular Economy is particularly relevant to our profession. An explanatory framework is given by our Member - the Association of Danish Landscape Architects. To foster a pan-European approach, we provide this Position Paper as an example and promote each IFLA Europe members National Associations and or region to develop their own response:

Circular Economy is the term used to describe an economic system in balance with nature, an economy which doesn´t extract or pollute more than systemically sustainable. Generally, Circular Economy operates with four principles for creating value by extending the lifetime of products or materials. These principles are here translated for use within the context of landscape architecture and construction (Andersen, et. al. , 2019).

The Inner Circle

The less change you need to apply to a site, to parts of a site - or the less you need to refurbish a structure or a material to reuse it - the higher the potential savings on energy, water and labour are. The keys to The Inner Circle are retaining existing project parts, for instance: plantings, soil, sub- or base layers, or entire paved areas, as they already are on site.

Long-Term Circulation

The longer a structure or a material can last, the fewer natural resources are needed in long-term perspective. Long- Term Circulation is ensured by designing and constructing structures in a way that allows for easy maintenance, partial replacement and eventual disassembly and recirculation. Long Term Circulation is any effort intending to prolong the lifetime of structures, and/or to minimize the resources needed for maintenance.

Cascaded use

Through light reprocessing or refurbishment, used materials or construction parts can extend their lifetime and be reused as parts in new projects. This keeps the materials in circulation, even in reshaped or refurbished forms, thereby minimising the need for extraction of new, virgin material resources and lowering the environmental footprint in general.

Pure Circles

If a construction material retains its purity and quality, it´s easier to reuse the material than if it´s been processed or mixed – for instance if it´s been coated or joined through casting or gluing. Pure materials often have a higher resale value, even often increasing value over time.

Having as such a knowledge that 'bridges' technical, analytical and biological skill-sets, Landscape Architects are able to coordinate, plan, design and manage **the interactions between the natural and cultural environments.** This combination of the skills and the ability to manage landscape 'sites' of all scales, presents Landscape Architects with the opportunity to play a crucial role in implementing **holistic circularity concepts.** Achieving this combination of design and site and respecting the 'Genius Loci' will be important requisites to achieving **adaptation and mitigation** related to current crises in climate change whilst providing a continuity and stability of ecosystems.

Photo: Mikkel Eye-Straussvej, Fremtidens Gårdhave ved Straussvej (The Courtyard of the Future at Straussvej), Copenhagen

In establishing a means by which we may live in a manner respectful of our use of materials and resources, **the creation of quality spaces and landscapes, can and does lead to improvements in socio-economic and community health and welfare.**

Our role as Landscape Architects makes us very competent in achieving this balance to fully assist the overall societal needs in tandem with a deep understanding of the physical and biological possibilities of our lands and landscapes. This is to the benefit of all society that we ultimately serve and a responsible way to manage the resources of our planet and respect all the vast array of life in its seas, lands and skies.

3. What does Circular Economy mean to us as Landscape Architects?

Circular Economy strives to minimise negative environmental impacts due to material supply and use through qualitative transformation in how we design our landscapes and the construction scenarios coupled with the closure and deceleration of material cycles.

Our designs and the landscapes we make, manage, and of which we are ultimately stewards, must be linked to the wider natural systems and a realisation that all things are interconnected. To realise sustainable policies and to ensure liveable cities, we need to include the principles of the Circular Economy in the how we 'cycle' these elements through society and focus on key issues such as:

- the reuse of buildings and products,
- the retention of materials within our systems and
- the use of products in a manner which ensures that the outcomes are healthy for both humans and the environment.

Therefore, we must consider the 'service life[3]' of the materials used in our projects and particularly those in 'constructed landscapes'. Our designs must be considerate of the principles of the Circular Economy and should be constructed and maintained (or not) in a way to ensure that our use of resources is optimised. This is to ensure that the supply of what now seems like common materials is 'circularised' and materials are 'cycled' through various projects, in a variety of forms.

[3] Note 'inverted commas' as this an interesting concept and one which project managers and decision makers will understand. Perhaps also to say the expected life is 'measured in geological periods and not annual reports, however, in convincing our clients (public or private) we must clearly state the management and maintenance and that 'whole life' costs may be less.

4. Applying the Principles of the Circular Economy

When applying the principles of the Circular Economy to our economic and value systems, **the focus must shift from a purely economic value** to **biological, cultural, and social values** and related issues. This is, of course, the subject of much research in how we can provide value in many ways through the projects we design and construct[4]. Moreover, the conceptual diversity must be promoted, and so an open dialogue with all concerned (clients, the communities and receiving population) is to be welcomed and carried out in a participative manner with the **Aarhus Convention** as a guiding principle[5].

The launch of **the New European Bauhaus Initiative** offers an opportunity for a participative approach to the many issues surrounding materials and their use by reference to the original concepts underlying the movement. The multidisciplinary approach, careful and creative use of materials and the value given to artisanship, must be part of the guiding principles of this New European Bauhaus and its timely realisation.

[4] Research on the use of Blue Green Infrastructure on Linear Infrastructural Assets including Roads and Transport Corridors, Powerlines, Waterways.
https://www.ciria.org/Research/Project_proposals2/Delivering_green_infrastructure_along_linear_assets.aspx
Research on the use of materials in Road Construction in Ireland
https://www.tii.ie/tii-library/conferences_and_seminars/tii-webinars/tii-webinar-5/TII-Seminar-CE-Jan-2021-v6-(002)-(004).pdf
[5] 'All at the table with equal eye level'. https://ec.europa.eu/environment/aarhus/

It is through such an active engagement between professions, economics, environment and participation of civil society that we can and will produce effective solutions. Cities, landscapes and infrastructures can serve as a raw material stock, could use more renewable energies and can effectively promote biodiversity. Such landscapes, areas and places sometimes are and surely must now be made for people, to foster the valuing of natural systems and ultimately inspired by nature. With each new intervention, we can ensure that the problem becomes more and more part of the solution. We must also ensure that the communities are at the centre of such interventions and that local knowledge and efforts are also 'circularised'.

