



Copenhagen  
Carbon Neutral  
by 2025

# COPENHAGEN CLIMATE RESILIENT NEIGHBOURHOOD

KLIMAKVARTER.DK





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Carbon Neutral  
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May 2013

“In the future we will get more rain, higher sea levels and warmer weather. This presents Copenhagen with a number of challenges. We must meet the challenges now. In St. Kjeld’s Neighbourhood we will work particularly on adapting to climate change with the use of blue and green elements in the urban space, which will make Copenhagen an even greener and more attractive city to live in.”

Ayfer Baykal, Mayor,  
The Technical and Environmental Administration,  
the City of Copenhagen

KLIMAKVARTER.DK is a project run by the City of Copenhagen. It is a cooperative venture between the Park and Nature Department, the Integrated Urban Renewal in St. Kjeld’s, Urban Renewal, HOFOR and Environmental Centre Østerbro.

All illustrations have been done by the architects TREDJE NATUR



# COPENHAGEN'S FIRST CLIMATE RESILIENT NEIGHBOURHOOD

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Vision of St. Kjeld's Square.

# COPENHAGEN CLIMATE RESILIENT NEIGHBOURHOOD

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Greener streets, front gardens in full bloom, abundant wildlife and green solutions to lead the rainwater away from the neighbourhood.

These are just some of the projects we hope to implement in the St. Kjeld's Neighbourhood in Østerbro in the coming years to make the neighbourhood more resilient against coming climate changes like strong and heavy cloudbursts. Adapting to climate change and the development of an attractive and green city will become two sides of the same coin.

In this folder, you can read about the background of the project and see the proposals for the streets and public spaces in the neighbourhood.

We are looking forward to turning St. Kjeld's Neighbourhood into the first neighbourhood in Copenhagen with focus on innovative climate adaptation.

[KLIMAKVARTER.DK](https://www.klimakvarter.dk)

- MAIN WATER CHANNEL
- WATER COLLECTION PIPE
- TUNNEL
- EXIT TO THE HARBOUR
- WATER CATCHMENT AREA
- FOCUS AREA



**The water's way to the harbour.** St. Kjeld's Neighbourhood is located in Østerbro, north of Fælledparken. We will secure an entire neighbourhood against the effects of torrential rain by creating channels in the streets that will lead large quantities of water to the harbour where it will do no damage.

# WHY ADAPT?

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The climate is changing. We can expect more rain in the future and cloudbursts such as those Copenhagen has experienced the past two summers: rain in such large quantities that the sewer system cannot handle it and our basements are flooded.

Enlarging the sewer system so that it can cope with every possible rain event will be an expensive solution, which would cause construction works for a large part of the city for decades without any further benefits.

Instead, in St. Kjeld's Neighbourhood we want to secure the city against the heavy rain with green solutions at street level. Solutions that create lush, beautiful urban spaces while effectively leading water from cloudbursts away from our neighbourhood to areas where it causes no damage.

Cloudburst solutions can be green streams in the widest streets of the neighbourhood or it could be new cycle tracks, which can also serve as channels leading large quantities of water from the neighbourhood to the harbour when there are no bikes.

At the same time, we will create local solutions such as rain gardens which can detent water, water towers to store water and greener courtyards that contribute to retaining the water. This reduces the pressure on the sewer system from intense daily rain.



Bryggervangen

St. Kjeld's Square

Tåsinge Square

Bryggervangen

# GREENER STREETS AND IMPROVED URBAN SPACE

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St. Kjeld's Neighbourhood has been chosen as an exhibition area for climate adaptation in the City of Copenhagen. There are several reasons for this particular part of Copenhagen being chosen. One of the most important is that the neighbourhood has wide streets and a lot of asphalt.

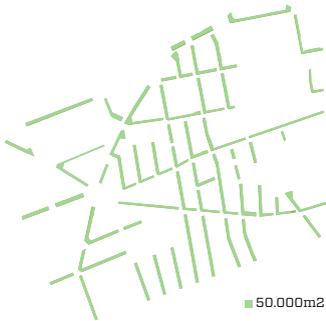
It is our vision, that 20% of the covered surface area in the neighbourhood should be turned into green areas and that 30% of the daily rainwater should be managed locally and not end up in the sewer system. We want to find the most innovative and effective solutions for climate adaptation of urban spaces and enclosed courtyards together with the residents of the neighbourhood.

