Green Strategy/

Schmidt Hammer Lassen

Green strategy / SHL

01. The big picture

02. Holistic Sustainability

03. Adaptive Transformation

04. Get In touch

Pre-design strategy:

‘Most opportunities for positive outcomes are lost before the brief hits the desk’

Social /

Encourage **human agency**

Support **interaction**

Adapt to **change**

Increase **health**

Operational /

Integrate with existing **systems**

Harmonise **construction** process

Reduce **labour**

Ease **repair**

Design as Ecology

Environmental /

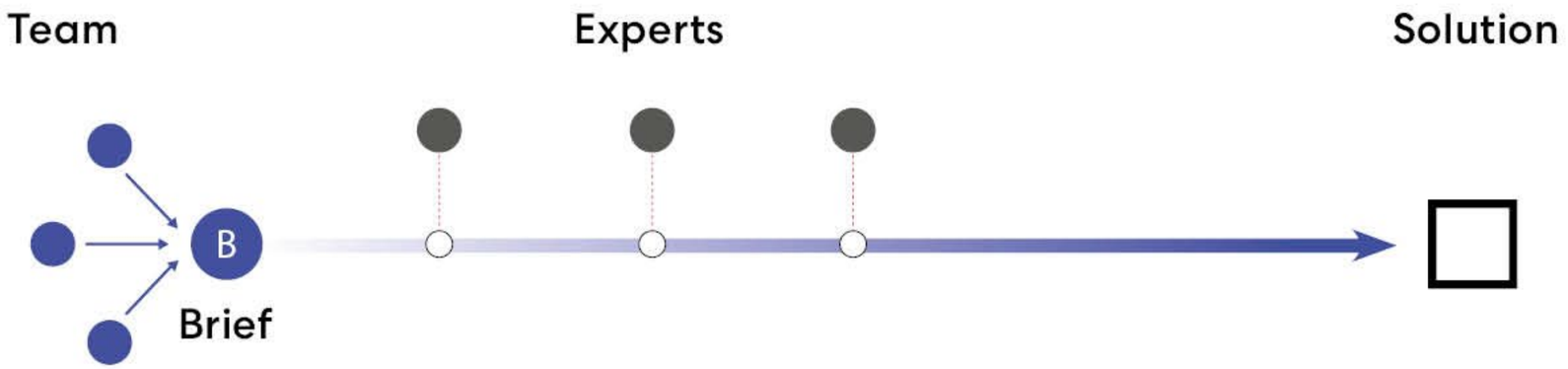
Circular economy

Reduce **resource** use

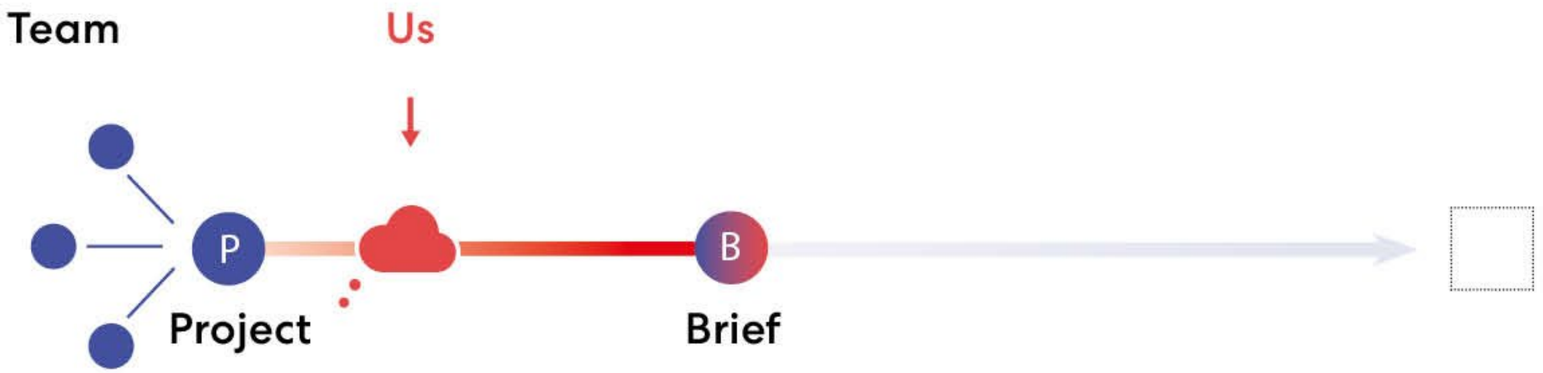
Eliminate obselescence

schmidt/hammer/
lassen/
architects/

From predefined brief...



... to design of the brief



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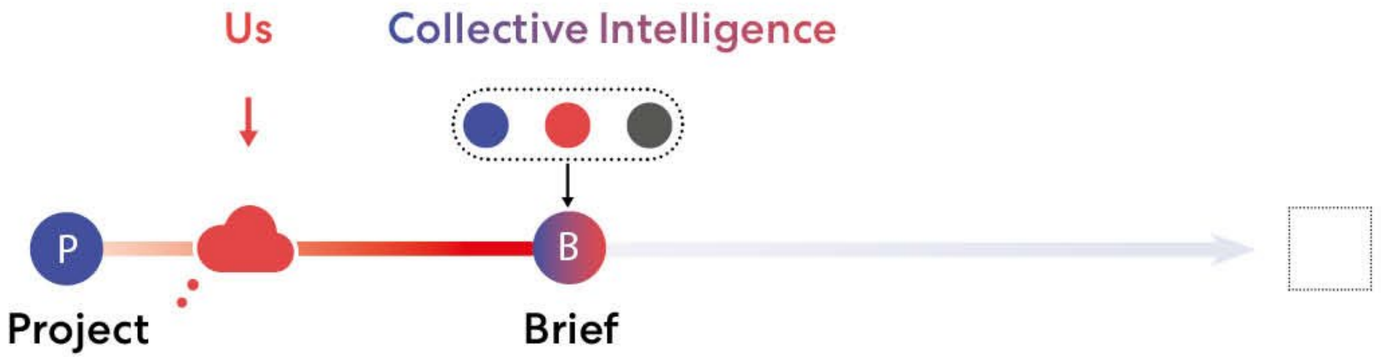

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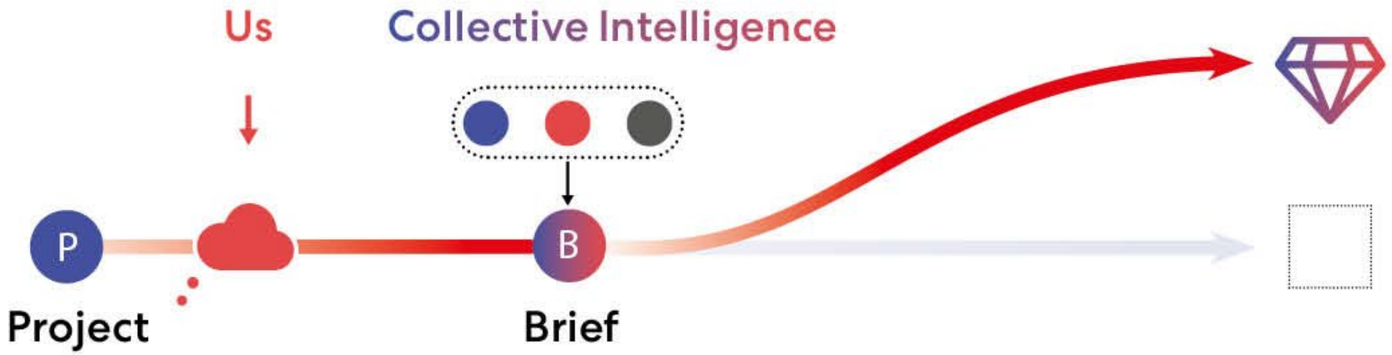


Pre-design strategy:

We form an early vision for positive outcomes & preserve these goals through design and delivery