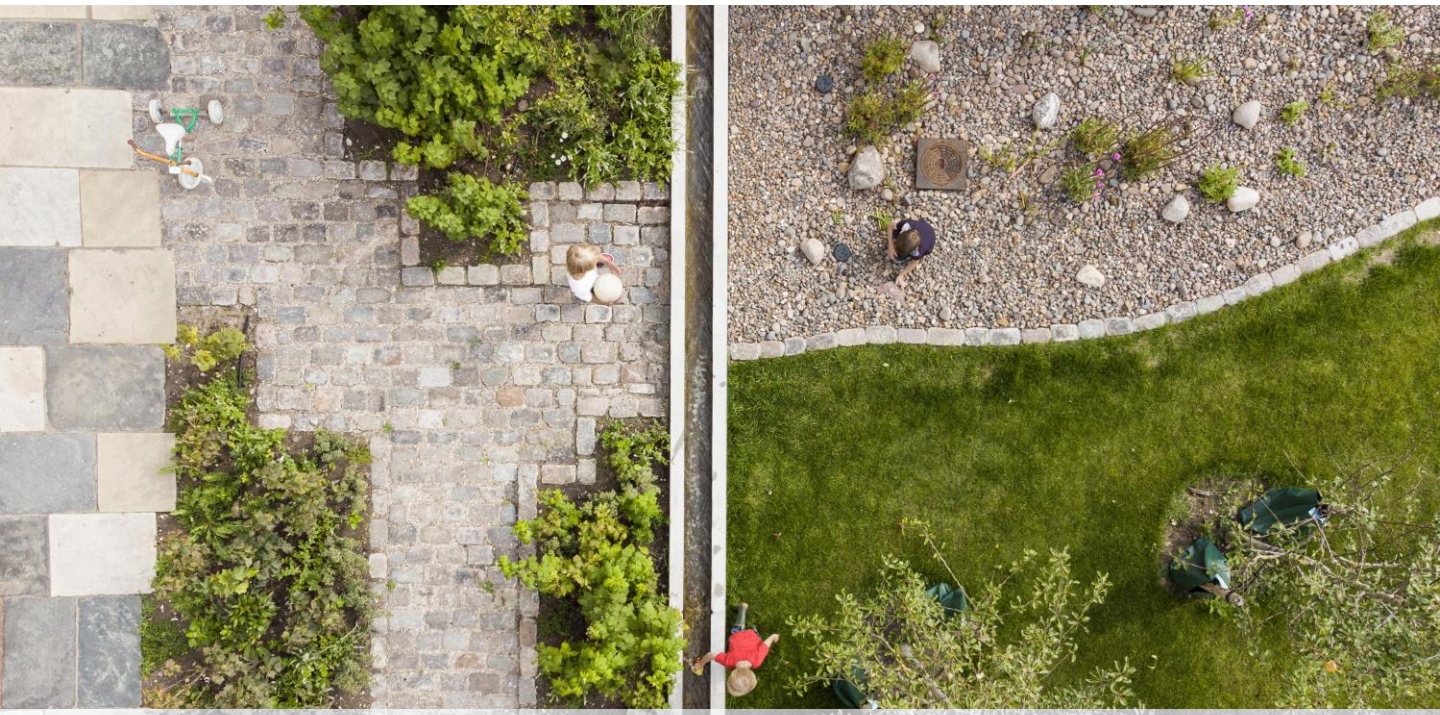

Photo: Mikkel Eye-Straussvej, Fremtidens Gårdhave ved Straussvej (The Courtyard of the Future at Straussvej), Copenhagen

As Landscape Architects, we can be a significant part of finding innovative solutions to the challenges of addressing material use in a creative way. **As a profession which includes such a diverse mix to include designers, scientists and planners/ managers, we are well suited for such innovative approaches.**

5. How can we influence the policy mechanisms for implementing Circular Economy at European and global level

As Landscape Architects, we may influence policy enabling better Landscape outcomes. Depending on our positions within private or public practice, we can both assist in forming and implementing good and resilient landscape policies. The focus of economic modelling is now also beginning to focus more on the resilient design and so the 'whole life' concept underlying our projects and concepts can inform such a change in 'assignment of value' i.e. the value placed on responsible use of materials or not in some cases.

Over the past decades the European Union has put in place a broad range of environmental legislation. **The 7th Environment Action Programme (EAP)**[6], aimed to give a more long-term direction, sets out a vision beyond that, of where it wants the Union to be by 2050:

"In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a safe and sustainable global society."

Among EAP's **key objectives** are:

- to protect, conserve and enhance the Union's natural capital
- to turn the Union into a resource-efficient, green and competitive low-carbon economy
- to safeguard the Union's citizens from environment-related pressures and risks to health and well-being

[6] https://ec.europa.eu/environment/action-programme/

The European Green Deal[7] Communication launched a new growth strategy for the EU that aims to transform the EU into a fair and prosperous society, by providing:

- fresh air, clean water, healthy soil and biodiversity
- renovated, energy efficient buildings
- healthy and affordable food
- more public transport
- cleaner energy and cutting-edge clean technological innovation
- longer lasting products that can be repaired, recycled and re-used
- future-proof jobs and skills training for the transition globally competitive and resilient industry.