The project started in 2012, focusing on St. Kjeld's Square, Tåsinge Square and Bryggervangen. The goal is to officially open the first squares in 2015/2016 at an international conference on climate adaptation in cities. In this way, the climate adaptation solutions can serve as a source of inspiration for the creation of greener streets and improved urban space throughout cities around the world.



## 270.000 sqm

is the road surface area in St. Kjeld's Neighbourhood today. The streets are much wider than necessary to be able to handle the local traffic.



## 50.000 sqm

of green spaces can be created if we design the streets according to current standards - with traffic in both directions and the same number of parking lots as today.



## Better urban life

In this way we create space for green corridors, roadside trees, front gardens and thriving urban space without losing a single parking lot.

# THERE IS ROOM FOR IT

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A characteristic of the St. Kjeld's Neighbourhood is that there is a lot of asphalt. The streets appear too big in some places, and there are areas where the broad streets seem empty and unfinished.

The road surface area in the neighbourhood today covers 270,000 sqm. The roads do not need to be this wide in order to be able to handle local traffic. By designing the streets in new ways we can liberate an area of 50,000 sqm which can be transformed into thriving urban space with green streets, front gardens, street trees and rain gardens.

An overall analysis shows that the roads on average can be narrowed by 20% and still meet the required standards. We can therefore reduce the road surface area by a fifth, and at the same time improve the urban space for pedestrians and cyclists. This can be done without losing a single parking lot and buses and cars will have the same access to the neighbourhood as today.

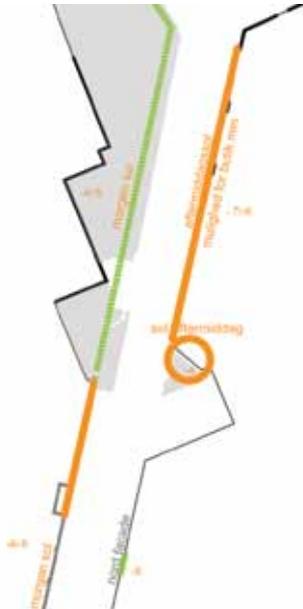


Asphalt. Bryggervangen at Landskronagade today. From grey surface to green urban space.



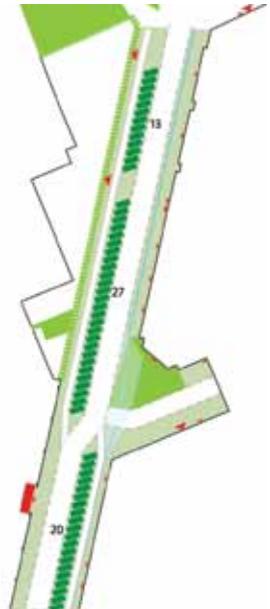
### Bryggervangen at Ourøgade

Today Bryggervangen is a wide street with parking lots on both sides – also on the sunny side.



### Sun and shadow

The public space can be improved by concentrating parking in the shadow, along offices and supermarkets.



### Suggestion

This way it is possible to liberate some space for a green recreational area on the sunny side of the street where people live without reducing the number of parking lots.

# THE OPTIMAL URBAN SPACE

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The architects TREDJE NATUR have been working on optimizing the design of St. Kjeld's Square, Tåsinge Square and Bryggervangen based on an analysis of the existing urban conditions and potential. It is a complex work, which contains many layers, including:

**Light.** Where are the sunny spots and which corners have potential to become green areas?

**Entrances.** How can we create meeting places and recreational areas where there is most activity and people live?

**Traffic.** Where is the traffic today, and is it possible to narrow down individual streets and still handle the traffic?