Green strategy / SHL

01. The big picture

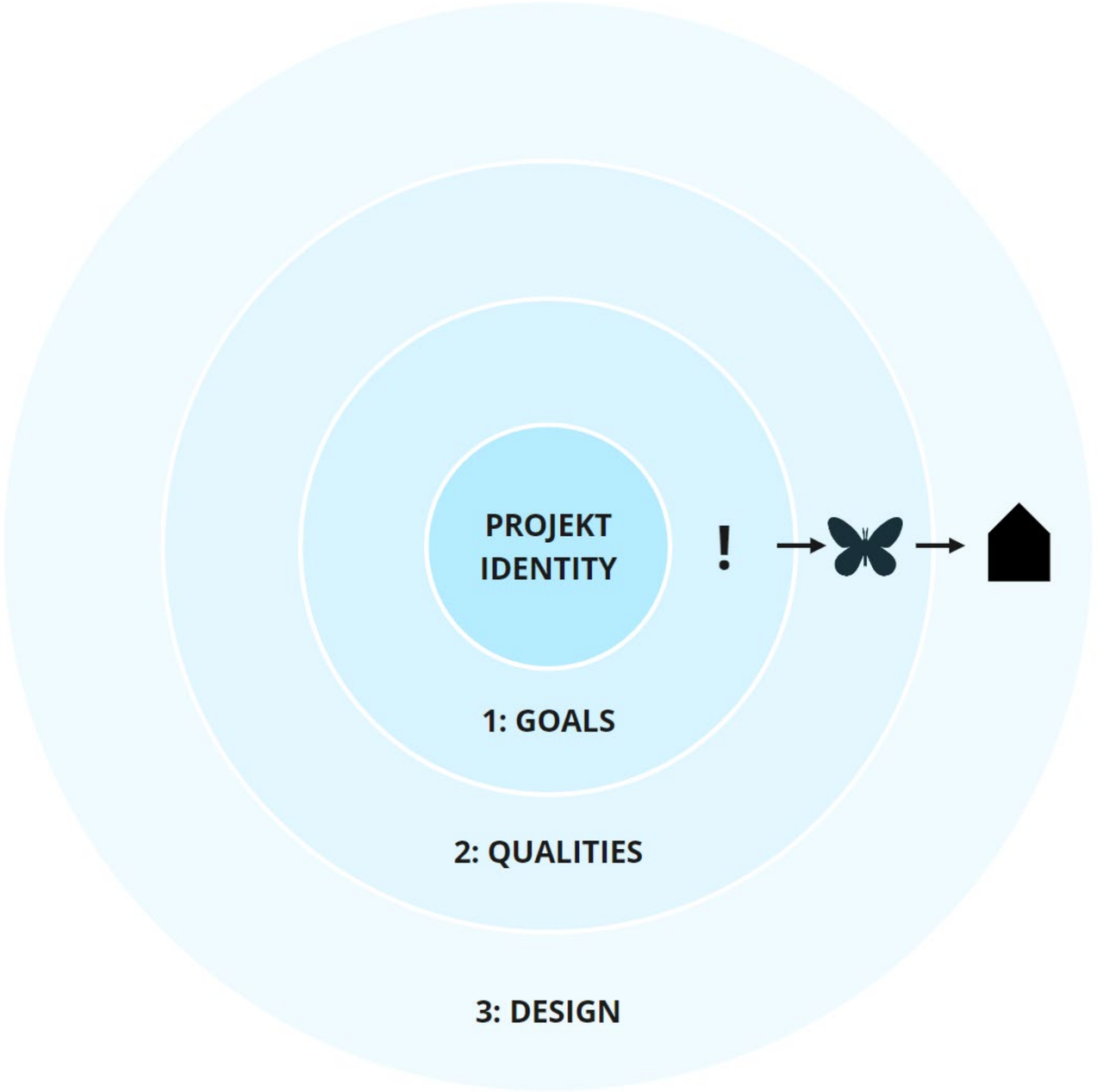
02. Holistic Sustainability

03. Adaptive Transformation

04. Get In touch

Tools for conceptual alignment

Collaborative targets



schmidt/hammer/
lassen/
architects/

SHL Practice Cards

Question

Natural Daylighting

Are daylighting needs met through passive methods?

Phase/Frameworks
Open Question

People & Resources

Tools

13

Quality

Biodiversity Design

Description
Maintain biodiversity in the local environment, the diversity of the species there and their genetic diversity. Encourage positive steps towards creating, maintaining and increasing biodiversity both on buildings themselves and in their environs. Consider biological corridors, pollinator passages and re-wilding landscapes.

People & Resources
Enlai Hooi, Pim IJsendoorn

Tools
Climate Positive Design Pathfinder, An Architect's guide to Biodiversity by E.Camplisson

Benefits

WELL	
BREEAM	LE02, LE03, LE04, LE05
DGNB	ENV2.4, SITE1.1
LEED	SS03
LBC	Place-01, Beauty-19

Phase/Frameworks
Ideation/Development

26

Process

Life-cycle Analysis

Description
Life cycle assessment or LCA is a methodology for assessing environmental impacts associated with all the stages of the life cycle of a commercial product, process, or service.

People & Resources
Living Design - Teams, Licences available from PW. Digital Practice - Teams, Experts: Jesce Walz, Elton Gjata

Tools
Tally (for Revit), OneClick LCA Analysis, Athena Impact Estimator for Buildings, Tally (for Revit), OneClick LCA Analysis

Benefits

WELL	A13, X10, X11, X12, X13
BREEAM	Man 02, Mat 01, Mat 02, Mat 03, Mat 05, Ene 04, Le02
DGNB	PRO2.1, ECO1.1, ENV1.1
LEED	MR02, MR03, MR04, MR05, MR06, IE04
LBC	Health-09, Materials-12, Materials-14

Phase/Frameworks
Development

9

Tool

Universal design for learning

Description
Universal Design for Learning is a system created to ensure students with learning differences can thrive in the same educational environment. Universal Design for Learning refers to a framework established to minimize physical and mental barriers to learning, affording all students equal opportunity to flourish.

People & Resources
Elif Tinaztepe, PW: Rachael Dumas

Tools

Benefits
WELL
BREEAM
DGNB
LEED
LBC

Phase/Frameworks
Ideation/Development

15

- **Flexible & project-specific**
- **Communication tool between collaborators**
- **Visualise the decision hierarchy**

Qualities

Quality

Biodiversity Design

Description

Maintain biodiversity in the local environment, the diversity of the species there and their genetic diversity. Encourage positive steps towards creating, maintaining and increasing biodiversity both on buildings themselves and in their environs. Consider biological corridors, pollinator passages and re-wilding landscapes.

People & Resources

Enlai Hooi, Pim IJsendoorn

Tools

Climate Positive Design
Pathfinder, An Architect's guide to Biodiversity by E.Camplisson

Benefits

WELL	
BREEAM	LE02, LE03, LE04, LE05
DGNB	ENV2.4, SITE1.1
LEED	SS03
LBC	Place-01, Beauty-19

Phase/Frameworks

Ideation/Development

schmidt/hammer/
lassen/
architects/

Processes

Process

24hr / Seasonal Space Programming

Description

Planned spatial programming which maintains activity throughout the diurnal period ensures greater levels of activity, reducing the likelihood of anti-social behaviour, thus improving the safety and comfort of urban areas. SHL Innovation have created an AI template to generate 24Hr mapping for a site or space.

People & Resources

Enlai Hooi, Elif Tinaztepe

Tools

Stakeholder workshops/ AI template -SHL innovation

Benefits

WELL
BREEAM Wst 06
DGNB
LEED LT04
LBC

Phase/Frameworks

BD & Positioning/Ideation

3

schmidt/hammer/
lassen/
architects/

Tools

Tool

Green Roofs

Description

A green roof is a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly–sloped roof. Green roofs can be employed to improve biodiversity, for rainwater collection, and as SUDs. They fall into three main categories—extensive, intensive, and semi–intensive.

People & Resources

S:_Firmwide\Rhino-Grasshopper\SNIPPETS (03 - Analysis)

Tools

Benefits

WELL
BREEAM LE03
DGNB
LEED SS03, SS05
LBC Place-02, Beauty-19

Phase/Frameworks

Development/Documentation

37

Tool

Green Roofs

LEED BREEAM LIVING BUILDING CHALLENGE

Design Devices

Digital tool

Pedestrian Simulation

Description

Pedestrian simulation is a powerful tool that can help us better understand how people move through and use the spaces that we design. Pathfinding can help us minimize lines of access to critical points in our plans (i.e. fire stairwells). In the past these sorts of simulations were relegated to highly specialized platforms.

People & Resources

SHL-Digital team, Computational Design Channel, https://digitalpractice.perkinswill.com/2020/10/26/pedestrian-simulation/

