

**A GUIDE TO  
PEOPLE-FIRST  
URBAN RENEWAL**

by Gehl, Energy  
Foundation, and CSTC

# Urban Retrofit

Sustainable Behavior  
from Building to Policy



---

## CONTENTS

3	Foreword
4	Holistic Urban Retrofit
16	Five Steps for People-First Urban Retrofit
18	1. Building / Renovate
28	2. Neighborhood Block / Densify
38	3. Public Space / Upgrade
50	4. City District / Invite
58	5. Guidelines & Policy / Build Inwards

This booklet is an introduction to what Urban Retrofitting is, and why it is recommended as an approach to ensure that cities can stay as the engines of sustainable transformation in China.

2/3 of China's population lives in cities. China has undertaken an unprecedented urbanization in the past century. Urbanization has been a vehicle to improve the living conditions for millions of people across China.

While urbanization in China and worldwide has been a path to improve living conditions, our approach to urbanization needs to be revisited. Instead of expanding, demolishing and building new city, we need to retrofit our cities to accommodate new needs and meet modern day challenges.

Urban Retrofitting is an approach that acknowledges that our cities constantly needs to change, grow and improve, but at the same time respects that our planet cannot handle the way we have done this so far.

Urban Retrofit as an approach can be applied from large scale policy strategies down to the redevelopment of single buildings and public spaces.

This booklet introduces Urban Retrofitting in a simple and accessible language, and shows how this approach can ensure that cities and continuing urbanization can deliver on the dual carbon goals, and on the life quality we need in the next 100 years and onwards.

# HOLISTIC URBAN RETROFIT

Urban retrofit consists of several elements applicable on building and public space transformations, and can be applied from small scale to city scale.

**GOOD FOR THE WORLD & YOU**  
 Urban retrofit is beneficial on social, economic and environmental sustainability level. The list of benefits include: healthier cities - green mobility leading to better air quality - healthier buildings - better indoor climate - stronger communities - better social life - economic gains, for the city and on more local levels through energy saving - and a more robust city that can better handle challenges.

**BOTH SPACE AND BUILDINGS**  
 Working with urban retrofit holistically means working with both the buildings and the spaces in between, for example through: energy efficiency and renovation of the built environment - public realm improvements - climate adaptations - reorganization of street space to give room for public transport and green shared mobility. In order to efficiently work with urban retrofit, there is also a need to look at it through a policy level.

Good globally



Good for the city



Good for you!



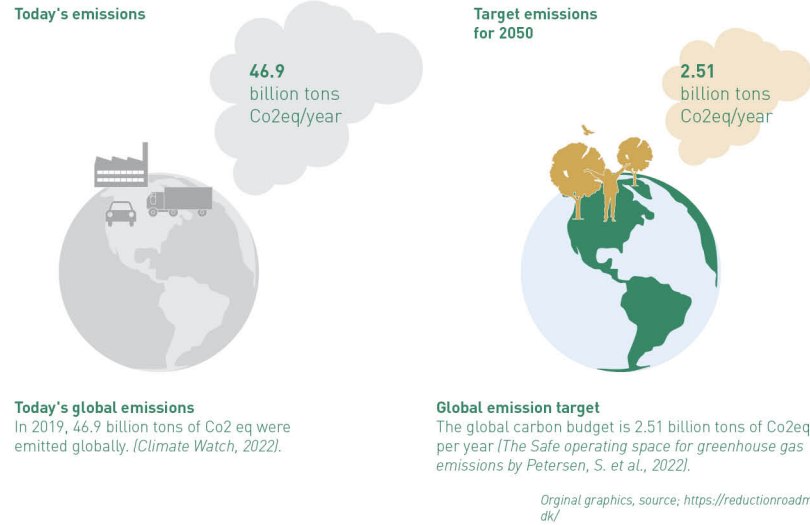
# WE NEED TO REDUCE CO2 GLOBALLY

## MEETING GLOBAL SUSTAINABILITY GOALS

To meet global sustainable goals we have to reduce our CO2 emission 20 fold.

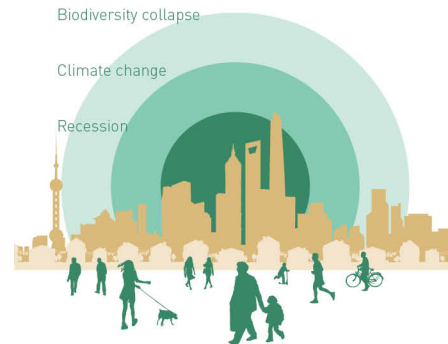
Globally, we need to rethink how we plan and develop for life in cities.

## Global emissions need to be reduced by almost 20 fold until 2050!



## SOLVING CHALLENGES IN AN INCREASINGLY URBANIZED WORLD

Urbanization is happening rapidly and will continue too in the years to come. Cities account for large part of emissions, but living collectively in cities can also be part of the solution. Simply living in cities already reduces your personal CO2 footprint when we share mobility, energy, heating and infrastructure. But we can do much more.



## 70 % of the world's population is estimated to live in urban areas in 2050

## EMISSIONS IS A GLOBAL CHALLENGE ...

Almost 40% of the CO2 emissions globally comes from the Built Environment and another 25% from Transportation. In other words, cities, and how we live, play a major role in reaching climate goals.

## ... AND A CHINESE ONE

As Chinese cities are fast developing, carbon emission from the building sector in China takes up a even larger share than globally, making urban retrofit an even stronger opportunity for CO2 reduction in China.

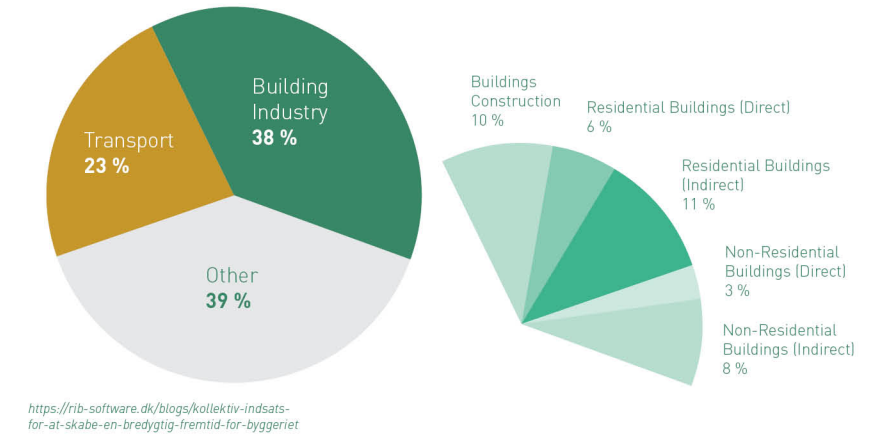
In 2020, the total carbon emissions of the entire building process in China were 5.08 billion t CO2, accounting for 50.9% of the country's total carbon emissions.

China has, after rapid development, entered a stage of slower development. The country's real estate financial logic has been largely based on land sales and construction. Furthermore, urbanization has happened by building new towns and expanding cities. A new model is needed now.

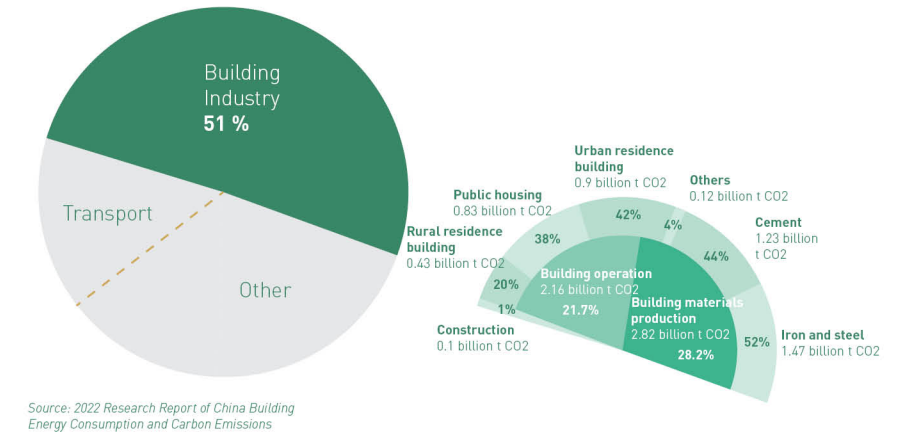
Source: Li Xiaojiang - The Road to Urban Green Renewal

## The global building sector accounts almost 40% of all carbon emissions!

### Building Carbon Emissions globally



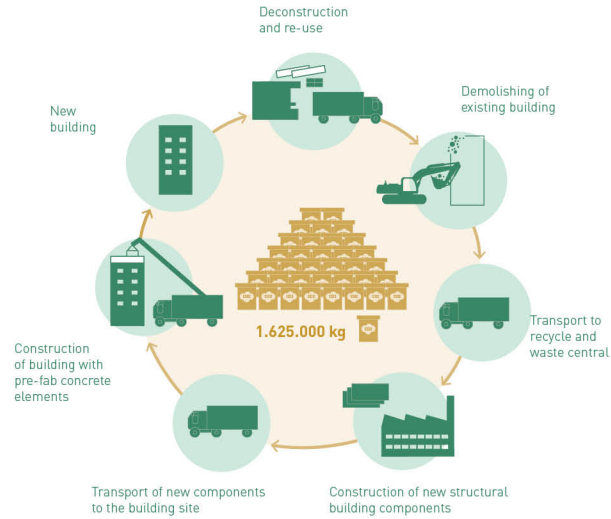
### Building Carbon Emissions in China



# URBAN RETROFIT IS KEY TO REDUCING CO2

## THE CITIES OF THE FUTURE ARE ALREADY BUILT

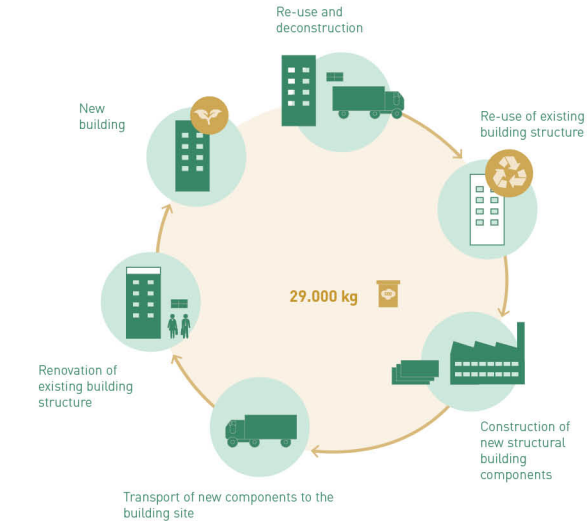
When we transform rather than build from scratch we reduce Co2 and improve quality. If we can manage to upgrade the existing cities through energy renovation, climate adaption, acupunctural densification, public amenities and mobility, we can come close to carbon neutral neighbourhoods.