As a result, the Council of Europe (CoE) and the European Union (EU) include the principles of the Circular Economy as a central aspect of the European Green Deal and related industrial strategies.

Their position on Circular Economy is outlined in CoE and EU Commission findings of December 2020.

Part of our current dialogue is to establish liaison with European wide institutions to ensure our profession of Landscape Architecture is assisting in leading the effort to implement Circular Economy principles in all aspects of our work and the wider civil society.

Our efforts as Landscape Architects are focusing on **'how we, as a profession, can assist the implementation of the Circular Economy in achieving the aims of the various policy aspirations in the wider Europe and beyond.**

The European Commission New Circular Economy Action Plan states that "scaling up the circular economy from front-runners to the mainstream economic players will make a decisive contribution to **achieving climate neutrality by 2050 and decoupling economic growth from resource use**, while ensuring the long-term competitiveness of the EU and leaving no one behind" (EC 2020)

[7] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

"This Circular Economy Action Plan provides **a future-oriented agenda for achieving a cleaner and more competitive Europe** in co-creation with economic actors, consumers, citizens and civil society organisations. The Plan presents a set of interrelated initiatives to establish a strong and coherent product policy framework that will make sustainable products, services and business models the norm and transform consumption patterns so that no waste is produced in the first place". (EC 2020)[8]

'Leading the way to a global Circular Economy: state of play and outlook'

The **UNEP** has outlined[9] the following in relation to the Circular Economy and our potential impact on achieving the Sustainable Development Goals (SDGs)

'Circularity and sustainable consumption and production are essential to achieving multilateral agreement, from the Sustainable Development Goals to the Paris Agreement to the post-2020 global biodiversity framework. Moreover, they are essential to a sustainable recovery from the COVID-19 pandemic.'

By adopting measures such as reusing and recycling materials in landscape projects, using wood and other natural materials through a sustainable forest management system, we are promoting 'circularity' in our thinking. Our projects can lead to better long-term landscape outcomes and ensure a responsible use of materials. This will add to the many ways in which we may address the current climate and biodiversity emergencies as it is understood that the functioning of natural systems relates directly to the success, or failure, of commercial agriculture viz. farming methods, land use, pollination strategies. We aim to influence these at regional, national, and local levels and promote and ensure the concepts are realised in our projects.

The list of policies outlined above, is by no means exhaustive but aims to highlight the most relevant and recent sources.

[8] https://ec.europa.eu/environment/pdf/circular economy/leading_way_global_circular_economy.pdf
[9] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN
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6. IFLA EUROPE Position

1. Recognising the importance of the Landscape Architect's skills[10]

The profession of Landscape Architecture is inherently connected to the implementation of Blue-Green Infrastructure (BGI) and Nature-based solutions (NbS) within the built and natural environment. The inclusion of these interrelated principles is a part of our holistic thinking and offers us unique opportunities to include circular principles.

IFLA EUROPE calls on the EU Institutions to recognise and promote the contribution of Landscape Architects to landscape projects as it relates to circular economy in all relevant legislation, standards and funding programmes.

2. Promoting the model of Circular Economy [11]

We would promote collaborations within and between professions as with the combined response of private practice members in the 'built environment' .

As a profession, we also promote behavioural change. We cannot achieve the aspirations of policies such as Circular Economy without changing our individual and therefore collective behaviour. In developing designs that are inclusive of local materials, respect for the locality and local populations, we can enhance the human experience of the urban and rural environments and ensure their comfort and resilience for all. We must remind ourselves of our humanity.

IFLA EUROPE calls for the principles of Circular Economy to be applied at all landscape project stages from the initial vision and strategy, the development of the concept and plans leading to the detailed design, specification and construction. The vision of the Circular Economy must continue to the use, function, operation and maintenance of our built and natural landscapes, where appropriate.

[10] https://iflaeurope.eu/index.php/site/news-single/report-urban-landscapes-and-climate-change-the-contribution-of-landscape-architects-to-improving-the-quality-of-life
[11] https://constructiondeclares.com/

3. Enhancing the circular principles in policy decisions

Circular Economy approaches can take effect in the various stages of a product's lifecycle. As a result, the products, processes, buildings, and cities will emerge, which are safe for humans, healthy for the environment and successful for business. Nonetheless, the achievement of circular principles can only be achieved if the policy decisions are transferred in social, relational, natural, and economic 'value-chains'[12] that include all the actors: government, industry, academia and civil society, ranging from international policies to local regulations.

IFLA EUROPE supports the collaboration among EU Institutions, National Associations, professionals from other disciplines, experts and citizens to make tomorrow's landscapes more sustainable, highlighting the value of simplicity, functionality and circularity of materials without compromising the need for comfort and attractiveness in our daily lives.

4. Providing financial support to research and innovation

Supporting research and innovation in the overlap of landscape architecture and Circular Economy should be among the priorities, for healthy and sustainable landscapes. The landscape architecture profession in Europe has much research potentials but needs support to develop its tools and services.

IFLA EUROPE calls for EU research funding programmes to provide sufficient finance to fund research and implementation of good quality landscape works thus improving the health and quality of life for residents and combating climate change; and to better target Landscape Architecture SME's and businesses, enhancing the collaboration with other disciplines.

[12] 'value' is not just monetary but measured as social and natural 'capital'
The 'chain' is the way in actual steps that we can implement the principles of BGI and NbS. e.g. who and what department of regional and local Government is responsible etc. along with the social and commercial stakeholders in the region or locality.