Tools

Benefits

WELL T09
BREEAM
DGNB
LEED
LBC Health-11, Equity-17

Phase/Frameworks

Ideation/Development

26

Digital tool

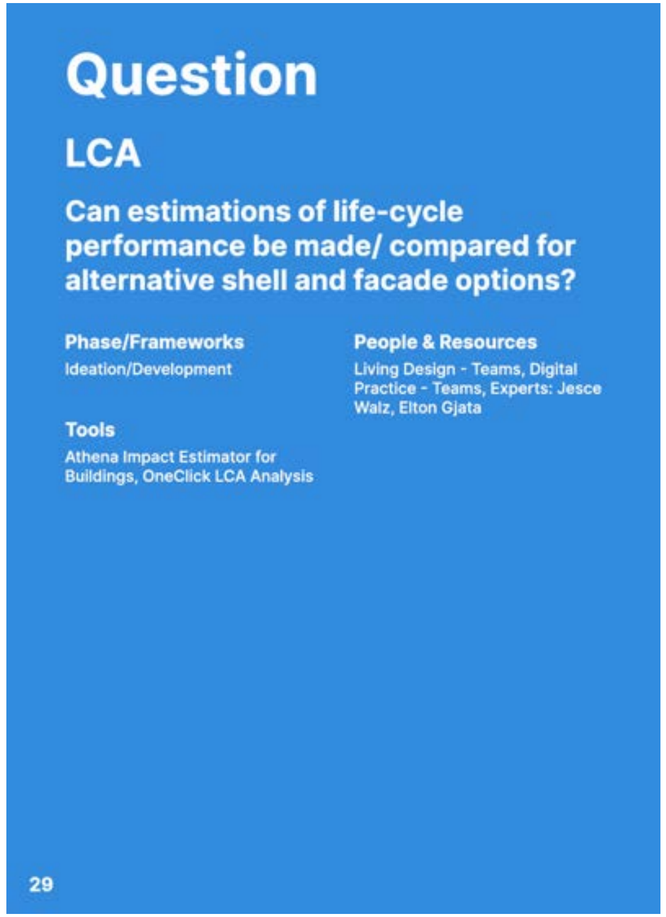
Pedestrian Simulation

WELL LIVING BUILDING CHALLENGE

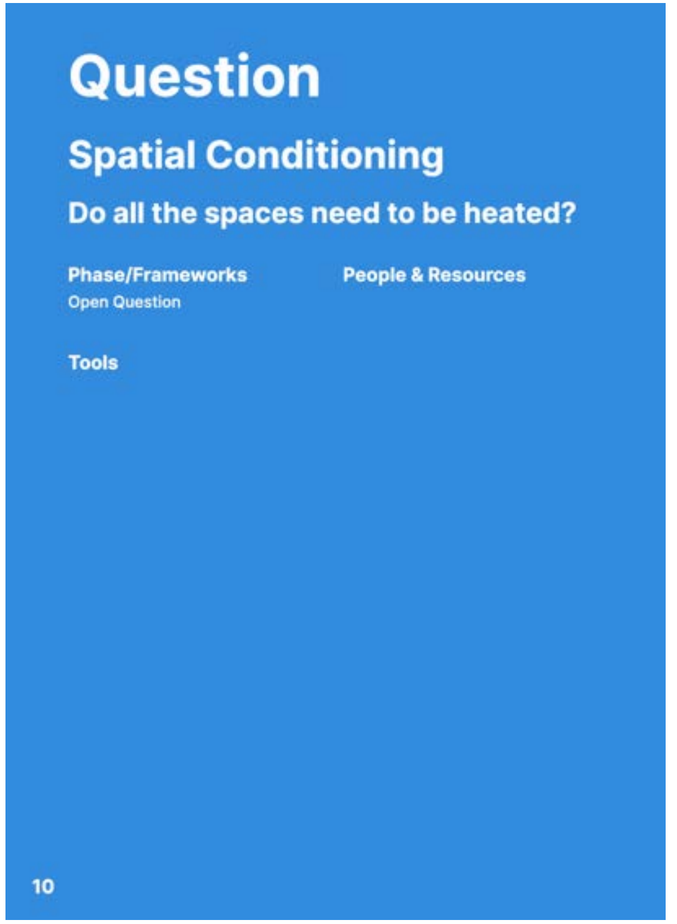
Digital tools