## Building new releases 56 times more CO2 than urban renewal renovation

### CO2 emissions of building new

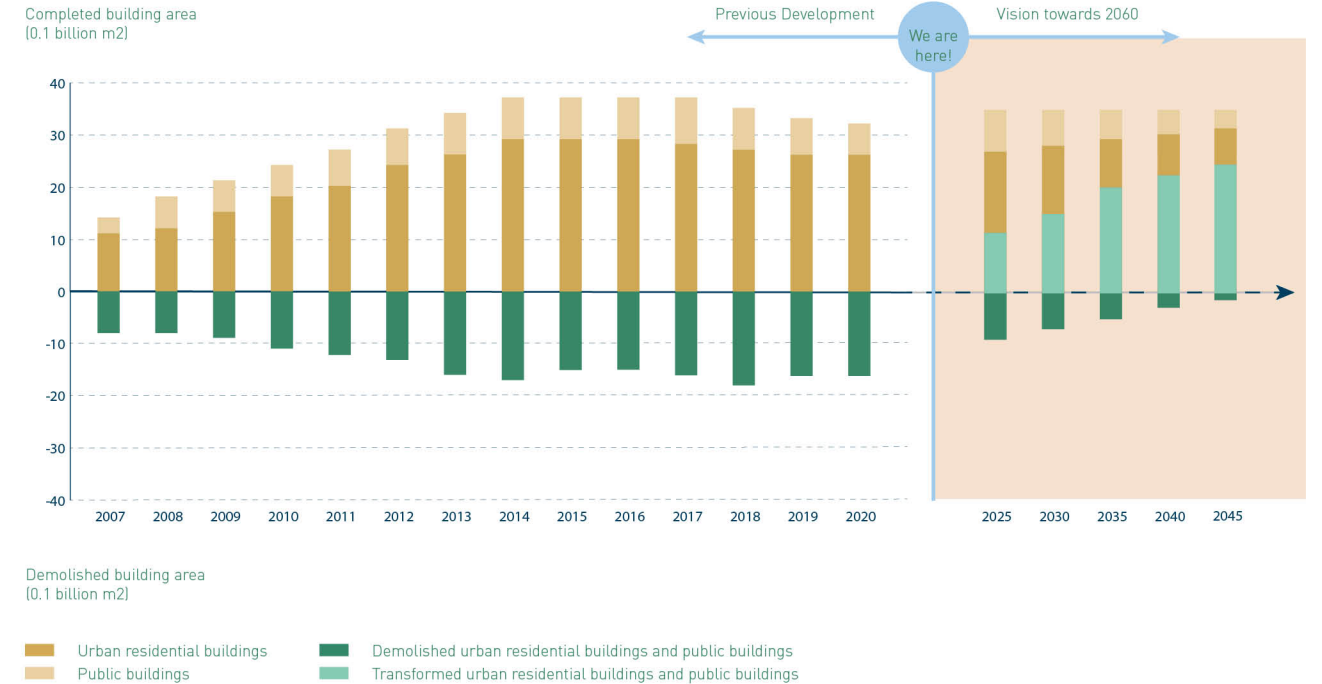
Source: Rambøll



### CO2 emissions of transforming and retrofitting

Source: Rambøll

## More urban retrofit to reach the 2060 goal of Carbon neutrality!



## THE CITIES OF THE FUTURE ARE ALREADY BUILT

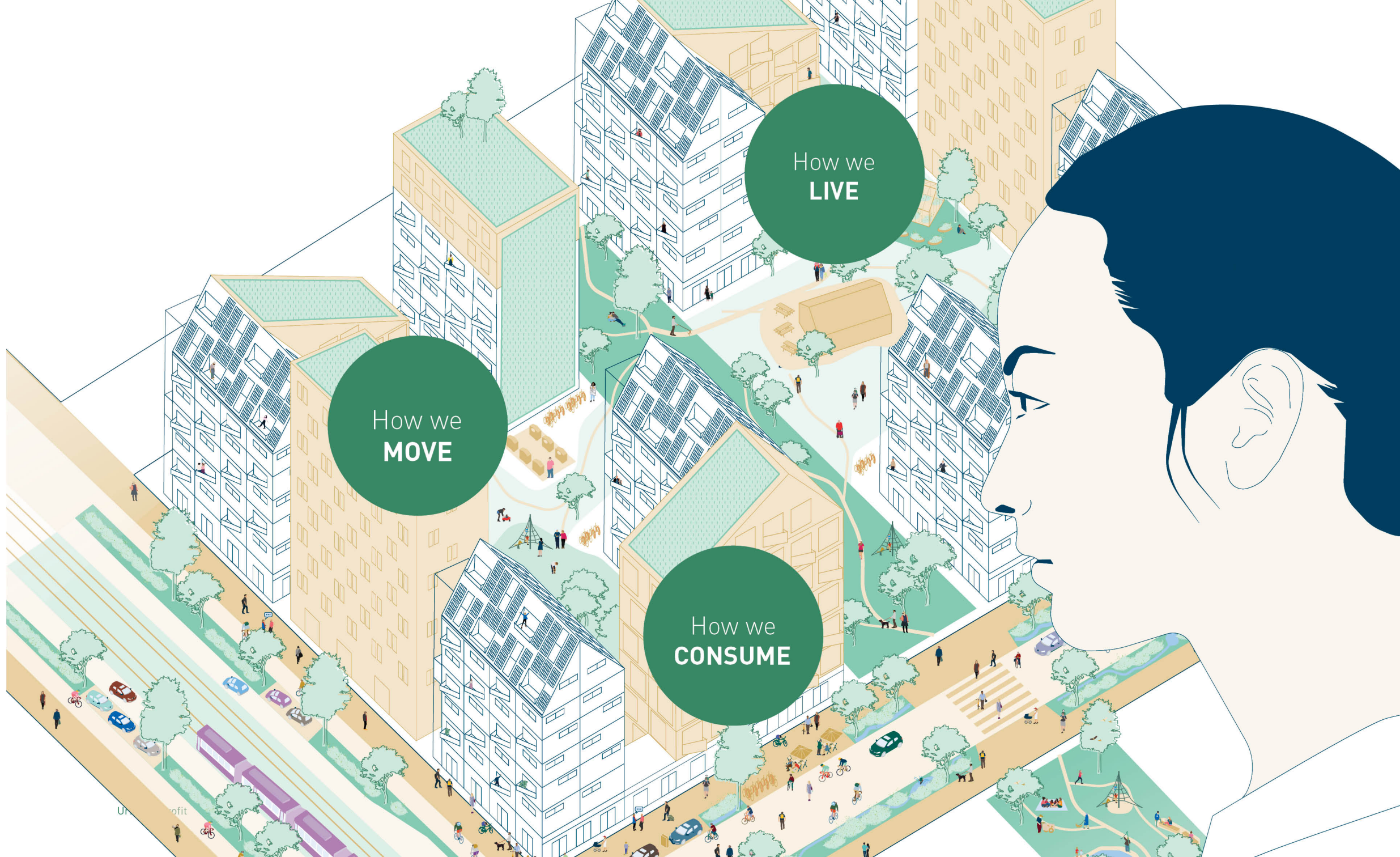
In the early 2000s, the annual completion of construction far exceeded the annual demolition volume. However, in recent years, although the annual completion area of urban residential and public buildings has remained between 3-4 billion square meters, the annual demolished building area has also reached nearly 2 billion square meters.

That trends needs to be reversed and the Vision towards 2060 should be no need for demolishing buildings when improving the cities.

The cities of the future are already built.

**IF WE DO  
URBAN  
RETROFIT  
RIGHT IT  
INVITES FOR  
SUSTAINABLE  
BEHAVIOUR**

Holistic urban retrofit is about how we live, how we move, and how we consume.



# SUSTAIN- ABLE BEHAVIOUR: GOOD FOR THE GLOBE, GOOD FOR YOU!

Urban retrofit is a holistic approach that spans a number of important areas of city development. These areas can have positive effects on a global level, and they can have positive effects on an individual level. Both are important in Urban Retrofitting.

From building on green fields ...



... to re-purposing roads and public space, while optimizing and densifying within existing cities and on brownfields.



## 15-MIN CITY

Urban retrofit and urban infill projects support and enable new amenities and functions in existing mono-functional areas. Paving the way for more mix-use in new 15-minute communities.

## MOBILITY

When we transform, develop and densify within existing neighbourhoods, we build on the existing infrastructure and public transport and we can support shorter commutes and green mobility.

## CLIMATE ADAPTION

When we invest in climate adaption we should aim to integrate the technical solution as an added quality in public space.

## BIODIVERSITY

Re-introducing and maintaining biodiversity in our cities is core to support a rich wildlife and people's well being.

## SHARED FACILITIES

Shared facilities will help support sustainable lifestyles and support community building.

## HEALTH

Everyday movement, walking or biking, influences your physical health. Good retrofit can support better air quality, etc. Same time, being part of a local community helps mental health.

## UPCYCLING

We should aim to transform and re-purpose buildings when possible, but when buildings are taken down we should see materials as a resource.

# URBAN RETROFIT PROJECTS IN CHINA TODAY

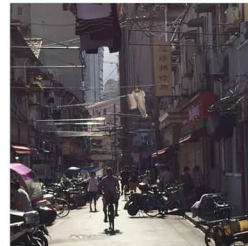
All scales of urban retrofit are important and can offer qualities in a city. Yet, due to the number of m2 already built, the potential and impact are different across the categories.

IMPACT ↑



## SMALL & MICRO RETROFIT

The small and micro retrofit projects are what we often see. They are great for communicating potential, but don't hold the same large scale and scalable impact as other categories.



## OLD CITY CORE

Most cities have an old city core with strong qualities and identity in the built environment. Preserving the old city cores is an important part of demonstrating the intentions in an Urban Retrofitting Strategy.



## PUBLIC FACILITIES AND PUBLIC TRANSPORT

Public Facilities, especially Public Transportation Facilities, are typically built with a mono-functional purpose. As part of urban retrofit, we can make sure these important hubs can serve more purposes.



## URBAN VILLAGES

15-min Communities is a way to breakdown the scales in the city, promote poly-centric cities and make sure that people can live good lives locally. Cities across China already have urban villages with strong communities. Using Urban Retrofitting build on those qualities and improve them.



## INDUSTRIAL / OLD FACTORY

As many cities move to a post-industrial development, old structures are left without function. Yet, these old facilities offer both structures, which can be redeveloped, as well as a memory of a past city. Remembering where we've been and transforming to future use for where we are going are important elements in urban retrofitting.