The greater common good cannot exist without the small things being attended to.

It is part of our nature as designers to 'be perfectionists'.

It is this need for attention to the details in our work and projects that can ensure that these global and regional concepts and policies are reflected in local and individual activities.

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ANNEX

The examples of Landscape Architects in Circular Economy by IFLA Europe member Danske Landskabarkitekter - Association of Danish Landscape Architects

CIRCULAR ECONOMY
IN LANDSCAPE ARCHITECTURE

D A N S K E
LANDSKABSARKITEKTER

2nd edition

Circular Economy in landscape architecture

By:
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Jan Støvring, MDL
Martin Hedevang Andersen, MDL
Torben Møbjerg, MDL

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Thank you to all contributors and partners

Preface

The Association of Danish Landscape Architects (DL) has a proud tradition of addressing socially relevant issues and influencing the development of our cities and landscapes. Today, the climate crisis is a burning issue, and the search for new solutions and methods for reducing our negative impact on climate is becoming increasingly urgent.

This makes it a particular pleasure for us to present an updated version of this publication – CIRCULAR ECONOMY IN LANDSCAPE ARCHITECTURE – that features more specific guidelines, additional sample projects and an English translation. The purpose remains the same, namely to inspire more landscape architects, colleagues and project partners to incorporate circular economy into their projects. It is clear to everyone that the circular economy is here to stay, and the present publication clearly demonstrates that as landscape architects, we are well prepared to act on this agenda.

We send a warm thanks to all the contributors to the publication and, in particular, to the other members of DL's Commitee for Circular Economy for their hard work and dedication. May the future bring more circular discussions, experiments and finished projects.

Martin Hedevang Andersen,
President of the Association of Danish Landscape Architects.

D A N S K E
LANDSKABSARKITEKTER

Introduction

Landscape architecture is green by definition, but we believe it can become even more environmentally friendly, resource-conscious and circular!

This conviction has served as the mantra for our work with this publication. As landscape architects and representatives of a green profession, we are already making a positive contribution to the green transition and the fight against climate change.

With our current resource consumption, we have already done irreparable damage to the planet we all share, which will affect both our own lives and the lives of future generations. The construction sector is responsible for significant levels of CO^2 emissions as well as a huge share of the waste generated globally. In the future, we need to do better.

Today, the construction sector operates with a linear economy, where resources are extracted, used and discarded. That leads to an untenable drain on the planet's resources, and we need to transition to a circular economy, where we keep the extracted resources in the cycle of materials. That calls for new methods, new approaches to design and the choice of materials, new, innovative products and, not least, inspiration and knowledge sharing across disciplines and professions.

These issues present a challenge to society as a whole, and the solution has to be found in an interdisciplinary partnership. As landscape architects, we are in a unique position, as we have a tradition for employing a circular mindset – we just need to recover that focus. For many years, for example, we have designed landscapes using 'building blocks' that can be disassembled, and we rarely need to join elements together using glue and other chemicals.

Moreover, our longstanding tradition for choosing materials that stand up to the elements gives us a keen focus on durability. As landscape architects, we are therefore ready to lead the way and demonstrate how we can embrace the perspectives of a circular economy – to inspire ourselves and each other and, just as importantly, society at large.

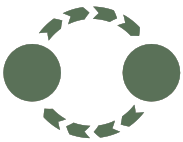
Enjoy!

The Association of Danish Landscape Architects, Committee for Circular Economy

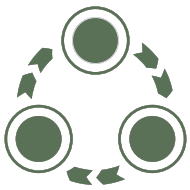
What is Circular Economy?

Circular Economy is the term used to describe an economic system in balance with nature, an economy which doesn´t extract or pollute more than systemically sustainable. Generally, Circular Economy operates with four principles for creating value by extending the lifetime of products or materials. These principles are here translated for use within the context of landscape architecture and construction.

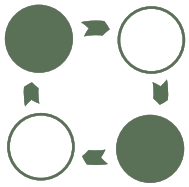
The Inner Circle
The less change you need to apply to a site, to parts of a site - or the less you need to refurbish a structure or a material to reuse it - the higher the potential savings on energy, water and labour are. The keys to The Inner Circle are retaining existing project parts, for instance: plantings, soil, sub- or base layers, or entire paved areas, as they already are on site.



Long Term Circulation
The longer a structure or a material can last, the fewer natural resources are needed in long term perspective. Long Term Circulation is ensured by designing and constructing structures in a way, that allows for easy maintenance, partial replacement, and eventual disassembly and recircuation. Long Term Circulation is any effort intending to prolong the lifetime of structures, and/or to minimize the resources needed for maintenance.



Cascaded use
Through light reprocessing or refurbishment, used materials or construction parts can extend their lifetime and be reused as parts in new projects. This keeps the materials in circulation, even in reshaped or refurbished forms, thereby minimizing the need for extraction of new, virgin material resources and lowering the environmental footprint in general.



Pure Circles
If a construction material retains its purity and quality, it´s easier to reuse the material, than if it´s been processed or mixed – for instance if it´s been coated or joined through casting or gluing. Pure materials often have a higher resale value, even often increasing value over time.

Photo: Schønherr

Køge Nord (Køge North)

Landscape architect: Schønherr
Location: Køge N (55.505194, 12.163750)
Completion from 2020

The purpose of the projects in Køge Nord (Køge North) is to store and purify rainwater from the new urban district that is under construction before the water is led into two natural recipients, the rivers Skensved Å and Snogebækken. The many component facilities in connection with pipe systems form the overall blue-green structure that is to serve both technical and recreational purposes for the coming district, that is expected to accommodate approx. 1600 homes when fully developed.