schmidt/hammer/
lassen/
architects/

Questions

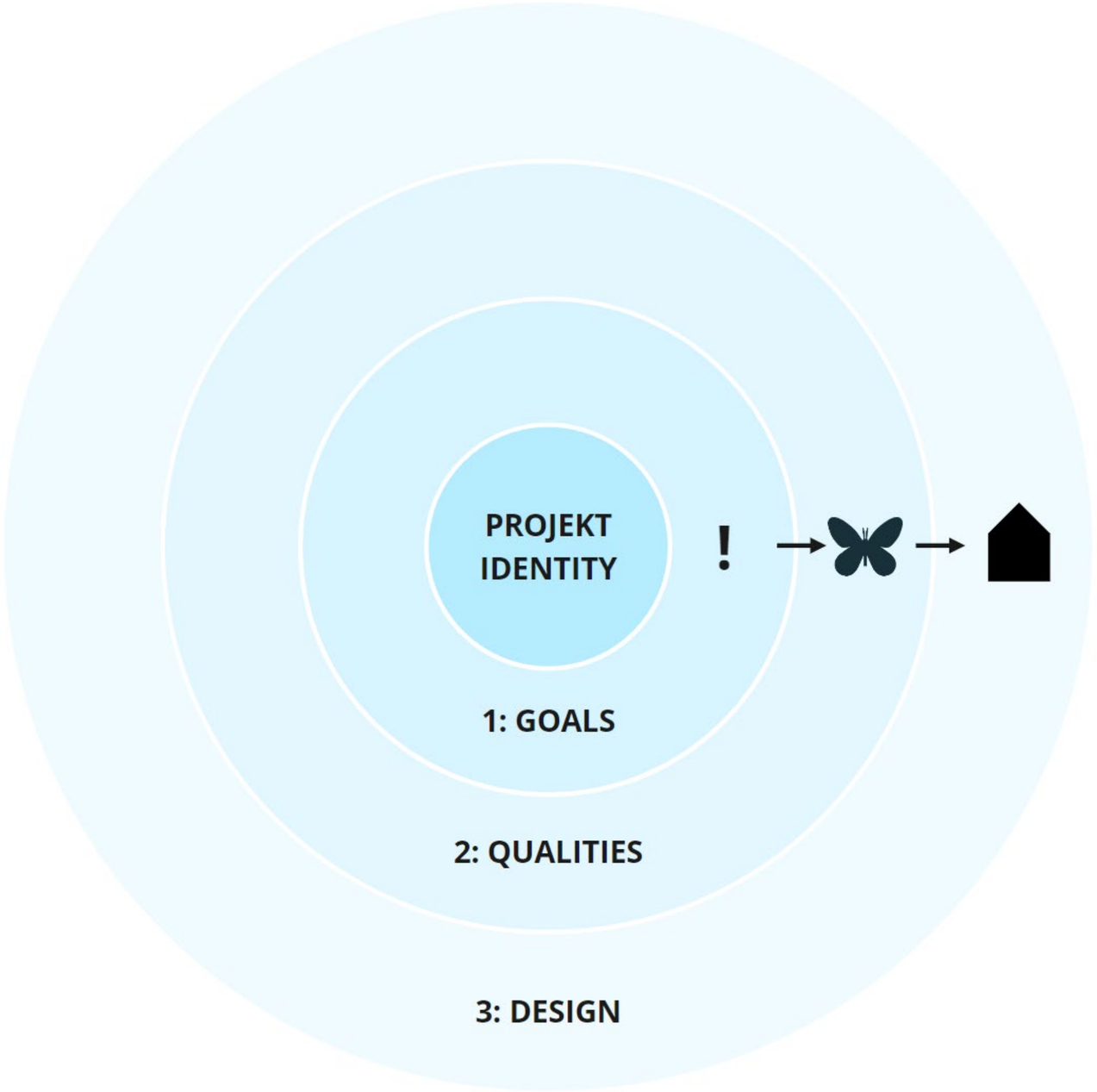


Stage Check

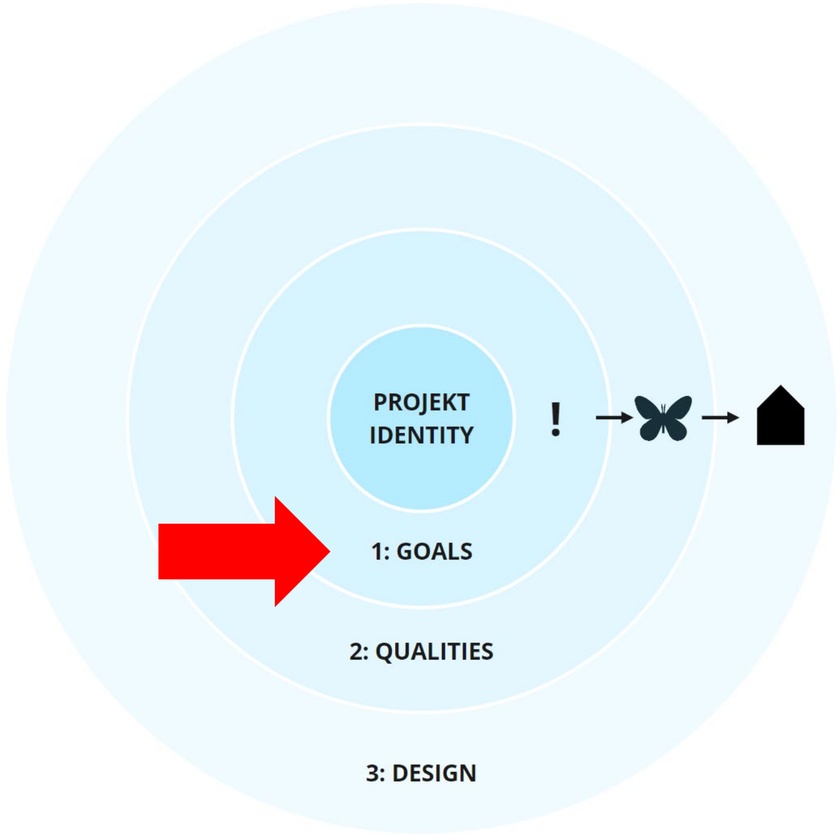


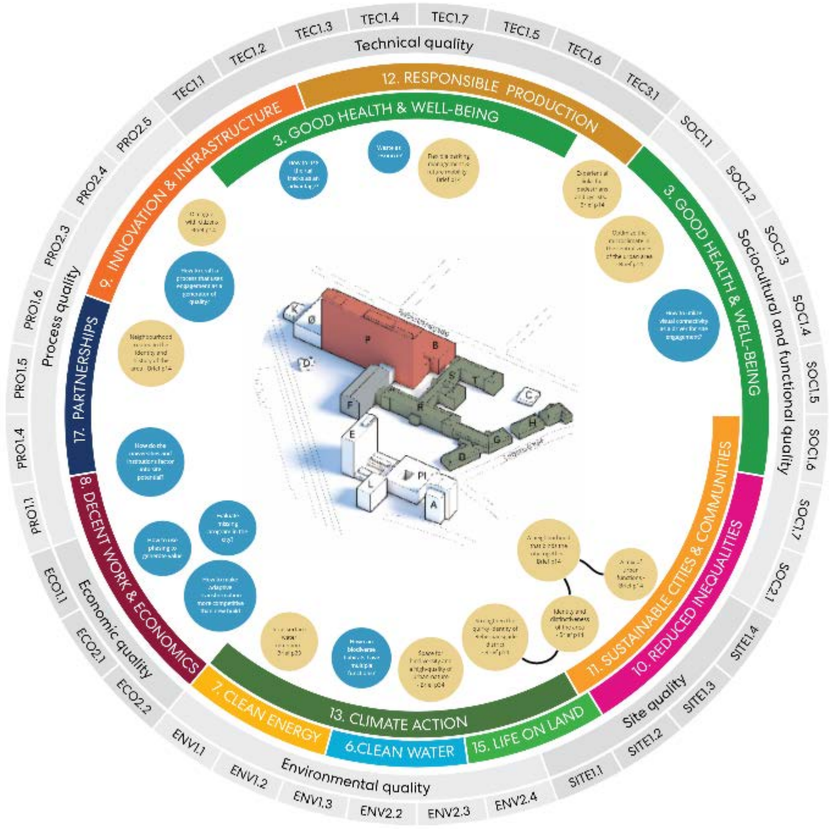
Global

From goals to outcomes

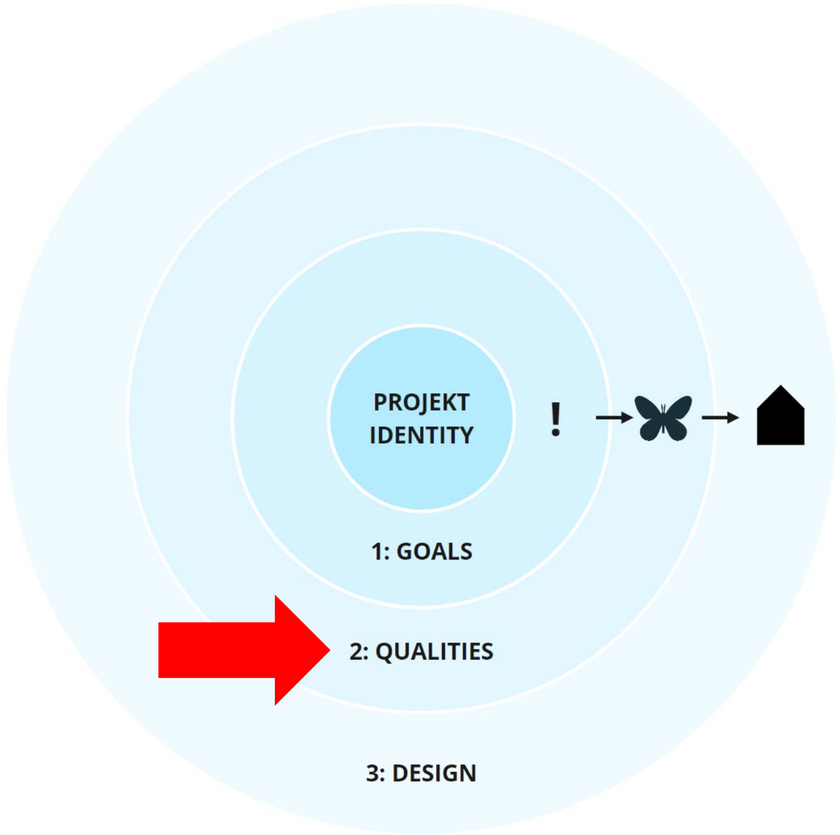