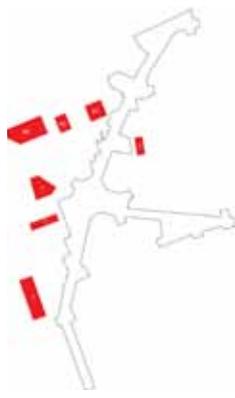
**Cables and pipes.** The ground contains a maze of sewers, water pipes, electricity, telephone and computer cables, which can be a challenge for creating green spaces in some places.

**Terrain.** Where does the water flow naturally and what size should the channels and rain gardens be to handle it?

The following diagrams show some of the architects' preliminary analyses. The project proposals, which follow, show how we can create a green neighbourhood with improved urban space and sunny green corners, while maintaining room for buses, cars and parking.



Parking 2012



Parking underground



Parking 2015



Future parking associations



Bike lanes



Entrances



Offices and shops at street level



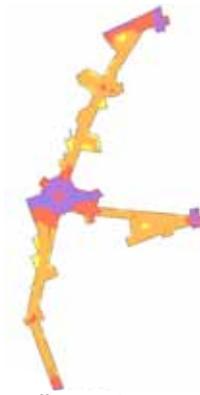
Underground pipes



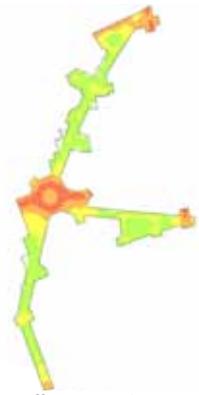
Potential project areas



Residences with lack of installations



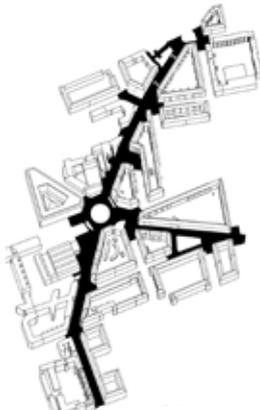
Traffic noise - day



Traffic noise - night



Dimensions



Hard surfaces 2012



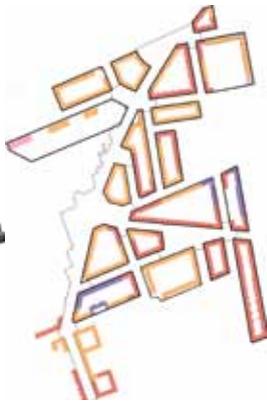
Streets 2012



Streets 2015



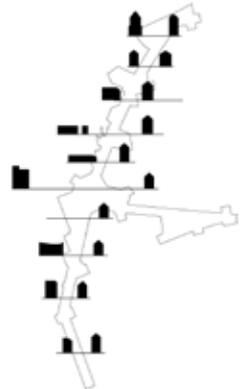
Shadow



Ownership



Sections



Building profile



Green elements 2012



Green enclosed courtyards 2012



Potential green facades



Enclosed courtyard entrances



Bryggervangen today



**Bryggervangen at Landskronagade.** Improved urban space on Bryggervangen can create local meeting places along the green stream.