The design of the facilities aims to ensure soil balance and has thus been guided by analyses of the existing topographic, hydrological and nutritional conditions.

Plantings, which are an integrated part of water purification, have been established based on native species requiring extensive management, in some cases through entirely natural immigration and succession.
All the areas are open to the public and are designed based on site-adapted organic forms rather than rational technical geometries.

Photo: Schønherr

The Inner Circle

As much as possible, all soil is reused on-site. The available soil types are analysed and sorted based on structure and nutrition content, and landscape designs are adapted to the available amounts in order to maximize reuse within the project area. This effort alone has eliminated the need for more than 1,000 truck transports.

Long Term Circulation

Building components are designed for disassembly and ease of maintenance and consist of as few, and as pure, raw materials as possible. The use of edging and cast concrete is minimized, all paving is based on unbound substructures, and basin and bridge components are made in unfinished oak.

The plantings are established using native species and mainly based on seed mixes and bare root plants. Large sections are established based on natural immigration and succession. Management and maintenance of the plantings are extensive and low-frequency and are continuously adapted to match the condition of the facilities, fluctuations in weather or other seasonal variations.

Pure circles

All paving is established on unbound base courses and constructed of the smallest number of different materials possible.

Soil types are sorted and reincorporated into pure layers to prevent mixing and enable end-of-life reuse.

Wooden constructions use wood without impregnation/oil finish/paint and are assembled with mechanical joints. This facilitates end-of-life disassembly and enables the reuse of individual materials.

Photo: Schønherr

Køge Nord (Køge North)

Photo: Rambøll

Ålebækken Ruin Park

Landscape architect: Rambøll
Location: Lyngby-Taarbæk (55.799384, 12.496390)
Completed: 2021

A combination of a defunct sewage treatment plant left to nature, two new underground overflow basins and a desire from the client (Lyngby-Taarbæk Utilities) to open the area up to recreational use inspired the basic approach of viewing everything in the area as a resource.

The strong geometry of the former plant is preserved and transformed into spatial experiences and little gardens. Parts of the area are returned to the original wet terrain level in order to help the natural biotopes along the Mølleåen river re-establish themselves. Once the project is completed, the area will be opened to the public as a recreational element in cultural-historical context of the Mølleådalen river valley.

Throughout, the project was guided by a focus on maximizing the reuse of soil and constructions.

Photo: Rambøll

The Inner Circle

The existing concrete constructions from the sewage treatment plant were originally slated to be dismantled and removed as waste. By envisioning an alternative function to the original one, the project enabled the constructions to live on with a new purpose. Minor repairs and adaptations transform the site from posing a safety risk to visitors to adding an unusual recreational experience to the local area.

Long Term Circulation

In connection with the excavation for the two underground basins and the clean-up of pollution, just under 35,000 m^3 of soil will be removed. Aiming to maximize reuse, the project incorporates more than 85% of the excavated soil, in part as landscape solutions, in part as landfill in former basins. The polluted soil is used as deeper layers, while the clean, intact soil is used as top soil. The remaining 15% is removed due to its degree of toxicity.

The planting is selected to create a resilient foundation for a naturally developing vegetation with a wilder, natural expression. Thus, only parts of the area were planted, and the selected species already grew locally in similar biotopes. That reduces the need for management and any need to replace plants.

Rendering: Rambøll

Ålebækken Ruin Park

Photo: Julie Kierkegaard

Tuborg Beach Meadow

Landscape architect: Julie Kierkegaard
Location: Tuborg Harbour (55.722656, 12.581978)
Completed: 2021

On the former Tuborg brewery site, a nature area of more than 100,000 m^2 is established where the poor soil is used as the basis of a beach meadow-inspired landscape.

The area is part of open land near new residential developments but a also publicly accessible recreational area. It is designed as an undulating grassy landscape dotted with clusters of fir trees, oaks, and wild roses with a cover of herbs.

The rocky, depleted soil, which would normally have been removed and replaced with quality garden soil, has been reused, reducing the need for CO_2-emitting transport and natural resources.

The project has been developed through a longer collaboration between a landscape gardener and landscape architect, who has made it possible to test different soil treatment methods and herbal mixtures, to reach processes that with the least possible effort gave the greatest possible effect.

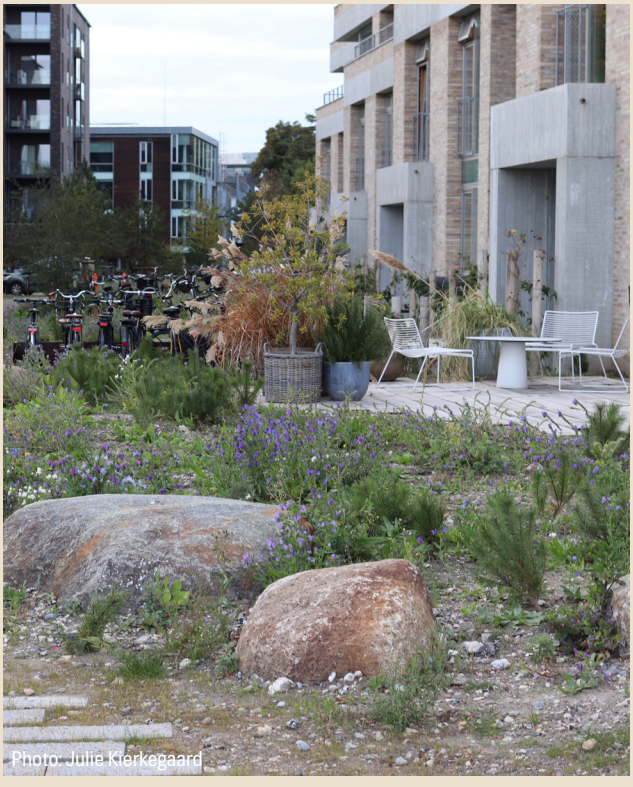


Photo: Julie Kierkegaard

The Inner Circle

Reusing existing soil has saved an estimated 4,000 lorry loads of soil that would have needed to be removed or added.