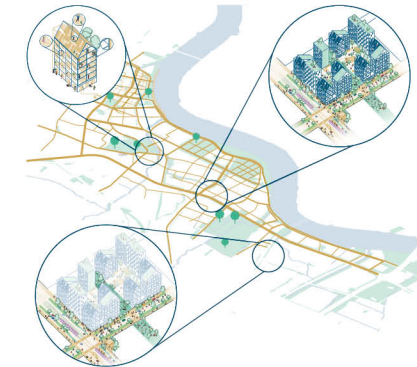
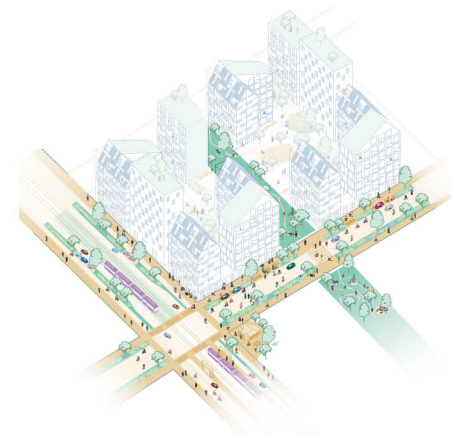
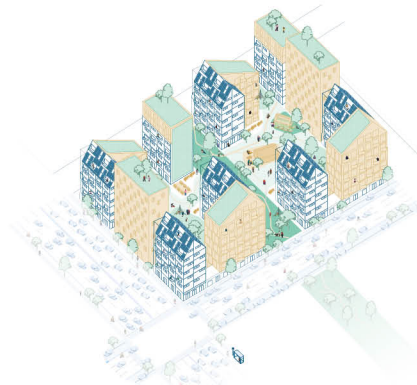
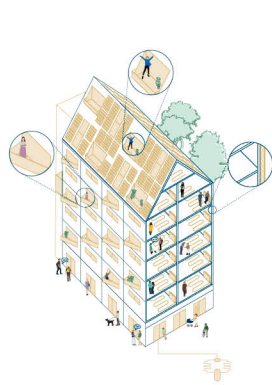
## RESIDENTIAL DISTRICT

Based on the amount of m2 in the built environment, the retrofit of housing buildings and housing areas is both where the largest potential is and the largest impact can be made. Most residential buildings need energy saving upgrades. The key is to be able to do upgrades without demolishing. And when doing upgrades, make sure they are holistic urban retrofitting that works across different focuses.

POTENTIAL →



# FIVE STEPS FOR PEOPLE-FIRST URBAN RETROFIT



By looking at urban retrofit through the lens of different scales, we zoom into a number of themes which ideally are applied in parallel.

Each scale holds different opportunities and benefits people and environment in different ways. Within each scale it all comes down to finding solutions that benefit environmental, social and economic sustainability - to reach positive results for both the planet, the city and its inhabitants.

## 1 BUILDING RENOVATE

- Solar panels
- Opportunity to add elevator for accessibility
- Insulation of windows / change of window panes
- Added balconies - (semi-closed for noise/pollution if needed)
- Renovation of entrance space and staircase
- Existing structure, with facade renovation and improved insulation
- Improved indoor climate through heating and ventilation
- Community services, workshop, bicycle parking social functions
- Heat pump

## 2 NEIGHBOURHOOD BLOCK DENSIFY

- Smaller volumes breaks down scale, divides the space and offer functions
- Recycling station
- Densification through infill
- High quality bicycle infrastructure
- Orientation of new groundfloor functions towards the street
- Densification through added floors
- Height of the block as baseline for the infill height
- Include parking facilities in buildings as courtyard parking is removed
- Densification with community functions
- Courtyard improvements
- Defined courtyard and climate adaption / cloudburst protection in courtyard
- Groundfloors offering shared facilities - bicycle workshop or community space for the block
- Densification near public transport

## 3 PUBLIC SPACE UPGRADE

- Active groundfloor
- Direct crossings responding to the pedestrian desire lines
- Space for generous bikelanes
- Trees with treepits
- Collecting water, different types of local tree species
- Rainwater beds with filtration and local rainwater management
- Spaces to sit
- Water management, play, and landscape design in one
- Public transport stops with synergies, easy switch between lightrail, metro, and bikeshare
- Car lanes switched for public transport

## 4 CITY DISTRICT INVITE

- Utilize existing infrastructure
- Provide new qualities to existing areas
- Avoid embedded CO2 from new infrastructure by working inside the existing urban fabric
- Use local pilots to show how things can be implemented at large
- Learn from pilots and keep improving with each new implementation
- Change behaviour through invitation in the public realm
- Support local 15min communities to flourish

## 5 CITY & POLICY BUILD WITHIN

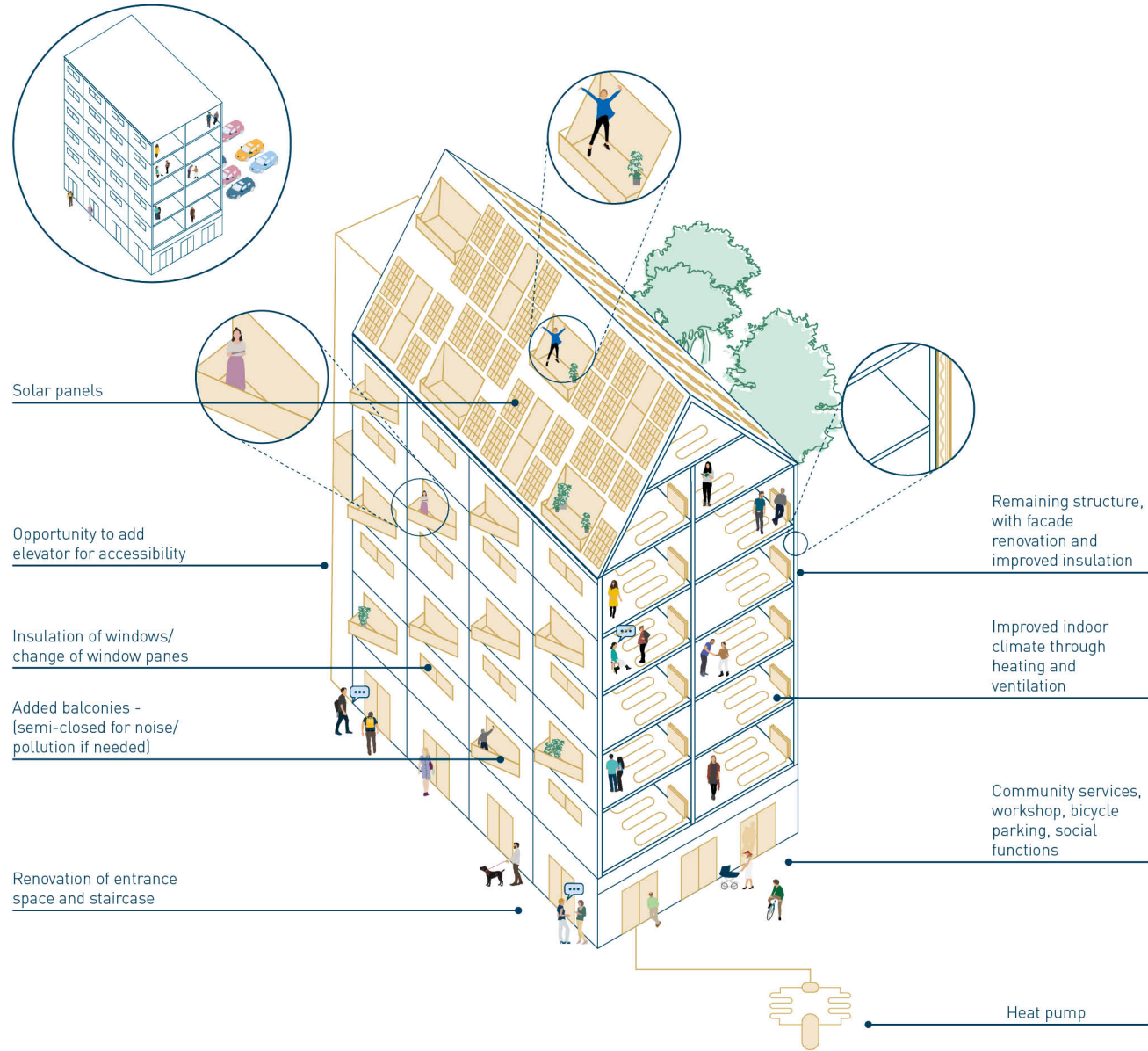
- The vision of a carbon neutrality and urban retrofit needs to be enabled through new policies and guidelines
- Cities can pioneer new policies that can be scaled nationally
- Work with citywide programs and strategies to enlarge impact and enable change
- Work with quality driven frameworks
- Cities are the epicenter of catalytic solutions and transformational change

# Building / Renovate



50

small urban gardens created in a facade renovation



# 1

## Building / Renovate

*“The most sustainable building is the one already built”* - Existing buildings represent a value beyond the financial. They represent a part of a neighbourhood’s history, and furthermore, they represent CO2 stored in construction. A starting point in urban retrofit is to maintain and re-use the existing built environment. The renovation of existing buildings can be done to different extents - but the key is to think holistically, in order to both reduce energy use and increase life quality of residents, and avoid the CO2 linked with demolishing and building from scratch.

### What can we gain?

- ⬆️ Maintain character and identity
- ⬆️ More dwellings and through that higher proximity to functions for more people
- ⬆️ Higher comfort, lower energy costs
- ⬆️ Reduction in CO2 - not producing new

### Key moves

- Renovations that both increase life quality and solve technical building problems
- More energy efficient buildings - for comfort, lower costs and sustainability
- Collaborations between property owners, architects and residents
- Better interaction with building and surroundings

## Case studies

Frederiksberg Boulevard,  
Copenhagen

### Infill at the corner of the block

The project is a case of aligning building development with the development of public transport. A key feature of this corner site is the Metro Station which the new infill building is integrated with. The new corner both achieves densification around public transport and optimizes building for new structures.

Architecture Firm: Cobe  
Website: [www.cobe.dk/](http://www.cobe.dk/)

➤ Make sure in-fills relate to surroundings

➤ Densification near public transport - a more sustainable everyday life



Before

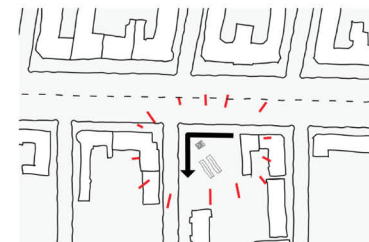
*Before:*  
The empty plot, also before the Metro entrance and the renewal of the adjacent street with bus and bicycle lanes.

*After (opposite page):*  
The new building forms the corner and completes the block and is integrated with the Metro Station. The new bicycle lanes and bus stop creates a multimodal experience.

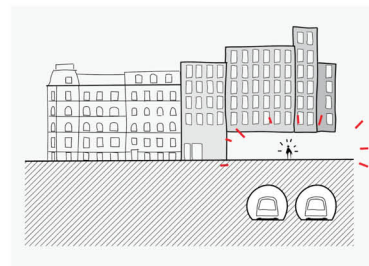
The building function is a mix of residential and commercial. The two groundfloors provide a new function to the area with a "house of food culture". The upper floors are residential and provide 30 new dwellings with very close proximity to public transport.

The facades are inspired by the context - the modern buildings behind the plot and the scale of the 19th century buildings along the boulevard. The "tower" at the corner relates to the tradition of the 19th century buildings corner towers

Bringing a mix of typologies, with rowhouse style dwellings and apartments. A shared courtyard for the residents included



The building completes a once missing corner site on Frederiksberg Allé.