# BRYGGERVANGEN

## THE GREEN STREAM

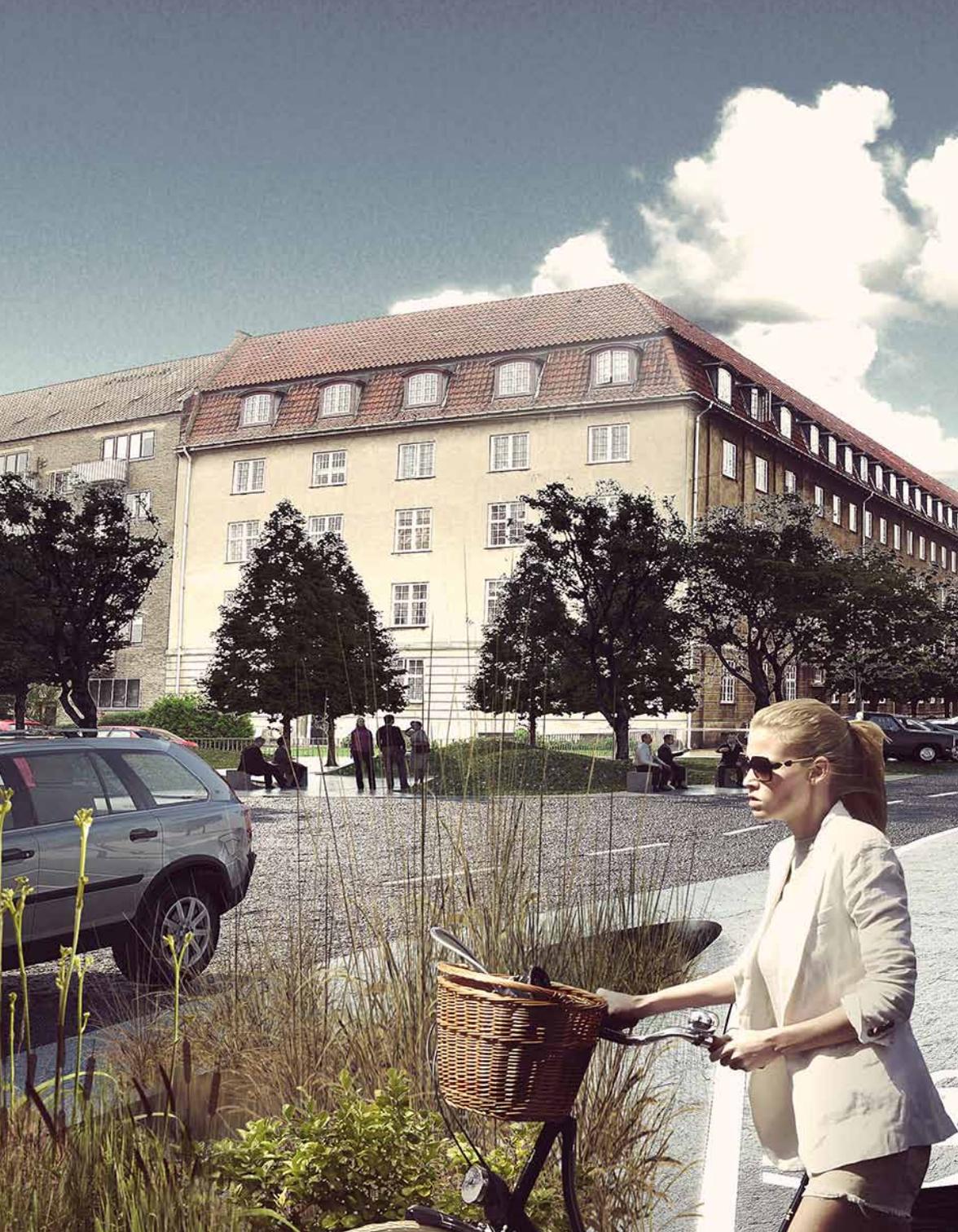
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The intersection where Bryggervangen meets Landskronagade is a spot that is characteristic for the St. Kjeld's Neighbourhood. There is so much asphalt in this place that many people lose their bearings. To remedy the confusion of pedestrians, cyclists and motorists a large asphalt area has been painted with white stripes. The intersection is an obvious place to make a beautiful green urban space while handling the traffic effectively.

At a stretch of about 500 meters there are office buildings on one side of Bryggervangen and housing associations on the other side. Today there are parking on both sides – also on the sunny side.

To create space for a better urban life, parking can be moved to the shady side and be placed next to the office buildings. This means that the residents can step straight into a green space when leaving their home.

By designing Bryggervangen this way, we can create a green stream through the neighbourhood, making the street lush and able to channel the rainwater to the harbor during a cloudburst. On selected corners the stream can spread out, for example where Bryggervangen meets Landskronagade and contribute to a new green space for the residents.







St. Kjeld's Square today



**St. Kjeld's Square.** The proposal is inspired by the dead ice landscape - a Danish cultural landscape with characteristic depressions in the surface. Here nature can break through the asphalt.