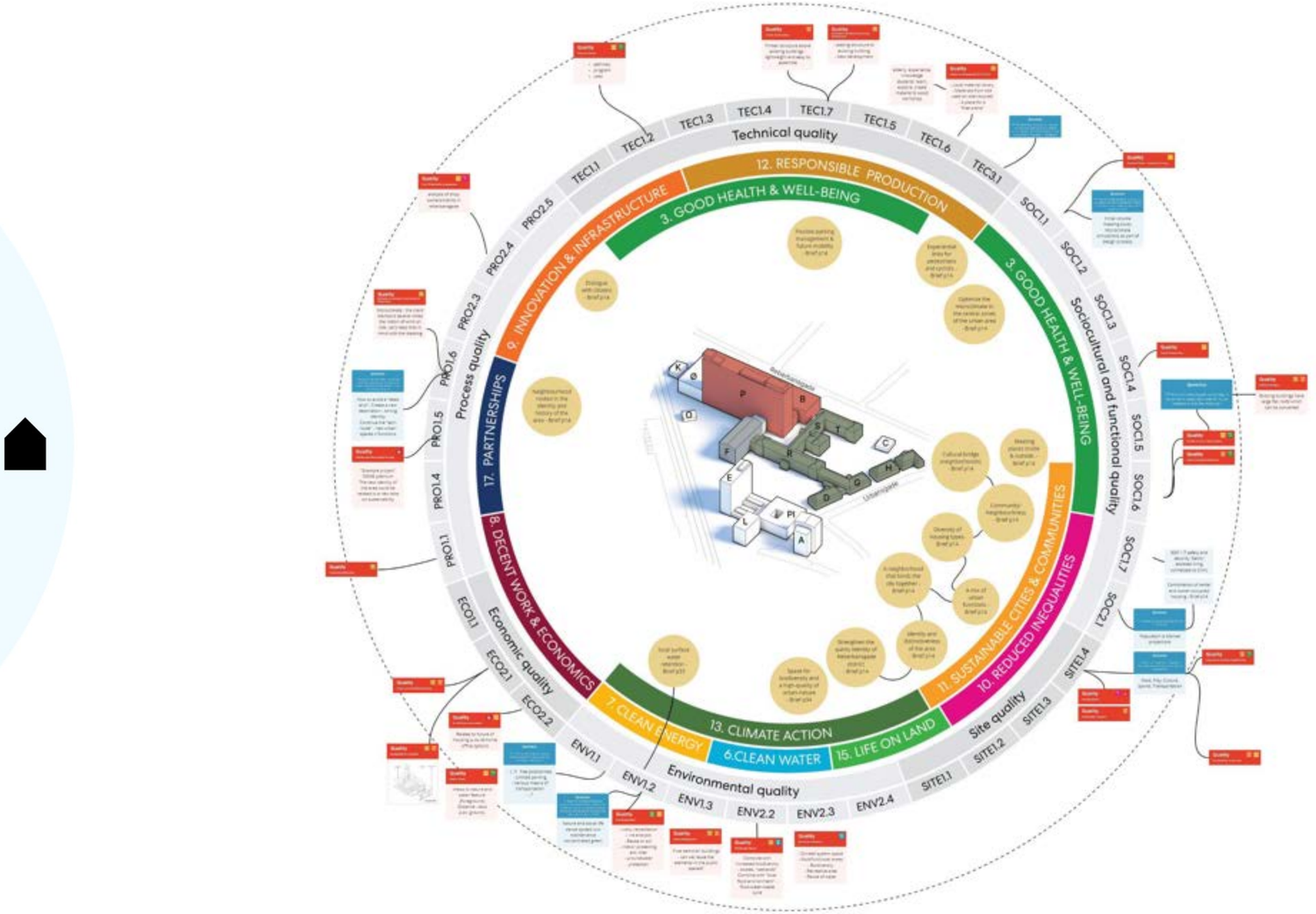
Brief Mapping





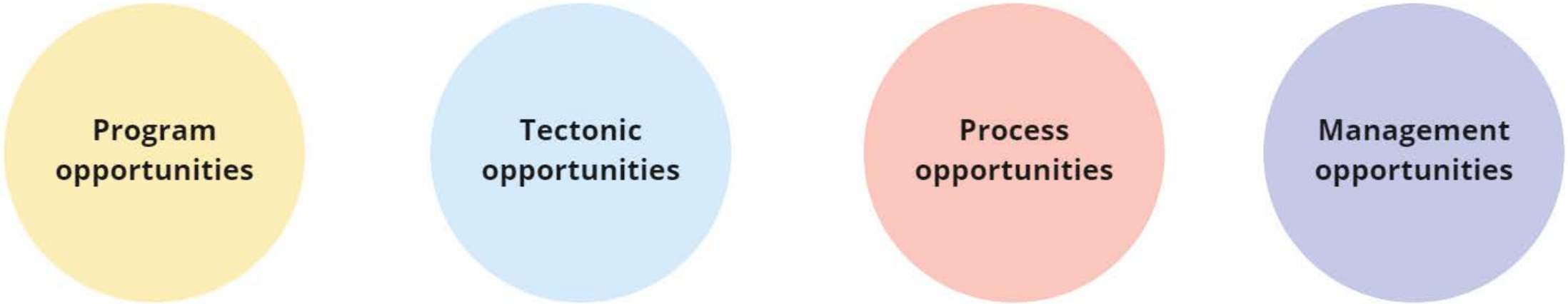
Qualities & Questions



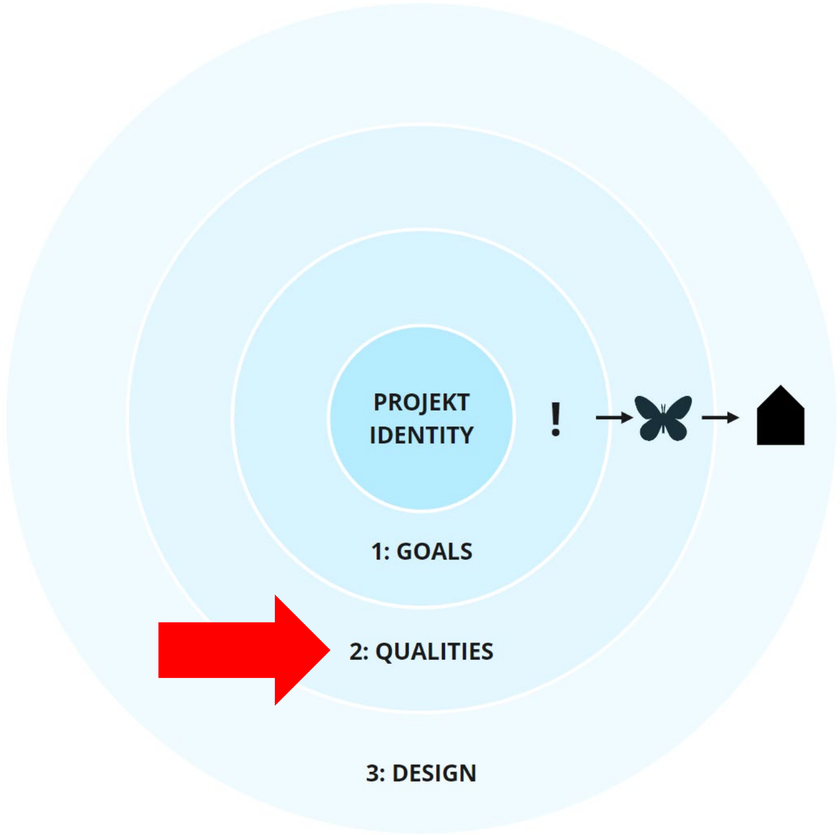


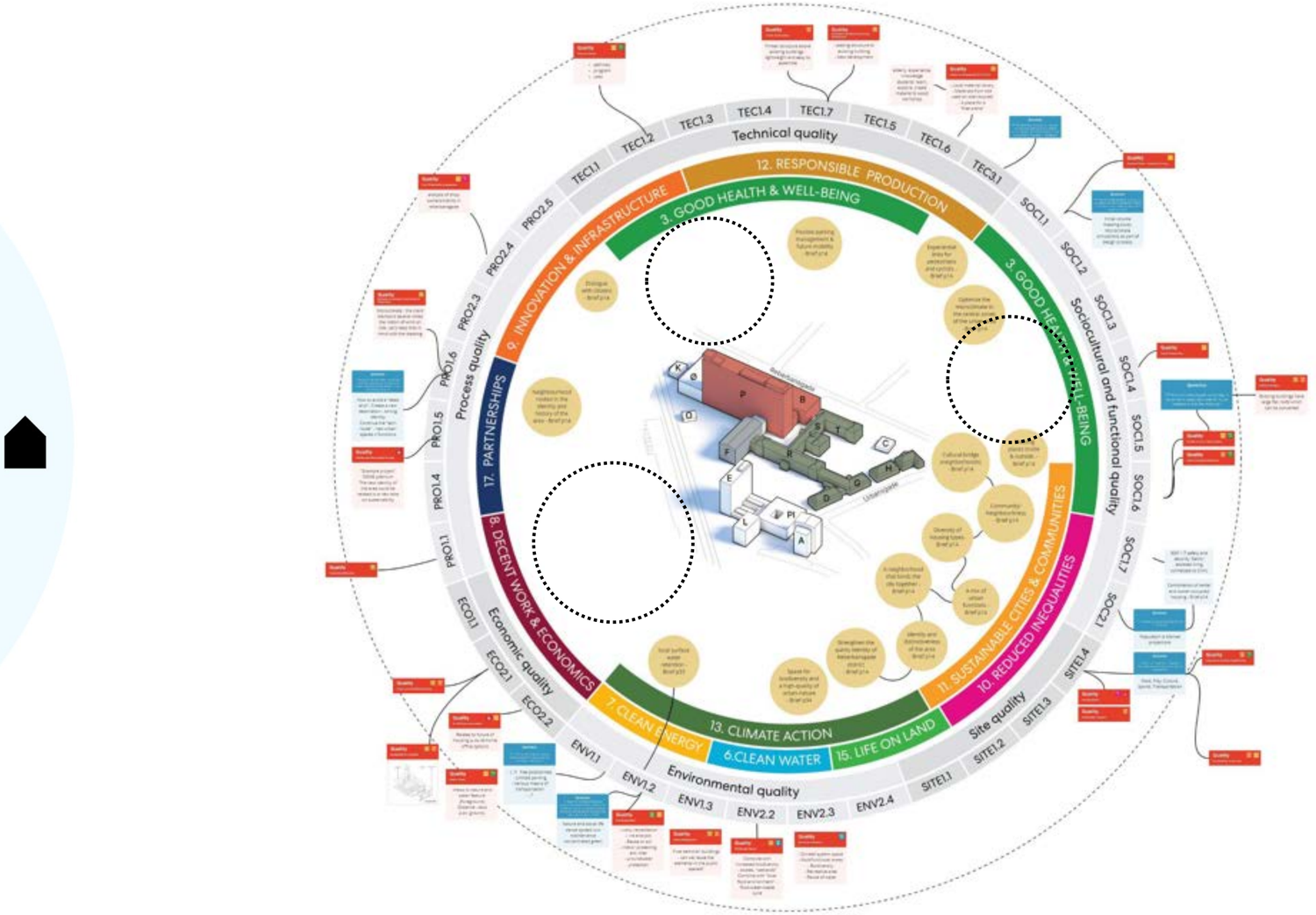
Explore *unstated* architectural opportunities:

(BD, PM & Innovation)



Blindspots?