Ahead of the final choice of method for soil treatment and the specific herbal mixture, a test area was established in which the existing soil was used as a growth medium respectively with and without the largest of the stones and mixed with sand in varying degrees.
The sand was leftovers from constructions of housings close to the sea in so-called 'cofferdams'. Different herbal mixtures were tested. When choosing the final solution, the focus was on the relationship between the least possible preparation and the greatest possible effect.

Long Term Circulation

Sowing herbs in the poor soil is expected to require less management than if the soil had been richer.

Photo: Julie Kierkegaard

Tuborg Havn

Photo: Mikkel Eye

The Courtyard of the Future

Landscape architect: BOGL
Location: Copenhagen S (55.648981, 12.530357)
Completed: 2020

The courtyard garden turns the challenge of rainwater into a valuable resource for the residents by creating effective and visible rainwater solutions that form beautiful garden spaces for community, play and sensory experiences.

The courtyard garden turns materials that are normally regarded as waste into a new beautiful courtyard design to the benefit of the residents of the housing blocks. The courtyard garden is built of reused construction materials and thus helps the city avoid waste, reduce the consumption of shared resources and reduce CO^2 emissions. The courtyard garden was developed in a co-creative innovation process with the residents and the City's courtyard team.

The process made the residents co-creators of the solutions and generated strong support and a sense of shared ownership for the courtyard design.

Photo: Mikkel Eye

The Inner Circle

The courtyard design is based on a soil balance where the existing soil is sufficient for the vegetation, which eliminates the need to add new soil.

Long Term Circulation

Recycled wood is used for terraces, facade cladding, sheds and benches. The wood for terraces and stairs is preserved using thermal modification instead of traditional treatments. This means the wood is free of toxic chemicals and easier to reuse.

Cascaded use

The courtyard's climate border, which collects rainwater and leads it into the small courtyard lake, is made of recycled concrete, a mix of crushed used concrete and new concrete. Wood reused as cladding on sheds has been charred with fire, which protects the planks from rot and drying. The aesthetic and natural footpaths paving uses recycled setts, cobblestones and slate.

Pure Circles

As much as possible, the courtyard design uses pure materials that can be taken apart and reused, including with unbound joints and base courses.

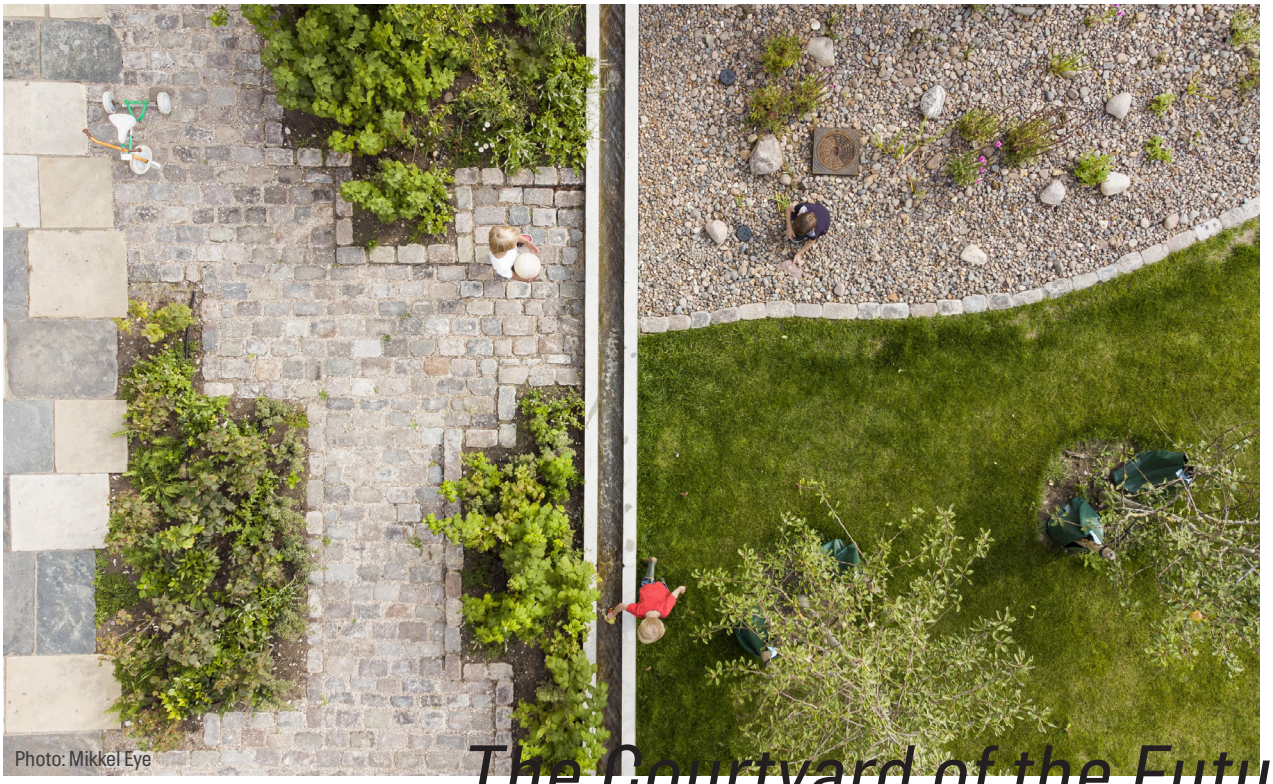


Photo: Mikkel Eye

The Courtyard of the Future

Photo: Mikkel Eye

Nordre Fælled (North Common)

Landscape architect: ORCA/Out of Office Architecture
Location: Ørestad, Copenhagen (55.626034, 12.571710)
Completed: 2020

At Nordre Fælled (North Common), three vacant plots have transformed into a temporary nature project.