# ST. KJELD'S SQUARE

## THE GREEN HEART OF THE NEIGHBOURHOOD

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Today, St. Kjeld's Square is a large roundabout. This is where the neighbourhood's intersecting roads meet around a group of beautiful old trees. The street area in the roundabout is 13 meters wide today - three times as wide as traffic actually requires. This means that many motorists drive too fast, and the residents are cut off from using the green area in the middle.

The square is the natural centre in the neighbourhood, and St. Kjeld's Square can become the green heart of the neighbourhood: an urban space, where the green elements are allowed to expand, and where there is still room for traffic. It will become an accessible green landscape where the sound of splashing water will drown out the traffic noise.

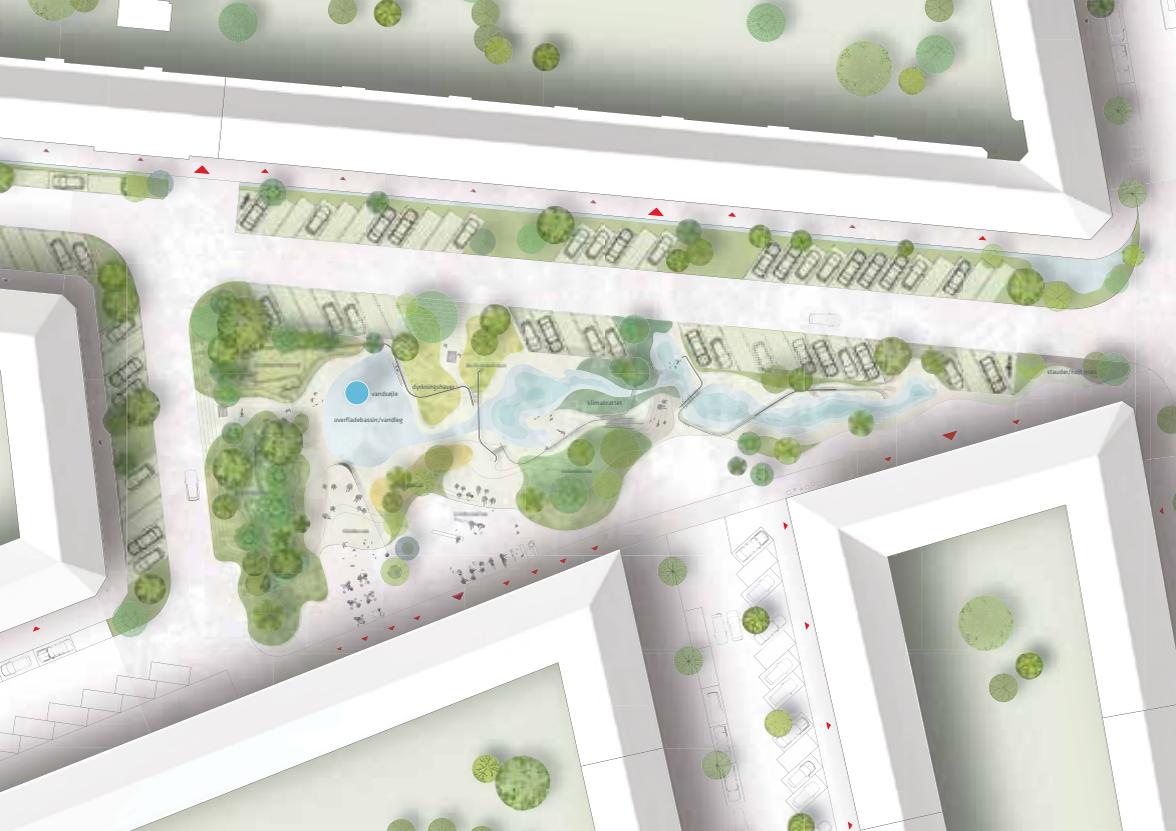
Because of its central location and its vast size - 8000 sqm - St. Kjeld's Square has the potential to become a leading example of how we adapt our urban spaces to climate change in new and innovative ways.