PROJEKT
IDENTITY
!
1: GOALS
2: QUALITIES
3: DESIGN


Technical quality
TEC1.1
TEC1.2
TEC1.3
TEC1.4
TEC1.7
TEC1.5
TEC1.6
TEC3.1
Process quality
PRO2.5
PRO2.4
PRO2.3
PRO1.6
PRO1.5
PRO1.4
PRO1.1
Economic quality
ECO1.1
ECO2.1
ECO2.2
Environmental quality
ENV1.1
ENV1.2
ENV1.3
ENV2.2
ENV2.3
ENV2.4
Site quality
SITE1.1
SITE1.2
SITE1.3
SITE1.4
Sociocultural and functional quality
SOC1.1
SOC1.2
SOC1.3
SOC1.4
SOC1.5
SOC1.6
SOC1.7
SOC2.1
9. INNOVATION & INFRASTRUCTURE
12. RESPONSIBLE PRODUCTION
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7. CLEAN ENERGY
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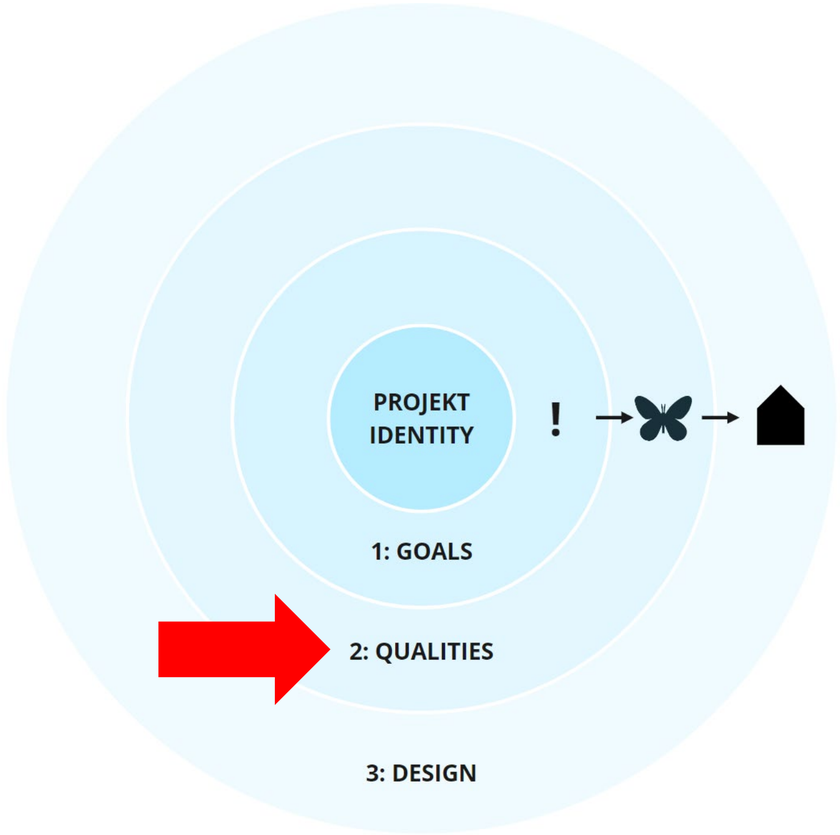
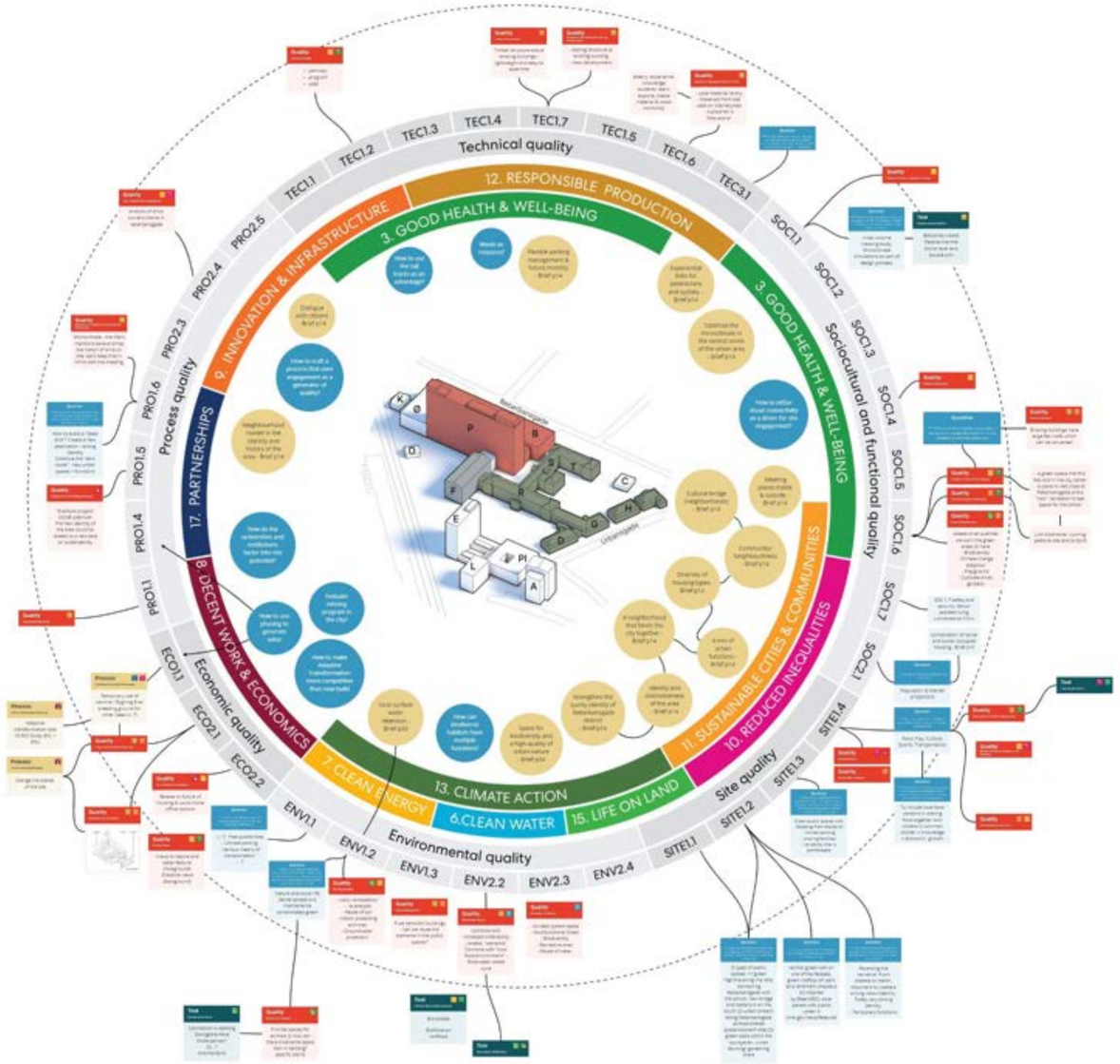
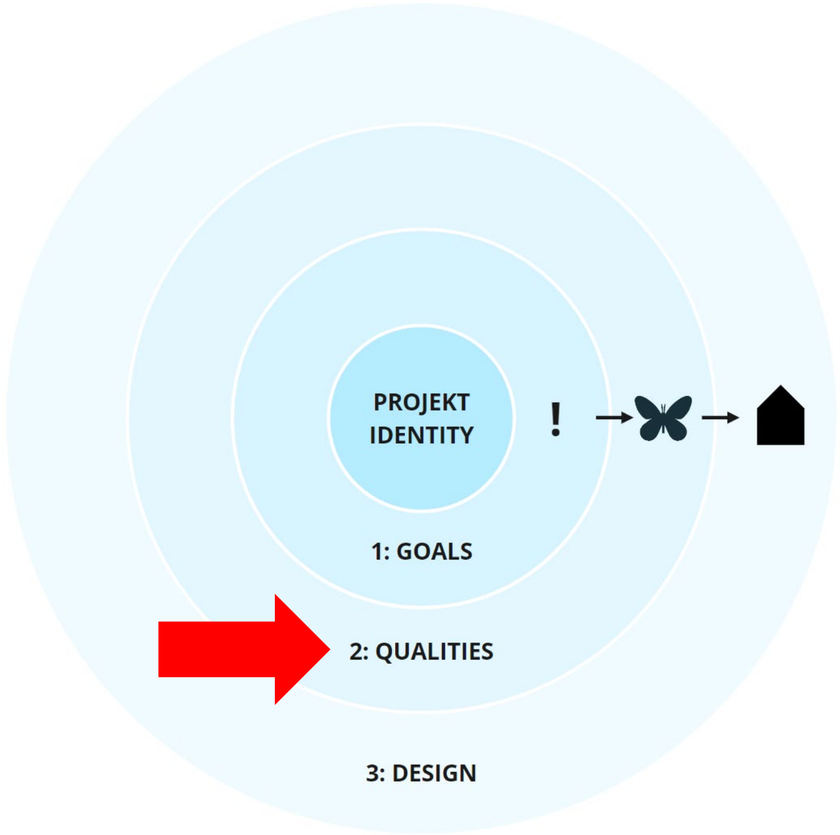
6.CLEAN WATER
15. LIFE ON LAND
11. SUSTAINABLE CITIES & COMMUNITIES
10. REDUCED INEQUALITIES