The project includes the establishment of a sunset spot towards the common, an observation post next to it and an expansive, hilly landscape with sheltered spots.

New embankments towards Hannemanns Allé dampen traffic noise and block the light from passing cars. The embankments are planted with willow saplings, and wildflowers are sown in the hollows in between the hills.

Benches made of former quay stones with larch planks as seats offer a place to pause and rest. Finally, an urban garden has been established where local residents can grow vegetables among large reused concrete slabs.

Photo: Mikkel Eye

The Inner Circle

From the outset, the project aimed to use the materials that are available on site, and thus the terrain was landscaped using existing gravel materials. The plants are mainly planted in gravel; only where it was absolutely necessary has garden soil been added, for example in the urban gardens. To create a softer boundary, the planting is based on the natural vegetation in the abutting Amager Common Nature Reserve.

Long Term Circulation

The planting is based on nature's own processes and aims to maximize environmental economic savings by sowing seeds and using saplings rather than purchasing plants. Large areas have been sown with a diverse meadow mix, with resilient grasses used in more exposed areas with particularly poor soil. Furthermore, willow saplings have been planted to ensure quick growth.

The planting was also selected with a view to minimizing management. It requires no particular care and is allowed to develop at its own pace.

Cascaded use

All the design components, including benches, paving stones and rocks, come from the stores of CPH City and Port Development, minimizing the need for virgin materials. The unique benches were designed specially for the park, drawing on a large store of quay stones from the Copenhagen Port. The result is a robust bench with a unique Copenhagen history.

All the elements are placed or installed in a way that makes it easy to remove them from the area and reuse them in other contexts and settings.

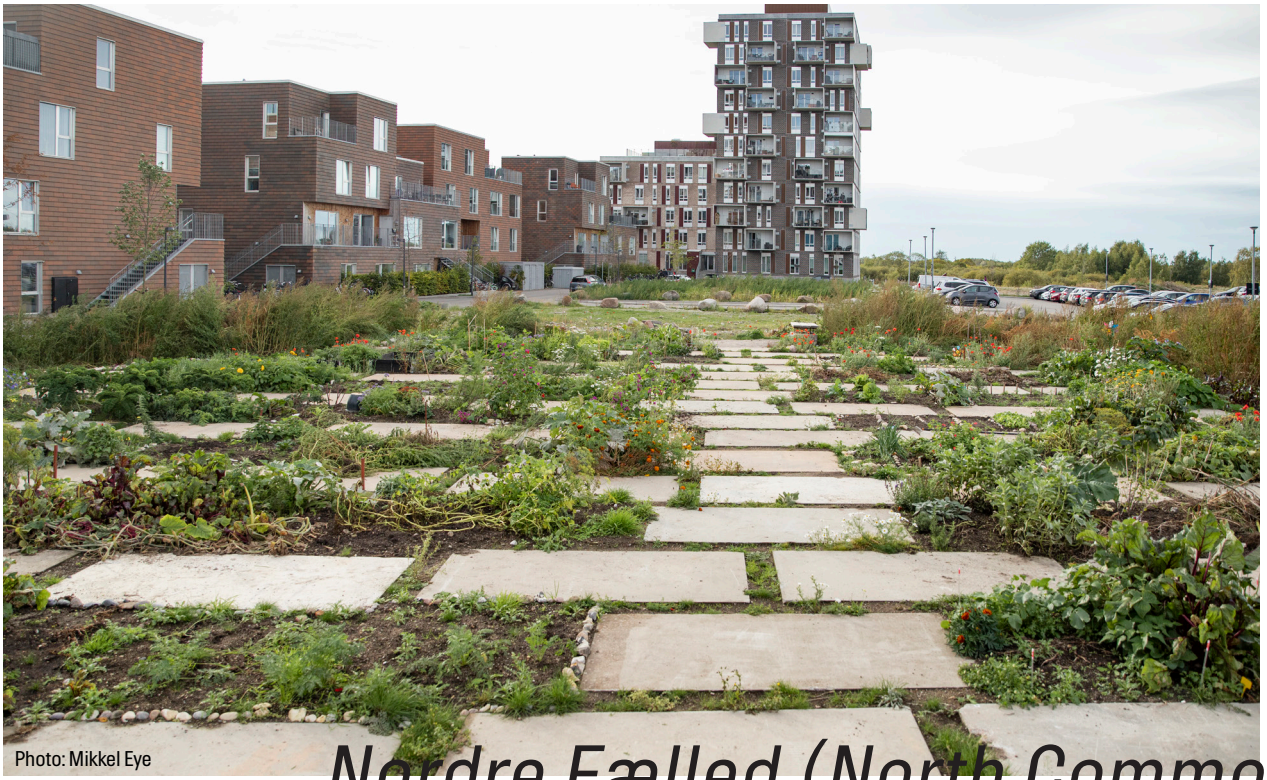


Photo: Mikkel Eye

Nordre Fælled (North Common)

Photo: LYTT Architecture

Christiansborg Palace Square

Landscape architect: LYTT Architecture
Location: Copenhagen K (55.676126, 12.581620)
Completed: 2019

The design of the security measures at Christiansborg Palace, which is the seat of the Danish Parliament, the Prime Minister's office and the Supreme Court, was guided by a conviction that sustainability must be site-specific. This design philosophy promotes recycling and the deliberate choice of robust quality materials with a long lifespan as well as a focus on a timeless design and a painstaking construction process.