Tåsinge Square today



**Tåsinge Square.** From a pointless expanse of asphalt to a refreshing green area.

# TÅSINGE SQUARE

## LOCAL MEETING PLACE AND GREEN OASIS

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Today, Tåsinge Square is an overgrown bunker, rarely used by residents living around the square. The green area of the bunker is surrounded by beautiful buildings and sunny most of the day, which is why Tåsinge Square has a great potential to become a green venue where local cafés and cultural life can thrive.

Tåsingegade, Ourøgade and Langøgade meet at a large area next to the bunker, which is a confusing and unsafe spot to navigate in. It is an example of an asphalt area which not only serves no purpose, but actually disrupts traffic. By rearranging the traffic flow, we can create a green area of over 1.000 sqm without losing any parking lots.

We can create better conditions for motorists, cyclists and pedestrians by closing Langøgade where it meets Tåsinge Square and expanding the green area. In the future the existing shopfront will face the green space, and Tåsinge Square can be a vibrant and attractive place to meet: an urban space with ample room for dog walkers, city gardens, benches and children.



OWN.

1000  
1000  
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1000



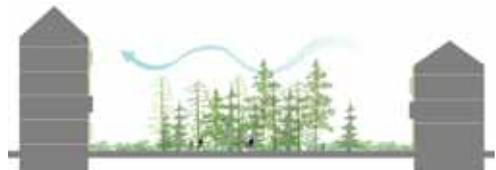
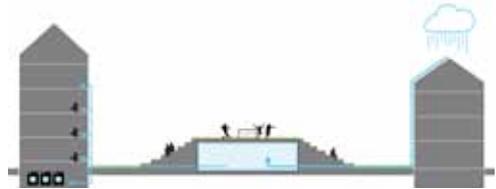
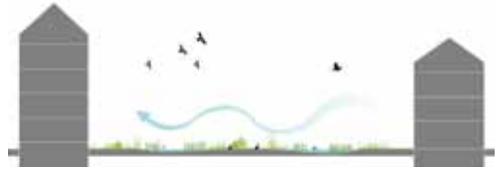
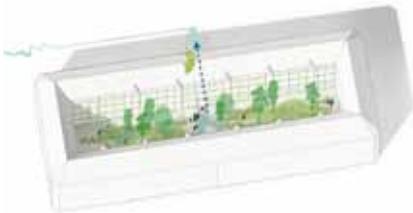
## Large enclosed courtyard

In a large enclosed courtyard, there is room for big trees without compromising on direct sunlight to the apartments. The roofs can be greened and hard covered surfaces can be transformed into water play and detention ponds.



## Narrow enclosed courtyard

In a narrow enclosed courtyard, it is natural to adapt the facades to both climate solutions and energy renewal. Green and blue facades can be part of a rethinking of dwelling opportunities and energy reduction. The water can be used to cool the building and courtyards and to water the green facades.



# GREEN ENCLOSED COURTYARDS A CHARACTERISTIC OF THE NEIGHBOURHOOD

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The enclosed courtyards in St. Kjeld's Neighbourhood are spacious and intimate at the same time. Many blocks have large green enclosed courtyards where much of the neighbourhood's social activities take place. In some cases, there are also private front gardens on the street side, which create a safe and welcoming atmosphere. These qualities are something we must protect and strengthen.

Copenhagen Communal Courtyards will remodel several courtyards in the neighbourhood over the coming years. In addition to expanding and improving the courtyards, the goal is to manage daily rainfall locally. Roof water can be collected in rain gardens, water towers or detention ponds and used locally for irrigation or play. At the same time, the courtyards will be designed to channel rainwater from cloudbursts to the street so it does not end up in the basements.

The enclosed courtyards in St. Kjeld's Neighbourhood are typical of the enclosed courtyards to be found in the rest of Copenhagen. With the right solutions here we can inspire others to remodel their own enclosed courtyards - and thus ensure that our city is ready to withstand the changes that the climate will present us with in the future.





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Read more about the project, the various events and your opportunities at

**[WWW.KLIMAKVARTER.DK](http://WWW.KLIMAKVARTER.DK)**