Source: COBE



After

0  
minutes  
to public  
transport

## Ørsted Gardens

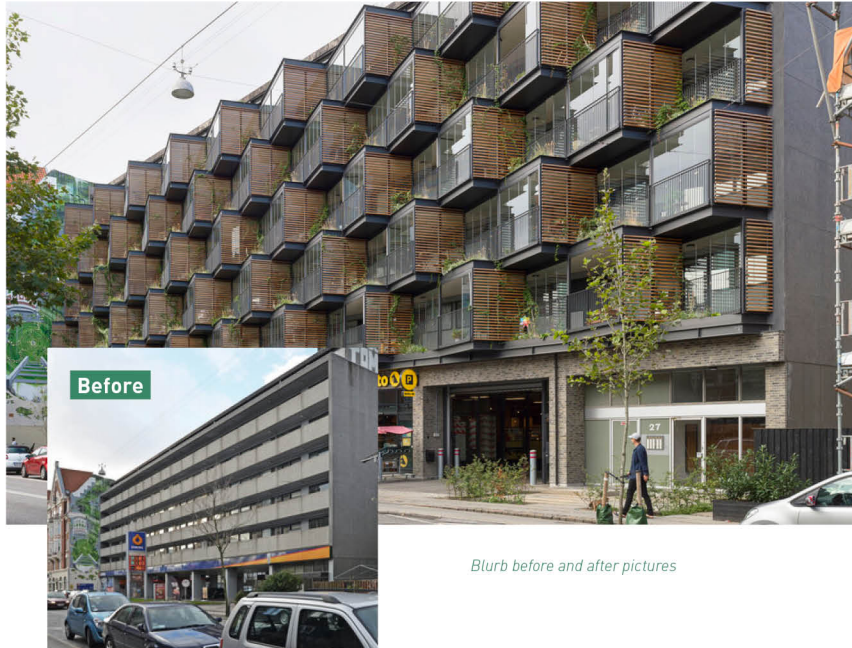
## High Quality facade renovation

Ørsted Gardens transformed a dilapidated building that was often referred to as among the ugliest in its neighborhood. The original building (and many similar to it) was erected in the 60's at the height of a fascination with rationality, industrial processes and efficiency in the Danish building industry. The building was sleek and unwelcoming and didn't age with a modicum of grace.

Architecture Firm: Tegnestuen LOKAL  
Website: [www.tegnestuenlokal.dk](http://www.tegnestuenlokal.dk)

➤ Renovations that both increase life quality and solve technical building problems

➤ Better interaction with building and surroundings



Blurb before and after pictures

The radical transformation grew out of an ordinary façade renovation, aimed to prevent water from damaging the concrete balconies, into a drastic alteration of the building's semi-private spaces and a radical reinvention of the façade facing the heavily trafficked street. Instead of just patching up the open balconies with similarly sleek glass panes, Ørsted Gardens aim to create a new social space to bolster the social coherence in the building. To create that social space, a series of triangular glass bays were added to the architecture, creating semi-private decks for the individual residents. A central aspect of the renovation is the notion that

the building should contribute positively to the experience of the street. The monotonous façade of the past is broken up into smaller geometric entities creating a sense of rhythm as you pass the building signaling a residential building, comprised of many families and individuals.

The new façade shelters the apartments from the heavy traffic noise, and it has transformed the way residents live in the building. Front doors are now open and kids roam the new space, visiting neighbors creating a lively urban space on the side of the building rather than the bleak access way that was there before.

## Key learnings

## Residents/Life Quality:

- Social - a new type of space to meet the neighbours
- A longer season on the balcony
- Shelter from traffic noise

## Public Space:

- A positive experience from the street - more variation, added greenery
- New groundfloor functions

## Property owner:

- Solves the issue with water damage on the previous balconies



Denmark

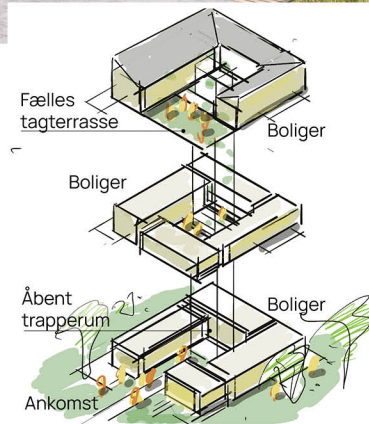
## Staircase as Public Spaces

Apartment buildings often lack good meeting places. Let's use stairwell and landing areas to promote community and social life! The project 'Vertikale gårdrum' (Vertical courtyards) explores how architecture can facilitate chance encounters between residents and neighbours in apartment buildings, thus promoting a sense of community and mitigating the increasing loneliness in society.

Team: PensionDanmark, ONV arkitekter, Gehl  
Website: [www.trappensrum.dk](http://www.trappensrum.dk)



Source: [www.trappensrum.dk](http://www.trappensrum.dk)



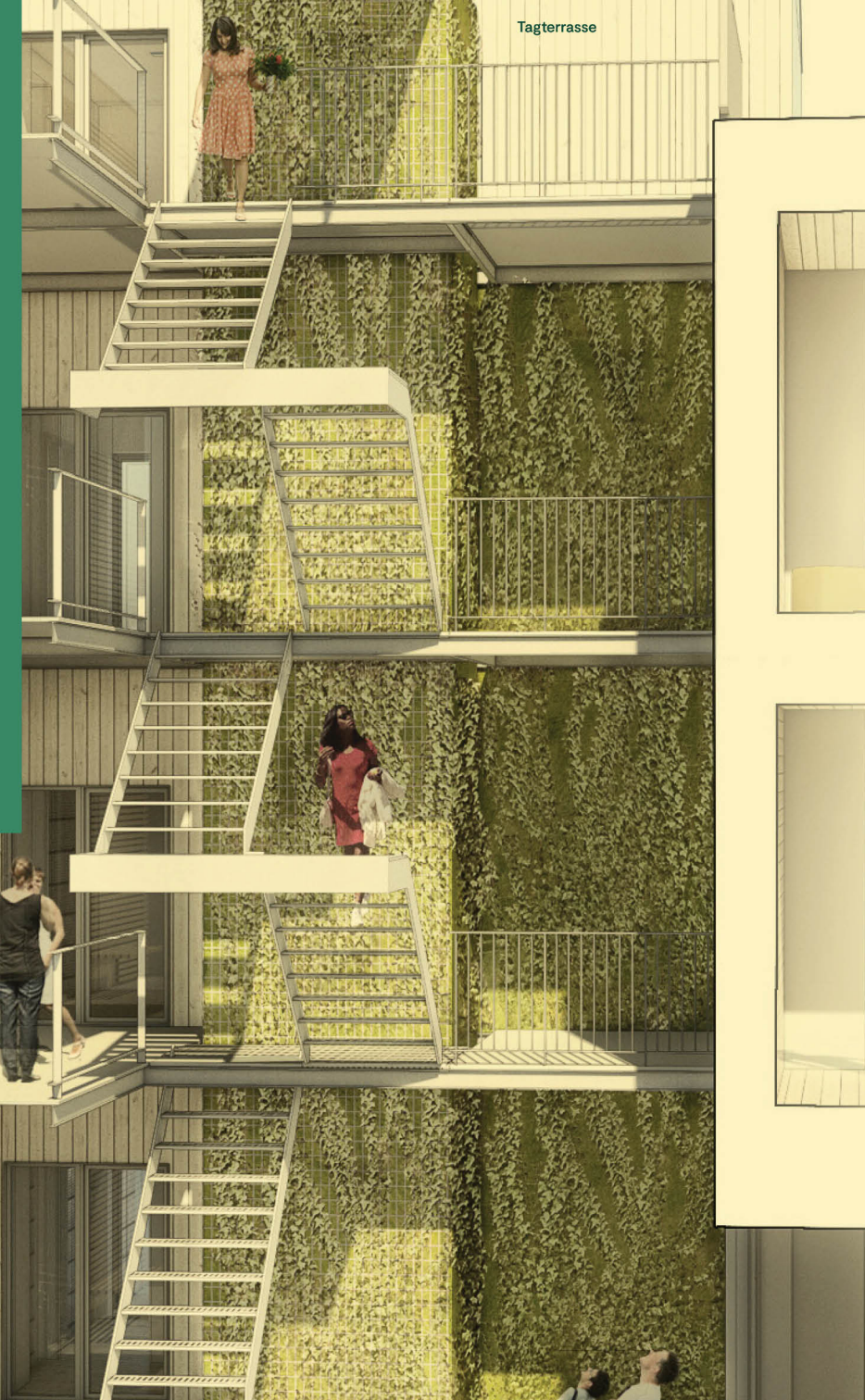
The project investigates, by looking at two different housing complexes, how the development of new types of entrances, common spaces, access balconies and circulation areas can promote informal meetings and social cohesion. This has resulted in four different community-based concepts, each of which rethinks the role of the stairwell by using the semi-private access areas as a catalyst for interaction between residents.

Concept 1 extends the shared stairway in order to create a common space between four flats, while concept 4 replaces the private balcony with shared outdoor access areas. Concepts 2 and 3 each in their own way offers common spaces in conjunction with the front entrance. Together, the

different concepts demonstrate how extra qualities can be added to the building's obligatory circulation areas. Easily mixed and matched, the four concepts can be integrated in other housing contexts, just as they can be adapted to fit different kinds of tenancy or homeownership.

### Key learnings

- Let's think about square metres in a new way**  
The way we measure square metres of living space needs to be rethought. Perhaps in the future, the number of square metres for stairs and lifts should be set as a fixed number - regardless of how the stairwell is designed. This would allow for much more interesting arrival conditions that would not limit the square metres of the home.
- New solutions can become new standard solutions**  
It can be difficult to get the contractor on board with new solutions. Examples of new types of entrance areas, common areas, balconies and connecting areas, solved technically, legally and functionally, minimize risk for the client and especially for the contractor. Therefore, we need to develop new solutions that can be pioneering examples and later become new 'standard solutions'.