The geometry of the square is defined by an arc with 85 granite spheres. The spheres are carved out of the same light-coloured Nordic granite that is used in Christiansborg's facade. The slope of the square gives the place a more supple character, and the calm surface with its new paving has given it a more coherent appearance.

A complicated task with relevance for Danish society has been addressed with landscape solutions that combine artistic and pragmatic qualities with the goal of maximizing the added value.

Photo: LYTT Architecture

The Inner Circle

The use of existing resources requires close attention from the initial project stages and remained a key focus throughout the process: the square is paved, in part, with cobblestones that were reused from the previous pavement. Existing granite steps along Christiansborg's main facade were similarly re-incorporated into the design. Furthermore, the base course was reused after simply being re-established and adapted to the new slope.

Long Term Circulation

The new square is paved with 200,000 cobblestones. To have enough cobblestones for the project, the existing granite materials were supplemented with recycled stones from the stores of the City of Copenhagen.

Cascaded use

Before the square was cleared, the granite tiles, flagstones and other paving materials were registered with a view to subsequent sorting. Any stones and slabs that were not used in the project were warehoused by the City of Copenhagen. Thus, all granite materials were either reused locally or stored for later use. The cobblestones were largely reused 1:1. Some of the granite paving stones along the facade were individually adapted to the new paving project and thus achieved an extended lifespan.

Pure Circles

The paving is set mainly in gravel and pointed with unbound gravel materials, which makes it easy to take up and reuse the materials in other contexts. When granite materials, such as cobblestones and granite slabs, are set in gravel, they can, in principle, be reused endlessly, and they only get more beautiful with time.

Photo: LYTT Architecture

Christiansborg Palace Square

Photo: JJW Architects

Hempel Student Residence

Landscape architect: JJW
Location: 55.785138,12.512522, Lyngby
Completed: 2017

In connection with the construction of a new student residence facility at the Technical University of Denmark (DTU), a multi-level planting strategy was implemented that works on several levels: preservation of as many existing trees as possible; interwoven structure of buildings and vegetation; new planting as well as the reuse of wood from the trees that – despite the original intentions – could not be preserved.

The student residence, whose facades are made of reused bricks, currently houses about 200 students.

The landscape design features new planting that, in combination with preserved trees, creates green surroundings close to buildings with courtyards that open towards the greenery, which simultaneously is supported by the path and the rainwater ditch.

Photo: JJW Architects

The Inner Circle

Many of the approximately 50-year-old oak trees were preserved through a persistent focus throughout the process, from the architectural competition to the realization.

The developed tree strategy preserves: Trees along the southern edge of the plot to ensure that the residence is framed by trees; Trees placed by the openings of the buildings to make the forest character enter the buildings; Trees inside the buildings which can help to ensure DTU's identity, coherence with the surroundings and anchoring.

The trunks of oaks with a total length of approximately 450 running meters were dried during the construction process and later cut up to be reused in the landscape project in the form of oak paving discs, posts and stumps for sitting on and as a terrain wall.

Long Term Circulation

Most of the green areas near buildings are covered in extensively managed grass and herbs, which reduces the environmental impact of the ongoing management.

Photo: JJW Architects

Hempel Student Residence

Photo: SLA / Magnus Klitten

Andreas Steenbergs Plads

Landscape architect: SLA
Location: Horsens (55.862871, 9.837810)
Completed: 2017

The transformation of a former bus terminal has created a new, dynamic urban space in the centre of Horsens with cosy and pleasant places to hang out, varied planting and paving made of recycled materials that links the street level to the roof a car park.

The new lighting, planting and paving combine to form a pleasant microclimate, a green environment and sensory stimulation in the area. Part of the green oasis is established on the roof of the new-built underground car park.

A sloping design connects the private rooftop garden with the public square and evens out the difference in levels between the roof and the street in an undulating terrain that creates a natural transition to the rooftop, encourages play and provides a range of design options for the expression of the paving.

Photo: SLA / Magnus Klitten

The Inner Circle

Reusing the existing paving and base course materials has been a key idea throughout the project. Cobblestones, setts, mosaic stones, flagstones, kerbstones and granite blocks from the former bus terminal were reused in the new urban space but in new combinations that give rise to a brand new expression.

Long Term Circulation

The use of granite materials creates a robust and durable urban space. In connection with roadworks, the paving can be easily repaired with good results.

Cascaded use

Reused local materials include stones from the quay on the inner harbour in Horsens and granite paving stones from the now defunct Ceres brewery. In addition to contributing to reuse, the materials also tell a story unique to Horsens. Left-over stones from projects in the nearby Kongensgade street and Vitus Berings Plads square have also been incorporated into the new urban space.

Pure Circles

All paving has been made using unbound joints and unbound base courses, except just around the water feature.

Photo: SLA / Magnus Klitten

Andreas Steenbergs Plads

New contribution

Contact the secretariat of Danish Landscape Architects on DL@landskabsarkitekter.dk for more information.

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