### Four concepts in development in 4 different areas:

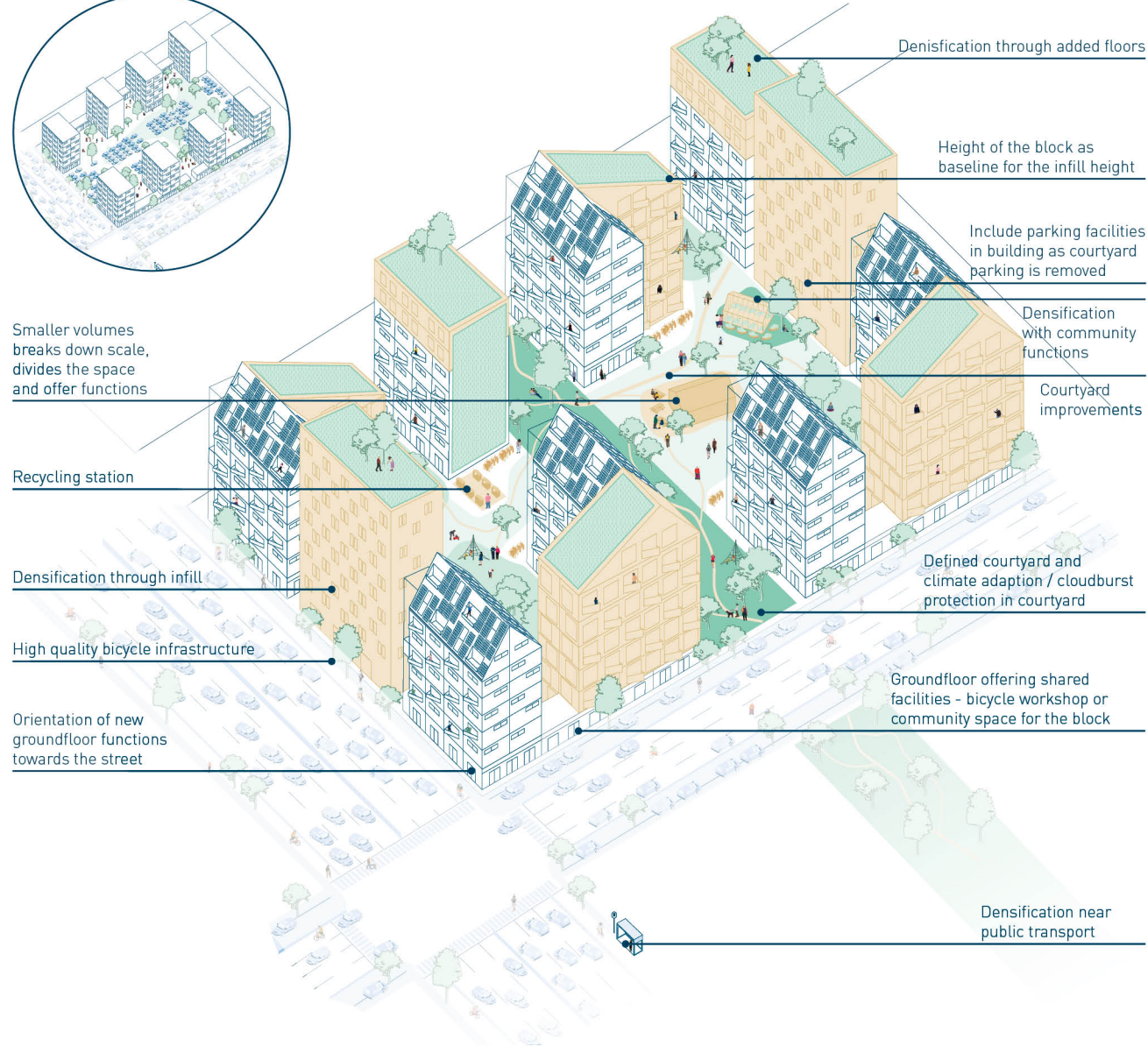
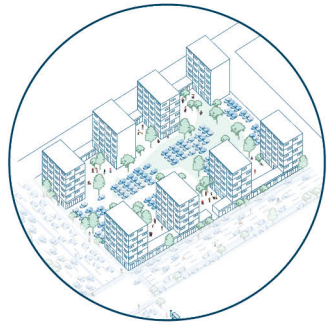
- 1 Stairs and courtyard
- 2 Stairs and streets
- 3 Stairs and Community Space
- 4 Stairs and balcony



Neighbourhood Block / Density



**Densify**  
and create better  
public spaces between  
buildings



Denisification through added floors

Height of the block as baseline for the infill height

Include parking facilities in building as courtyard parking is removed

Denisification with community functions

Courtyard improvements

Smaller volumes breaks down scale, divides the space and offer functions

Recycling station

Densification through infill

High quality bicycle infrastructure

Orientation of new groundfloor functions towards the street

Defined courtyard and climate adaption / cloudburst protection in courtyard

Groundfloor offering shared facilities - bicycle workshop or community space for the block

Densification near public transport

# 2

## Neighbourhood Block / Densify

When we transform and densify inside existing urban blocks, we have an opportunity to create new housing and offices, and, more important, we have the opportunity to improve shared facilities, improve green spaces and integrate climate solutions, as well as providing new amenities. Whether it is an urban retrofit of existing housing areas or a transformation of brownfield sites and old industry, urban retrofit offers a chance to strengthen the qualities while building on the existing community and existing infrastructure.

### What can we gain?

- ⊕ Higher quality semi-private spaces for residents within blocks
- ⊕ More dwellings and through that higher proximity to functions for more people

## Key moves

- Improve public space quality for residents well being
- Renewal that upgrades the image and /or use of an area
- Make sure in-fills relate to surroundings
- Densification near public transport - a more sustainable everyday life
- Build on brownfield - not greenfield
- Collaboration between stakeholders



## Case studies

Trælasten, Aarhus

# The Timberyard

The goal is to develop and densify brownfields and existing urban neighbourhoods – while providing green, social, shared, public facilities and space; no more greenfield developments!

The Timberyard project is both a brownfield site and an urban infill. It brings new qualities to the surrounding neighbourhoods while densifying within the existing city structure, making the most of the existing infrastructure and public transport.



Implement temporary public space for day one, to test the vision and give back to the neighbourhood



As part of the transformation an material bank has been made on-site to secure that all building materials from the transformation was upcycled and re-used in the area's new buildings



➤ **Infill on brownfield site adding new qualities to the neighbourhoods**

➤ **Upcycling on site, transforming existing buildings, re-using materials**



## Key learnings

- Urban retrofit, urban infill and brownfield transformation should always provide green, social and shared public facilities and space
- Implementing new public spaces from the start helps build community and test vision
- On site upcycling of old material showcases a more sustainable approach and secures historic references in changing cities
- Transformation of existing buildings is always more sustainable than demolishing an building new

## Case studies

Rosenhøj, Denmark

# Upgrading residential block

The renovation of the Rosenhøj social housing area entailed both energy renovation, infill of buildings and re-organization of the spaces between them. With the renovation, the identity of the area improved so drastically that the area went from deprived and run-down to having a waiting list to move in.

Team: EFFEKT, Arkitema, Viggo Madsen, UiWE, CIA  
Year 2011-2017

➤ Improve public space quality for residents well being

➤ Renewal that upgrades the image/ and or use of an area



Before

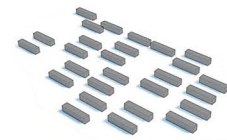
*Before:*  
Rosenhøj in 2010 with rich greenery, but also large areas of parking splitting the area, and buildings in need of renovation. Social problems and segregation affected the area and its residents

Sources: EFFEKT

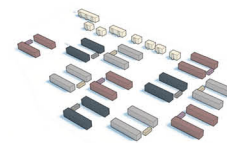
**Buildings:**  
Orientation of buildings was adjusted and infill used to create smaller communities.

**Space:**  
Inner streets added to connect and divide the area into smaller segments. Parking replaced with park, and more attractive spaces to play and social was added.

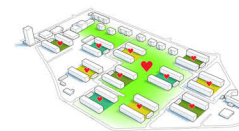
**Technical renovations included:**  
Renovation of heating systems, change of water installation, renovation of bathrooms, new ventilation systems and solar panels on the roofs.



**Before**  
A single typology of unified housing blocks



**After**  
To a more diverse mix with smaller infill buildings and a mix of facade material adding character



**Vision**  
Streets and spaces tying the area together with places for both meeting the neighbours and the whole area



After

## Key Learnings

- Densification without demolishing
- Room for 22 new family residential units
- New system of pathways and roads to connect the residential compound with surrounding city.
- Using the densification to define better public realm spaces in between the building

## Case studies

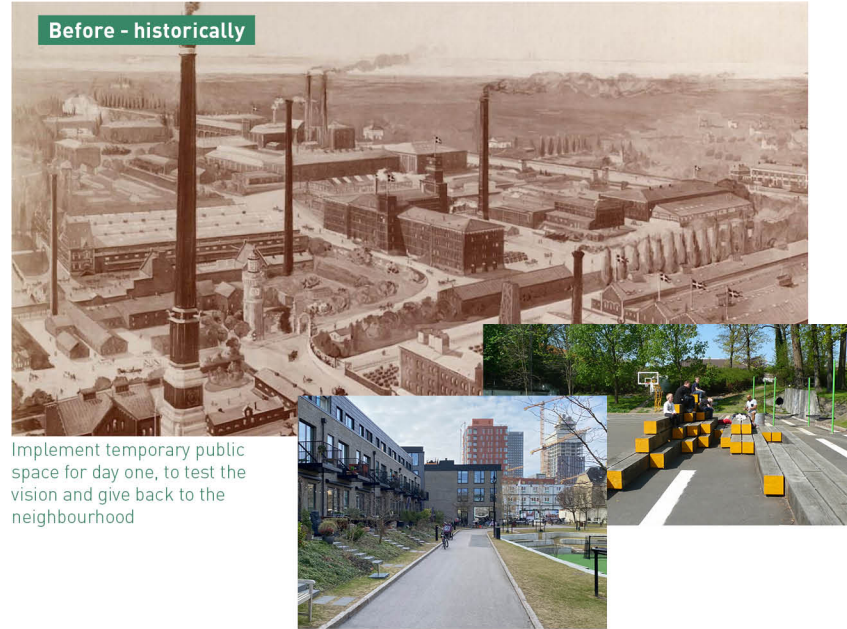
*Carlsberg, Copenhagen*

# Retrofit of an industrial district

After the decision was made to close the brewery, plans were launched to redevelop the area into a new district. A master plan for the area draws on inspiration from classical, dense city centers with short, winding streets, passageways and small squares. The planned district will aim at sustainability and an active urban life.

Main Actors / Initiators:  
Copenhagen Municipality  
Carlsberg Group  
Organisation of pilot projects:  
The project was carried out in collaboration between Carlsberg, Lokale- og Anlægsfonden, Realdania and Copenhagen Municipality and Gehl

- Build on brownfield - not greenfield
- A missing puzzle piece of the city
- Collaboration between stakeholders



## Key Learnings

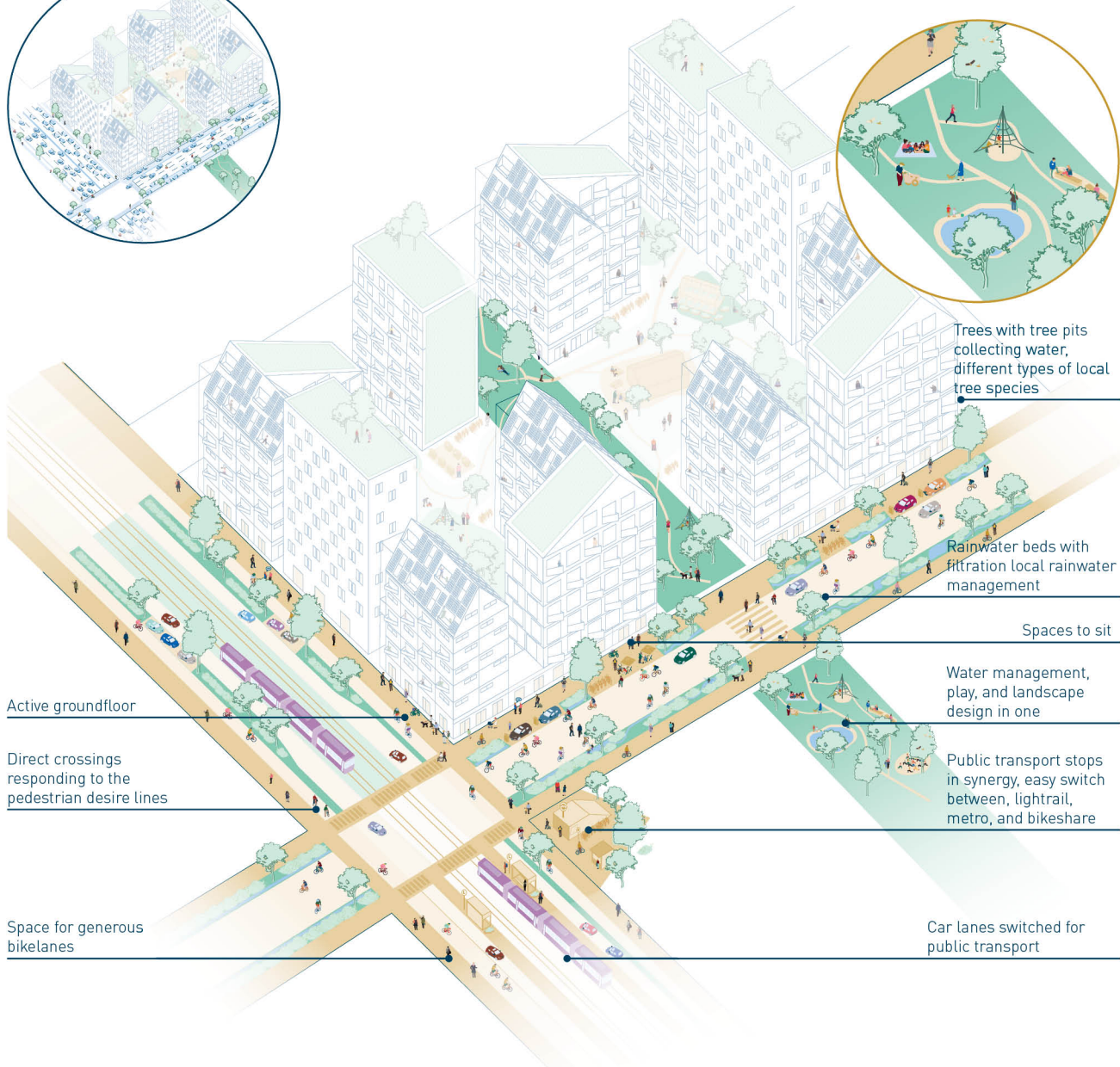
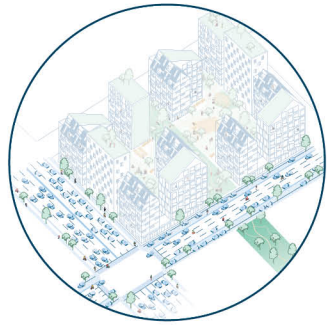
- A competition brief with a people first approach
- An area where public space is glue
- Temporary public spaces to open up and establish the area - invite people in
- Maintaining industrial heritage with strong value and identity
- Space is made specially for sustainable community
- 15 % to consist of retrofit industrial heritage buildings
- Pilot projects as a key to establish the area



Public Space / Upgrade



Landscape that  
**Multitasks**  
as climate adaption and  
better public realm



Trees with tree pits collecting water, different types of local tree species

Rainwater beds with filtration local rainwater management

Spaces to sit

Water management, play, and landscape design in one

Public transport stops in synergy, easy switch between, lightrail, metro, and bikeshare

Active groundfloor

Direct crossings responding to the pedestrian desire lines

Space for generous bikelanes

Car lanes switched for public transport

# 3

## Public Space / Upgrade

Urban retrofit in the public realm can help improved the life quality and user experience in our cities, and support and invite for sustainable behaviour. When we look at individual CO2 consumptions, 1/4 of it is linked to transportation. Re-designing streets, squares and parks to make it attractive to walk, bike and use shared and public transportation is good for our health and good for the planet.

### What can we gain?

- ⬆ Climate solutions integrated in design/ climate adaption
- ⬆ Healthier and more attractive public space
- ⬆ Increased biodiversity
- ⬆ Better access to sustainable mobility choices
- ⬆ Cleaner air

## Key moves

- Landscaping that multitask - combine great public space with sponge city design
- Street and space design that invite for non-motorized mobility

## Case studies

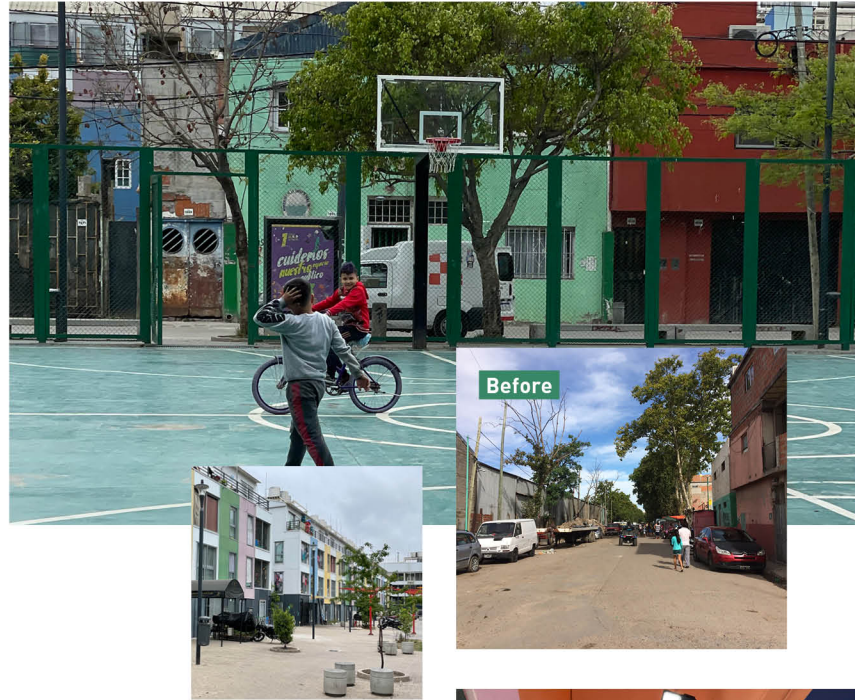
Barrio 31, Buenos Aires

# Integrating a disconnected area to the city

Barrio 31 has long been perceived as something outside the urban limits of Buenos Aires, yet it is home to over 40,000 residents within the heart of the city. Here, the city's numerous focuses was brought under one cohesive, unified neighbourhood vision that reflects the needs and desires of the residents and

Architecture Firm: Gehl Architects  
Website: gehlpeople.com

➤ Take on areas in great need of quality upgrade for the residents - in collaboration with local partners



the larger community. Part of the vision was to increase connectivity to and within Barrio 31, as well as upgrading and retrofit both buildings and public spaces, and better prepare the already lively streets as key spaces for both social and commercial activities.



### Key learnings

- Collect the different strategies in the city under one joint project
- Make the community life priority
- Use simple methods to obtain large results.

## Case studies

### Shanghai

## Nanjing Lu

The upgrade of Nanjing Road East connects two of Shanghai's main destinations, the pedestrianized Nanjing Rd with the Bund through historic central Shanghai.

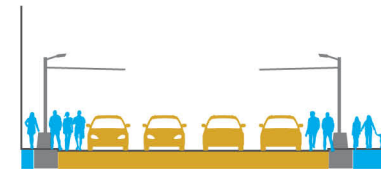
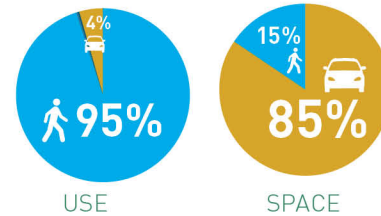
In 2013 when Gehl conducted an analysis of Huangpu district the users of the street was 95% pedestrian and only 5% cars and public transport, but 85% of the space was given to the car.

Research, strategy and conceptual design Gehl  
Website: [gehlpeople.com](http://gehlpeople.com)

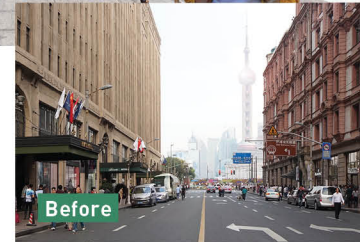
➤ Street and space design that invite for non motorized mobility



### Nanjing rd east before — Flow vs space distribution



Space distribution - 2013



Based on the research, a strategy and conceptual design was made in 2015 which was finally implemented in 2021



Case studies

New York City  
**NYC Plaza Program**

The transformation of Broadway and in particular Times Square is a cornerstone of New York's focus on providing quality open space for all New Yorkers within 10-minute walk.

The program is also crucial to meet the city's goal of reducing economy-wide GHG emissions 40% by 2030 and 85% by 2050 from 1990 levels.

Strategy and Public Life: Gehl Architects  
 Website: [gehlpeople.com](http://gehlpeople.com)

➤ Street and space design that invite for non-motorized mobility

➤ Measure - Test - Refine: do pilot projects, learn from the effects and refine the solution.



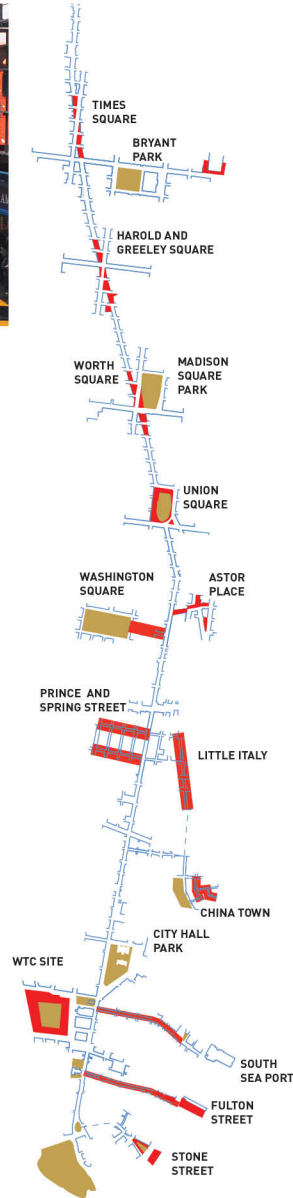
Gehl has worked since 2009 with New York City on the the NYC Plaza Program, which is a key part of the City's effort to ensure that all New Yorkers live within a 10-minute walk of quality open space.

Between 2008 and 2010, NYCDOT undertook the most extensive revision of traffic patterns in Manhattan since the mid-20th Century, when the city changed most major avenues from two-way traffic to one-way.

In 2009, major public plazas were added in Times and Herald Squares, and Broadway was closed to through-traffic at those locations. Vehicular traffic is able to serve destinations along Broadway, but the route is no longer a thoroughfare. As a result, DOT and the business improvement districts that manage streetscapes and public space in Midtown Manhattan have been able to devote more room along the route to pedestrians, public seating, cycling and special events.

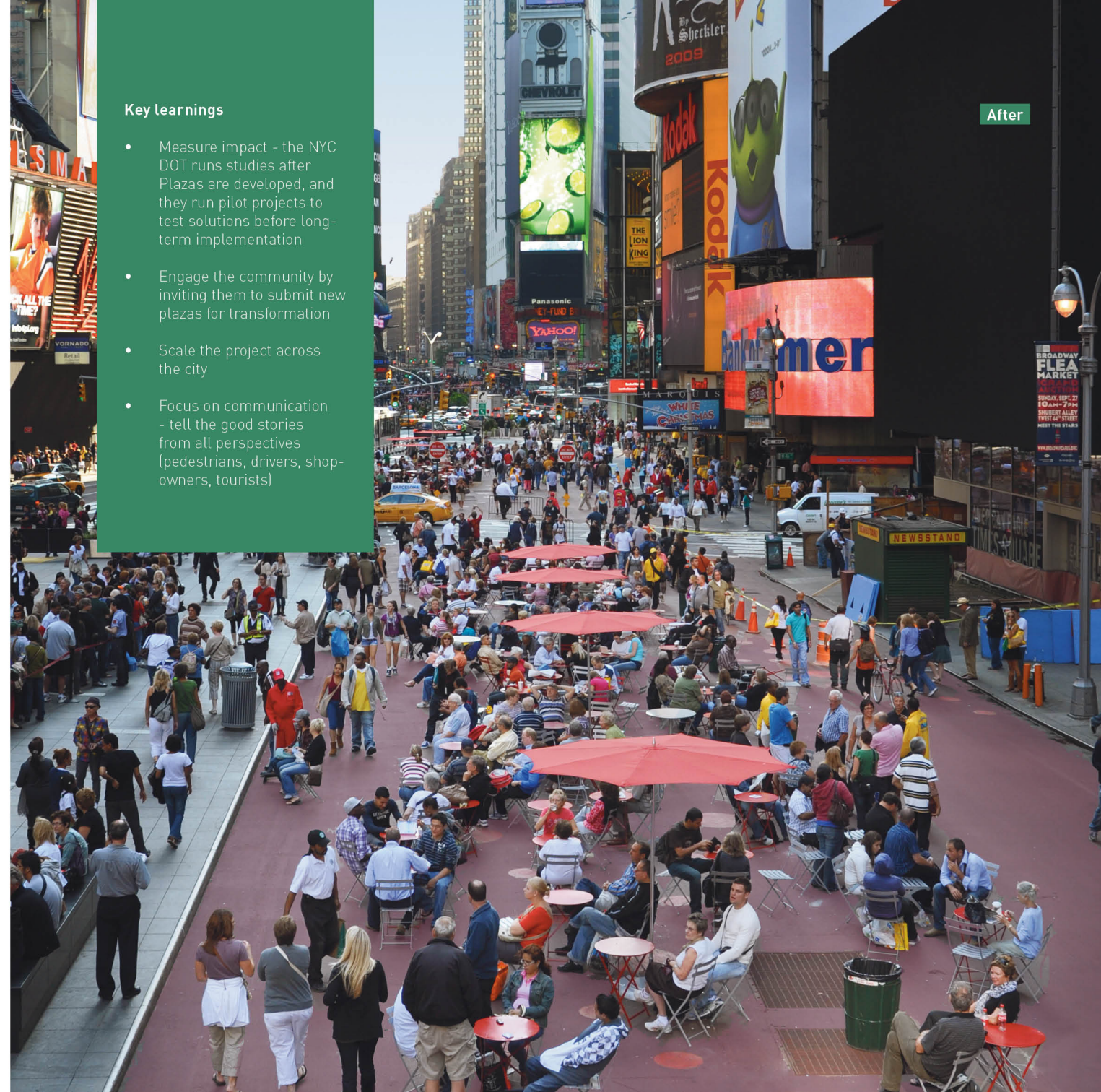
In many respects, the changes along Broadway constitute an exceptionally visible microcosm of NYCDOT's overall street improvement program, encompassing new public space, safety improvements, better traffic flow, a better balance among street users and a strengthening of the local economy.

More than 100 squares and plazas in the city - from large and prominent plazas to small community pocket parks - has been improved as part of the program.



Key learnings

- Measure impact - the NYC DOT runs studies after Plazas are developed, and they run pilot projects to test solutions before long-term implementation
- Engage the community by inviting them to submit new plazas for transformation
- Scale the project across the city
- Focus on communication - tell the good stories from all perspectives (pedestrians, drivers, shop-owners, tourists)



After



## Case studies

# The Climate Quarter, Copenhagen

Tåsinge Plads was The City of Copenhagen's first climate-adapted urban space. The square focuses on demonstration of climate adaption measures. As a green oasis in a densely populated city district, the square can handle heavy cloud burst events. It's part of the the Climate-Resilient quarter of Østerbro, where former roads / parking spaces has been turned into climate adaption, green pockets, parks, all after the stormwater event in 2011.

The City of Copenhagen is working together with the Copenhagen utility company HOFOR, Environmental Centre Østerbro and the residents of the neighbourhood on a common vision <https://klimakvarter.dk/en/om/>

➤ **Landscaping that multitask - combine great public space with sponge city design**



Climate change adaptation on Tåsinge Plads is to control and retain as much as possible of the rainwater falling around the square. Towards the west the landscape is raised above ground level to provide space for the existing trenches and create a slope facing the sun, where visitors can go to enjoy a cup of coffee or play games. From here the landscape slopes away towards an area at a lower level, where the stormwater collects.

Diverting and percolating rainwater from roofs and squares locally keeps the water away from the sewers, and we ensure in this way that there is capacity in the sewer to cope with the torrential downpours of the future. Altogether, Tåsinge Plads can delay and percolate rainwater from a surrounding area of 4,300 m<sup>2</sup>. On Tåsinge

Plads wild nature is placed in an urban framework. The design of the square is inspired by the "Copenhagen pavements" that run through the neighbourhood as a local symbol. The pavements are routed from the entrances of the buildings through the square, and in that way are divided into small urban spaces and activity sites. It is a framework that provides space for local nature to be able to grow willfully wild without appearing untamed. Rain, wind and sun are welcomed here, while the rhythm of the city is seen and noted. In the middle of the square are 'water parasols' and drops as structural elements that collect the water, so that children can use it for play. The water is pumped out onto the surface, where it runs in small channels on the surface out into the green space.



## Key learnings

- Collaboration also incl the residents, towards a shared vision for the area both handles large volumes of rainwater and creates a place for the neighbourhood's residents to meet
- 50 new trees
- Recycled materials and structures - 625 m<sup>2</sup> granite tiles are reused from Ørestad Boulevard, while 600 m<sup>2</sup> of paving stones and 625 m<sup>2</sup> of granite stones were recycled and used for seating areas and footpaths. Beneath the square, two air-raid bunkers continue to serve as rehearsal rooms for musicians



City District / Invite



Grow  
the city  
within  
the green belt



# 4

City District / Invite

Urban retrofit improves the quality for residence in the direct neighbourhood and also in the surrounding areas. When done well, urban retrofit gives people the opportunity to walk, bike and use public transport and other sustainable behaviours. People do not change behavior just because we tell them to. People react to invitations in the public spaces - this is what drives behavioral change and enriches life qualities.

## What can we gain?

- △ Maintain character and identity
- △ More dwellings and through that higher proximity to functions for more people
- △ Higher comfort, lower energy costs

## Key moves

- Combine several buildings and public space retrofit on a larger scale
- Take on areas in great need of quality upgrade for the residents - in collaboration with local partners

## Case studies

### Melbourne

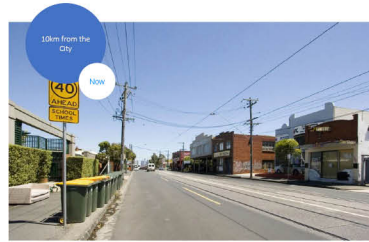
# Transforming public transport and densification

Melbourne got a new vision mandating growth only within its existing urban fabric. The principle is that new activity centres need to be developed with higher densities, quality streets, a mixture of uses and good access to public transport. These centres, which are connected by designated transport streets - be they tram or bus - were given as-of-right planning

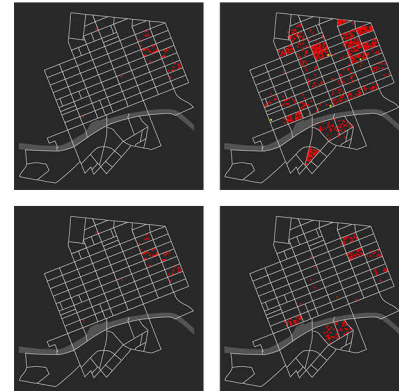
Gehl and the City of Melbourne  
Website: [gehlpeople.com](http://gehlpeople.com)

➤ Green belt to stop sprawl and densification within existing city structure

➤ Simple planning code for anyone wanting to densify along public transport corridors



approval to build up to six stories and for a depth of about 100 metres from the road. Heritage buildings and public parks would be protected and the roads calmed in favour of public transport, bicycles and pedestrians with limited car access and within easy walking distance of the adjacent suburban areas.



## Key learnings

- When we densify from within we utilize existing infrastructure and avoid embedded CO2 from new infrastructure
- We avoid building on green field
- We create critical mass to support efficient public transport and lively local communities
- We can do this with simple changes to policy along with investments in public facilities
- We can support and prioritize green mobility



## Case studies

### The Bund, Shanghai

## The Bund

The iconic old Bund port and trade area functioned as an `old CBD` in the past century, but with current day challenges and climate goals, there is a need to reinvent the area.

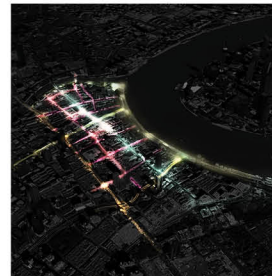
In contrast to the present day CBD of the past decades, with its deserted public realm and mono-functional focuses, the new old CBD would build on existing cultural and historical narratives - reusing and re-inhabiting this unique area at the heart of the global city

Vision developed by: Gehl Architects  
Website: gehlpeople.com

Combine several building and public space retrofit on a larger scale



The Bund - the historic CBD of Shanghai can be turned into a new iconic "New Old CBD" and new Zero Emission Zone.



and diversifying the offering, ambitions and opportunities.

Through a focus on Pedestrian priority, Green Mobility and Sponge City initiatives joint with an ambitious Energy Optimization of the heritage buildings, this can become

a Zero Emission zone recognized on a Global level and lead the way for China's 2060 carbon neutrality.

## Vision



### Key learnings

- A continuous route
- Revitalize heritage buildings
- One Bund area
- Great conditions for walking and cycling
- Retrofit existing building
- Adapt streets to climate
- Test innovation and new technology solutions



Guidelines & Policy /  
Build Inwards



**45+ km**  
continuous public  
space implemented  
city-wide along the  
Huangpu River



# 5

## Guidelines & Policy / Build Inwards

A sustainable and livable vision for the future is often challenged by outdated policies and regulations and short term economic models. Working with policy and guidelines is about realigning vision and process to live up to the potential of urban retrofiting. Policies to avoid demolishing and continuing to expanding of cities, and rather build on existing qualities, infrastructure and public facilities. This way, we can improve and renew our cities and our everyday life quality and move towards carbon neutrality.

### What can we gain?

- △ Formalized ways to improve
- △ Practical ways to do improvements

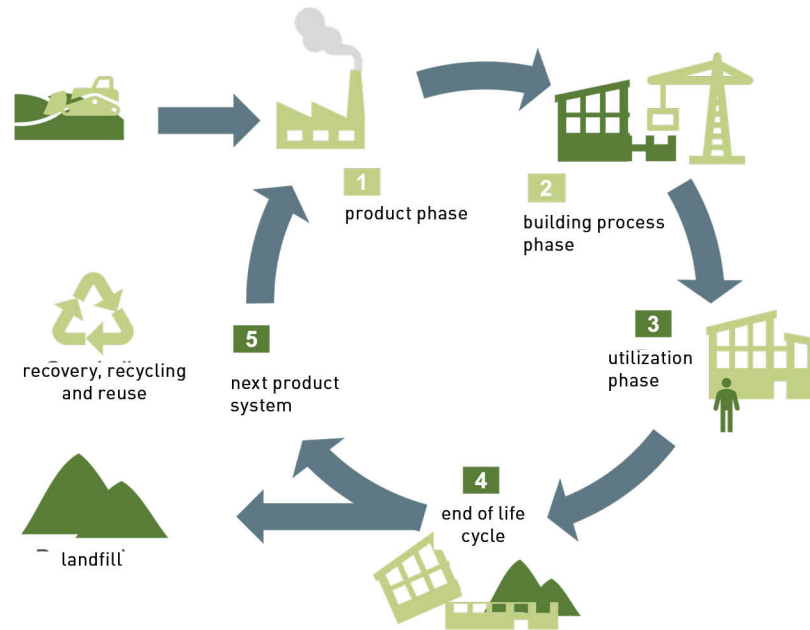
### How to do it!

- Collect data and input to be able to measure success and evaluate
- Build partnerships around shared vision and guidelines
- Have framework and guidelines that can be scaled
- Have clear and communicative concepts

Nationwide strategy

## LCA (Life Cycle Analysis)

In Denmark, a new requirement for LCA calculation is introduced for new construction on 1 January 2023. For new construction over 1,000 m<sup>2</sup>, a requirement for a CO<sub>2</sub> limit value corresponding to 12 kg CO<sub>2</sub>eq/m<sup>2</sup>/year is introduced. The requirement applies to all new buildings covered by the energy framework. This is the first step to reducing the 40% Co2 linked to the build environment.

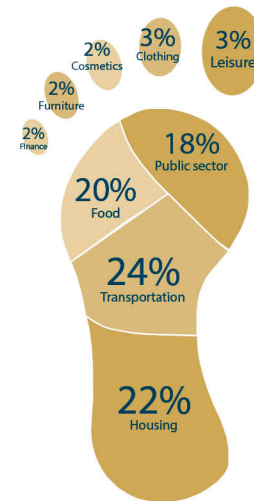


Source: www.lcabyg.dk

### Personal footprint

We have to change policy to change the build environment footprint, but looking at the Danish CO<sub>2</sub> footprint per person, it is clear that our mobility choice (24%) and food choices (20%) are equal important as our homes (22%), we need to invite for sustainable behaviour.

Source: concito.dk



➤ Change policy to fit vision

➤ Focus on sustainable behaviour both in building and daily life



### Key learnings

- Change policy and process to fit sustainable vision
- Change supply chains and industries towards more sustainable material
- Build to support daily sustainable choices and minimize commuting
- Provide access to locally produced food
- Invest in high quality green public transportation and soft mobility infrastructure

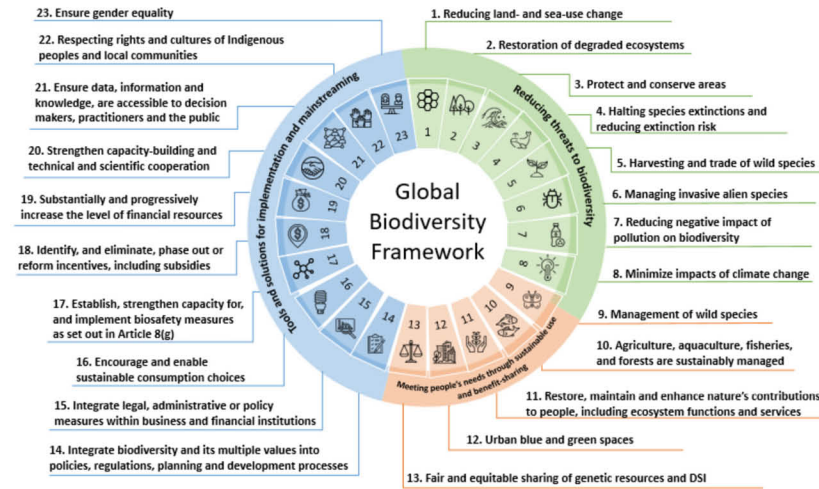


Global

## The Kunming-Montreal Global Biodiversity Framework

The Kunming-Montreal Global Biodiversity Framework (GBF) was adopted during the fifteenth meeting of the Conference of the Parties (COP 15) following a four year consultation and negotiation process.

### Kunming-Montreal Global Biodiversity Framework Themes and Targets



Source: [www.shapeofnature.ca](http://www.shapeofnature.ca)

This historic Framework, which supports the achievement of the Sustainable Development Goals and builds on the Convention's previous Strategic Plans, sets out an ambitious pathway to reach the global vision of a world living in harmony with nature by 2050. Among the Framework's key elements are 4 goals for 2050 and 23 targets for 2030. In adopting the Kunming-Montreal Global Biodiversity Framework, all Parties committed to setting national targets to implement it, while all other actors have been invited to develop and communicate their own commitments. At the next meeting of the Conference of the Parties, the world will take stock of the targets and commitments that have been set. The framework as 4 overall goals

1. The integrity, resilience, and connectivity of ecosystems is maintained, enhanced, or restored, substantially

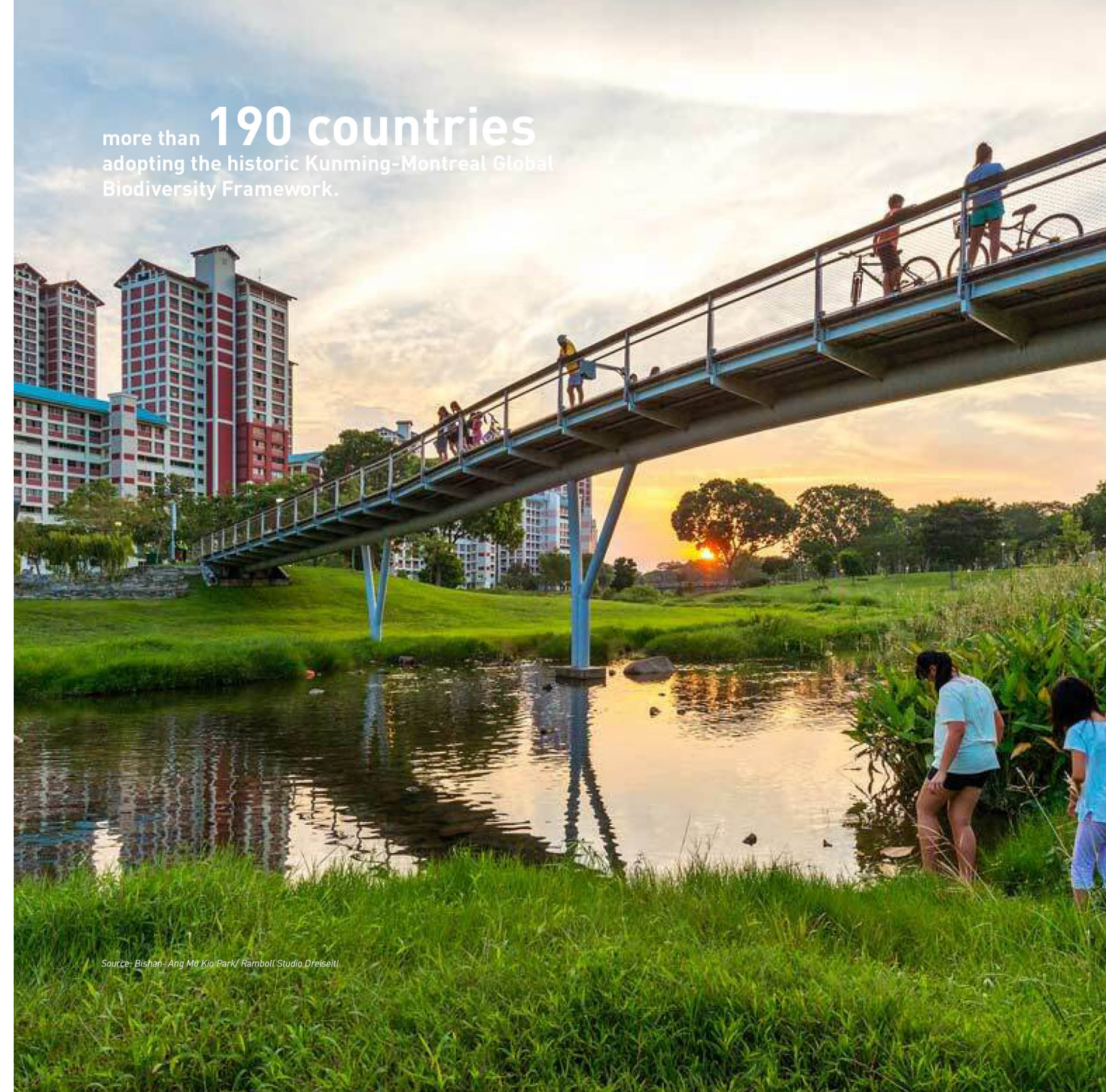
increasing the area of natural ecosystems by 2050, and that human-induced extinction of threatened species is halted.

2. Biodiversity is sustainably used and managed and nature's contributions to people, including ecosystem functions and services, are valued, maintained and enhanced.

3. The monetary and non-monetary benefits from the utilization of genetic resources, and digital sequence information on genetic resources, and of traditional knowledge associated with genetic resources, as applicable, are shared fairly and equitably.

4. Adequate means of implementation, including financial resources, capacity-building, technical and scientific cooperation are secured and equitably accessible to all Parties.

more than **190 countries**  
adopting the historic Kunming-Montreal Global Biodiversity Framework.



Source: Bishan - Ang Mo Kio Park/ Ramboll Studio Dreiseitl

➤ The Framework has 4 overall goals and 23 targets.

➤ The Framework has the important 30x30 goal: the commitment to save 30% of land and water by 2030

Shanghai

## Riverfront Guidelines and public spaces

The implementation of the strategy and guidelines has led to a continuous public space along the Shanghai Huangpu Riverfront that offers something for people all across Shanghai. The Huangpu River runs through 10 of Shanghai's 17 districts.

- 78 % of all users live nearby
- 45 km of riverfront implemented in 5 years
- 83% arrive on foot, bike or with public transport
- Better public spaces within 15min walk for 4,8 million people

### A global place

**#1** The Bund is #1 of 1,345 things to do in Shanghai according to Tripadvisor

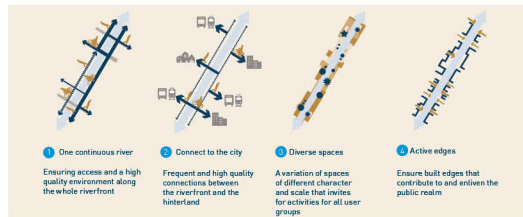
### A local place

**78%** of visitors Live nearby\*

**83%** Do not arrive by car but instead by foot, bicycle or public transport. This makes frequent, high quality connections hugely important

Increased proximity to better public space for

**4,8 million people** working and living within a 15 minute walk of the Huangpu river



The 4 strategies has so far enabled:  
→ more than 29km of bicycle path has been implemented and 33% of visitors come to boost health;

→ 83% do not arrive by car;

→ 62% stay longer after the improvement of public spaces

→ 82% increase in greenery for all of Shanghai

→ Overall, the riverfront offers increased proximity to better public spaces for 4,8 million people working and living within a 15 minute walk of the Huangpu River.



### Key learnings

- Clear and communicative strategies helps implement guidelines city-wide
- Measuring effects and impact is important to guide implementation and communicate change

Gehl