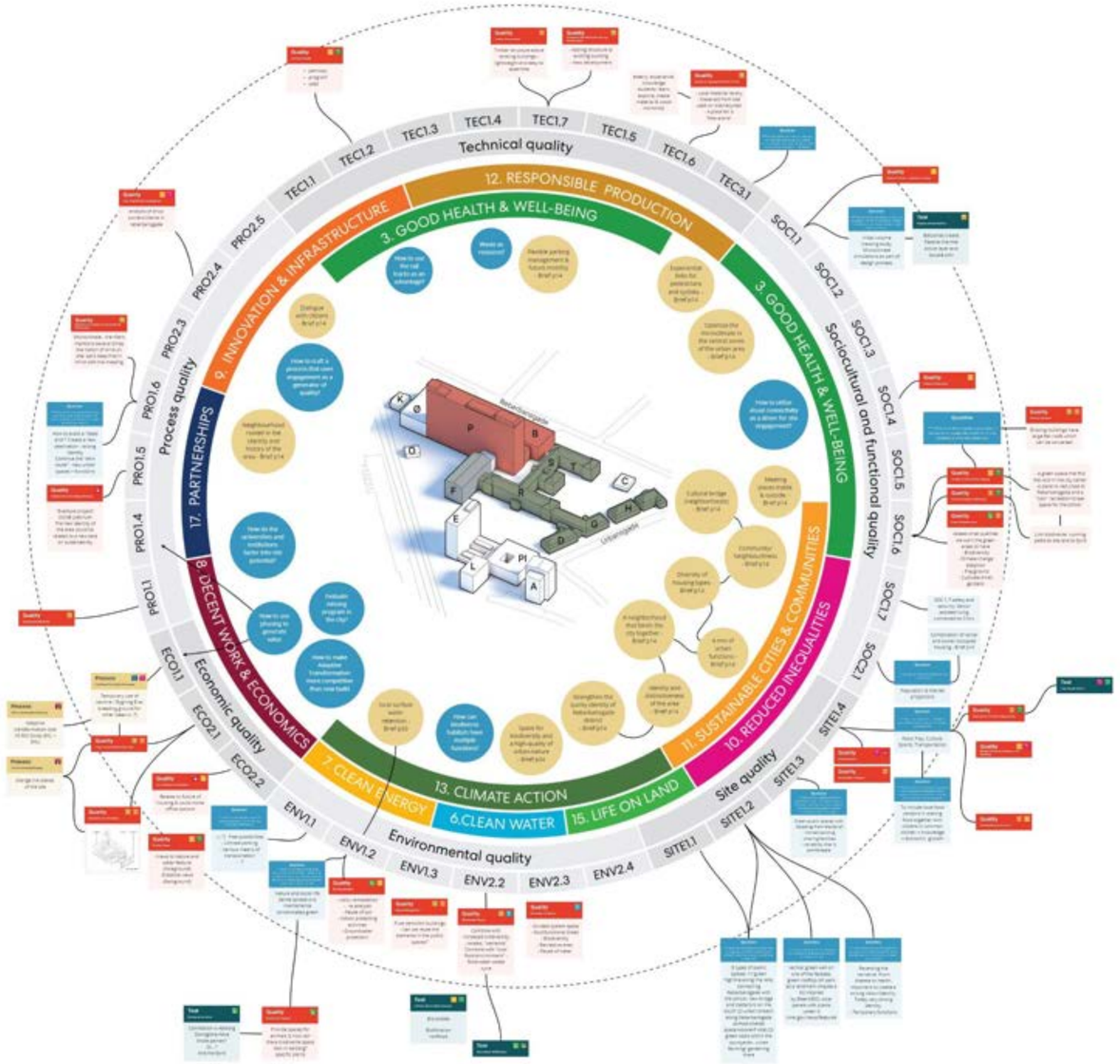
Ideas & critique



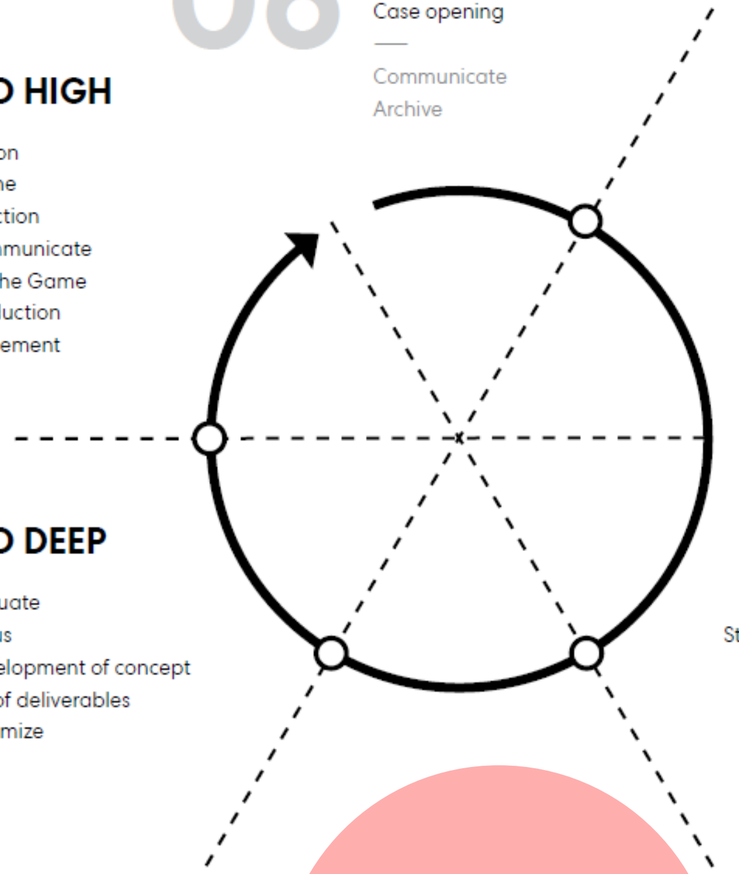


Ideas & critique





Go wide



00 BD HANDOVER

Client understanding
Assignment understanding
Planning
Case opening

Communicate
Archive

"Why did we get in?"

Client aspirations. Passing knowledge

01 GO IN

Get involved
Question
Problem finding
Fact finding
All is relevant
Understand

02 GO GREEN

Aspire
Strenghten capabilities
Map competencies
Defining profile

"What is it all about?"

**Define strategic goals.
How can it be done?
Discussion. Decision making**

03 GO WIDE

Explore the limits
Get the big picture
Multiple concepts
Sketch out mulitiple options
Generate ideas

Point of no return:

**"How can we do this"?
Pro's and con's sharpen the understanding and set direction**

04 GO DEEP

Evaluate
Focus
Development of concept
List of deliverables
Optimize

05 GO HIGH

Action
Refine
Function
Communicate
Lift the Game
Production
Implement

Point of no return:

"This is what we are going to do, and this is who is going to do it, within this time frame"

Challenges

How can the new urban district be a link in the overall urban structure and create coherence with the district's major urban life generators?

Process / Go Green workshop

Et udpluk af kort - relation til bærekraftsmål og program

BaneNOR Bærekraftsmål

Client values / SDGs

Nr. 12: Responsible consumption and production

We work purposefully with energy efficiency of our real estate portfolio

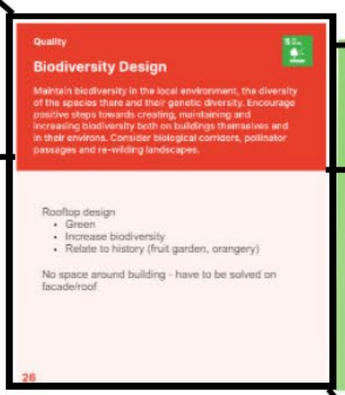
Future Built kriterier

Future Built mandatory criteria

Greenhouse gas emissions:

The model projects must have at least 50 percent reduced greenhouse gas emissions from materials, construction process, energy use and transport.

Frame 15



Kommunedelplan

MUNICIPAL PLAN:

Bluegreen factor

Future Built kriterier

Future Built additional criteria

Biodiversity:

Projects will contribute to significantly increased local biodiversity.

Program

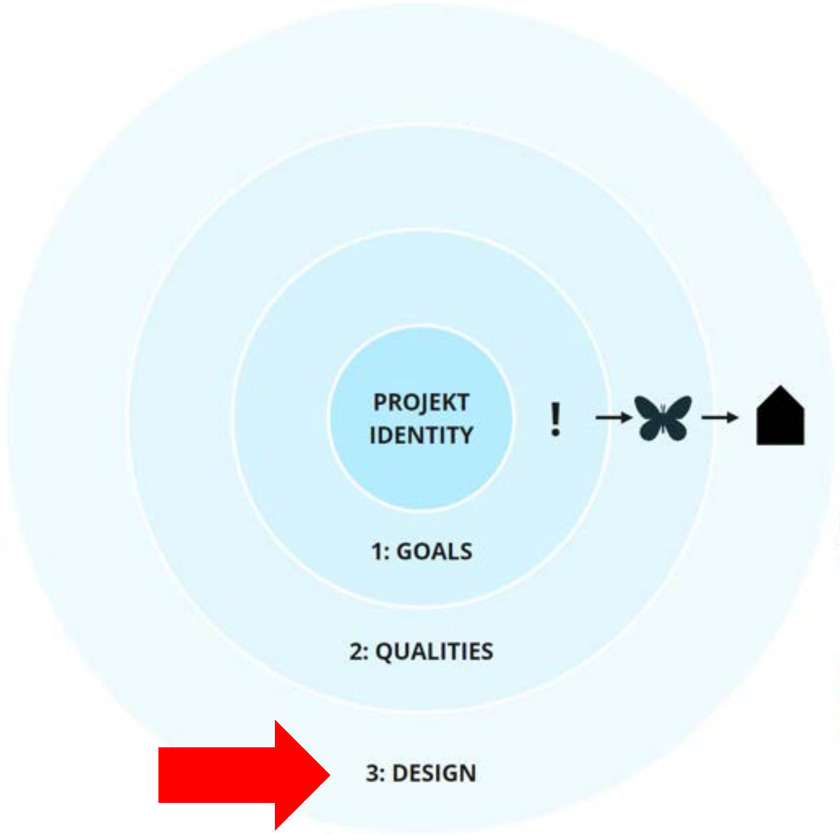
Roof terrace, rooftop bar, solar cell system, green. Primary access for all building tenants. Alternatively, a publicly available rooftop bar.

Brief p. 9

Group visioning process:

To create resilient solutions, many ideas serve the same goals

Proposals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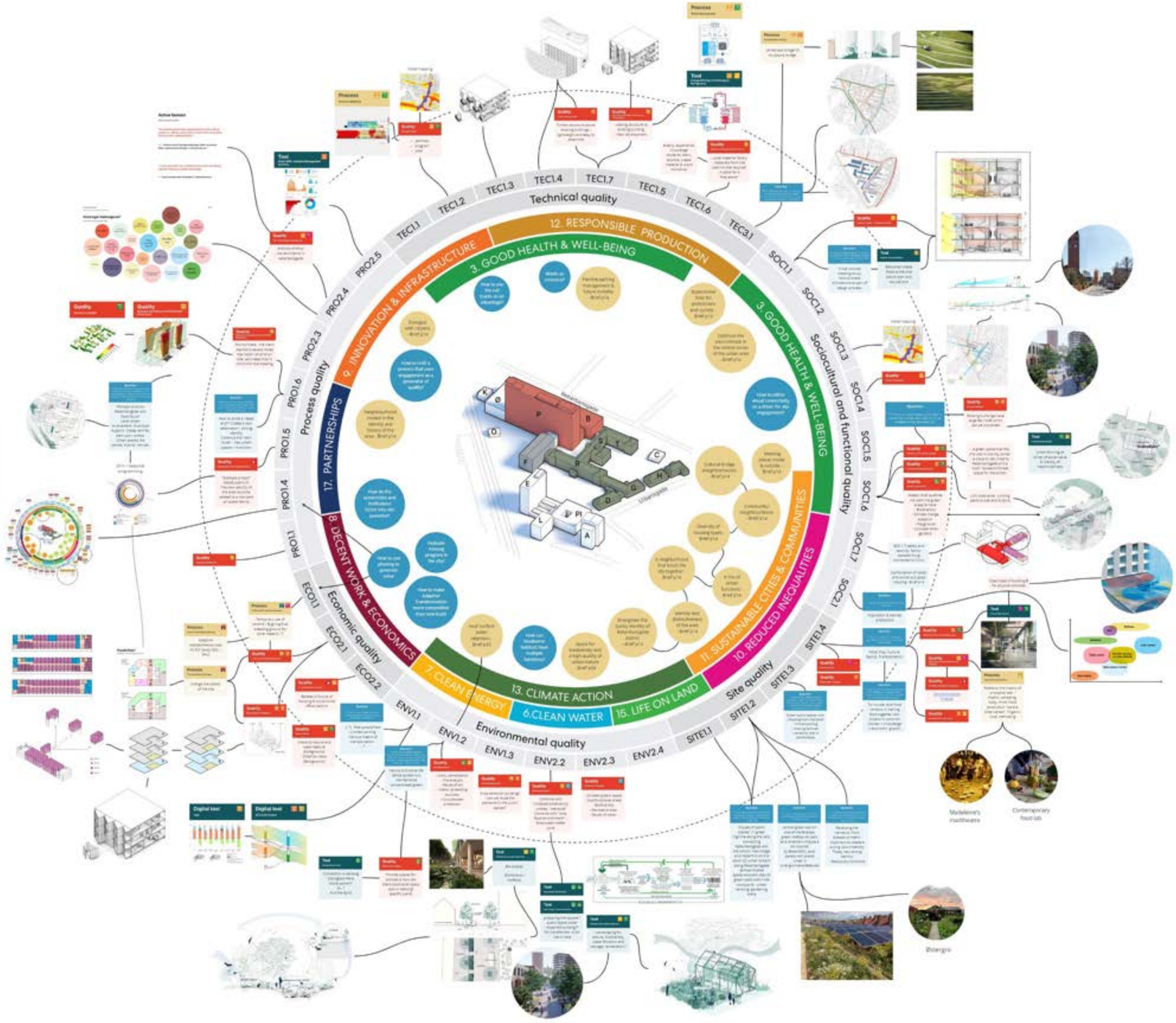
2: QUALITIES
3: DESIGN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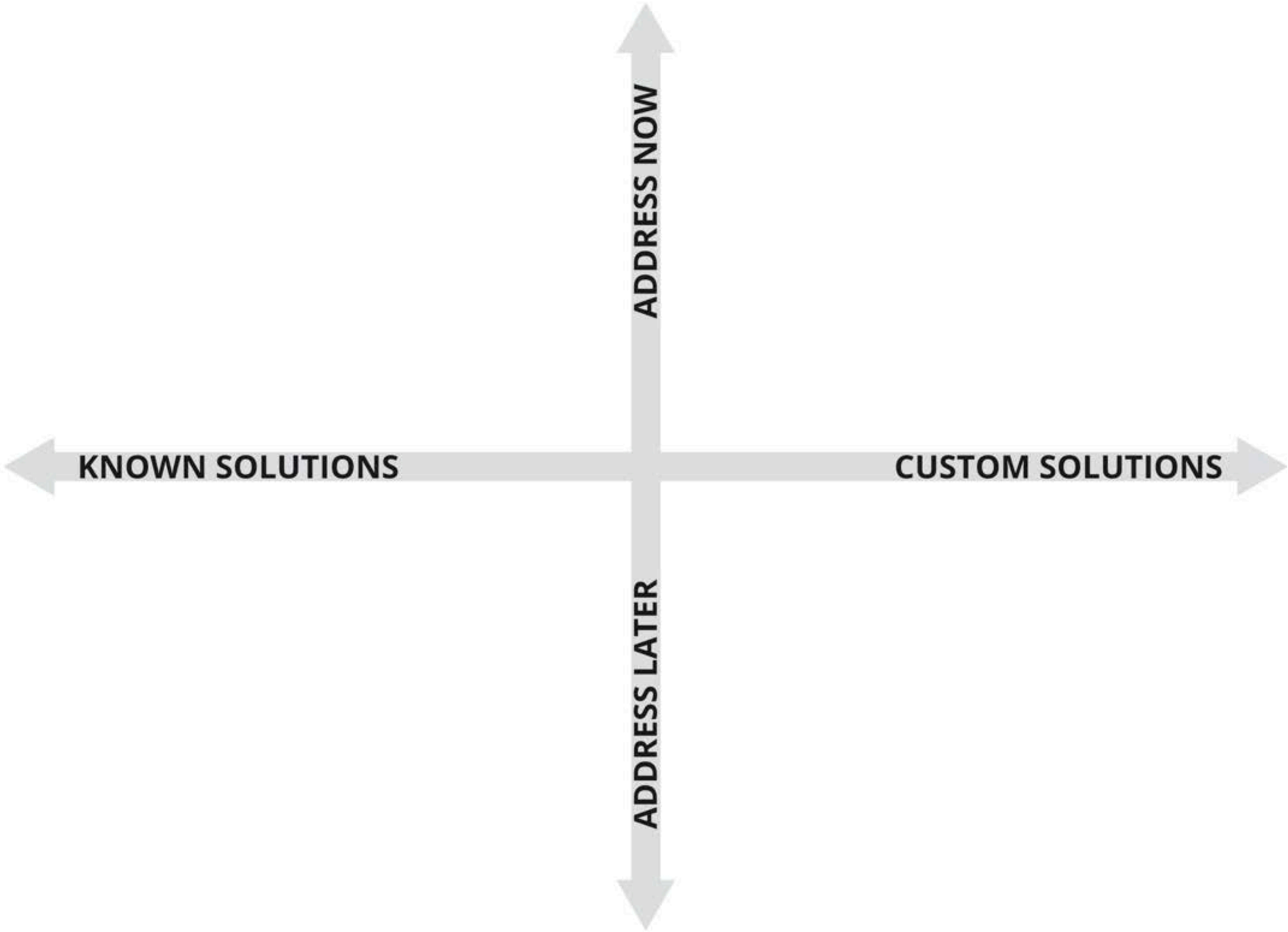
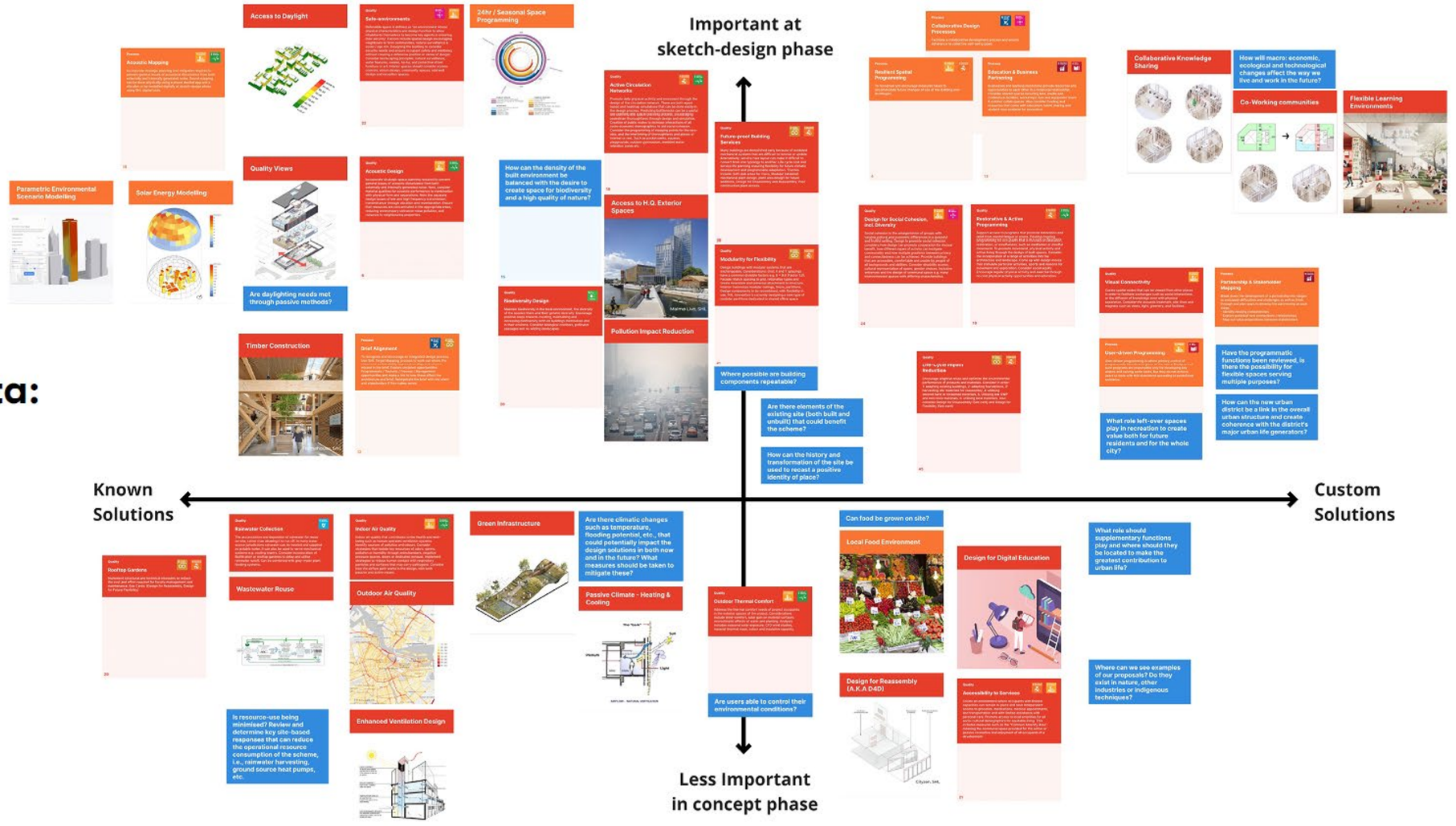
Prioritising

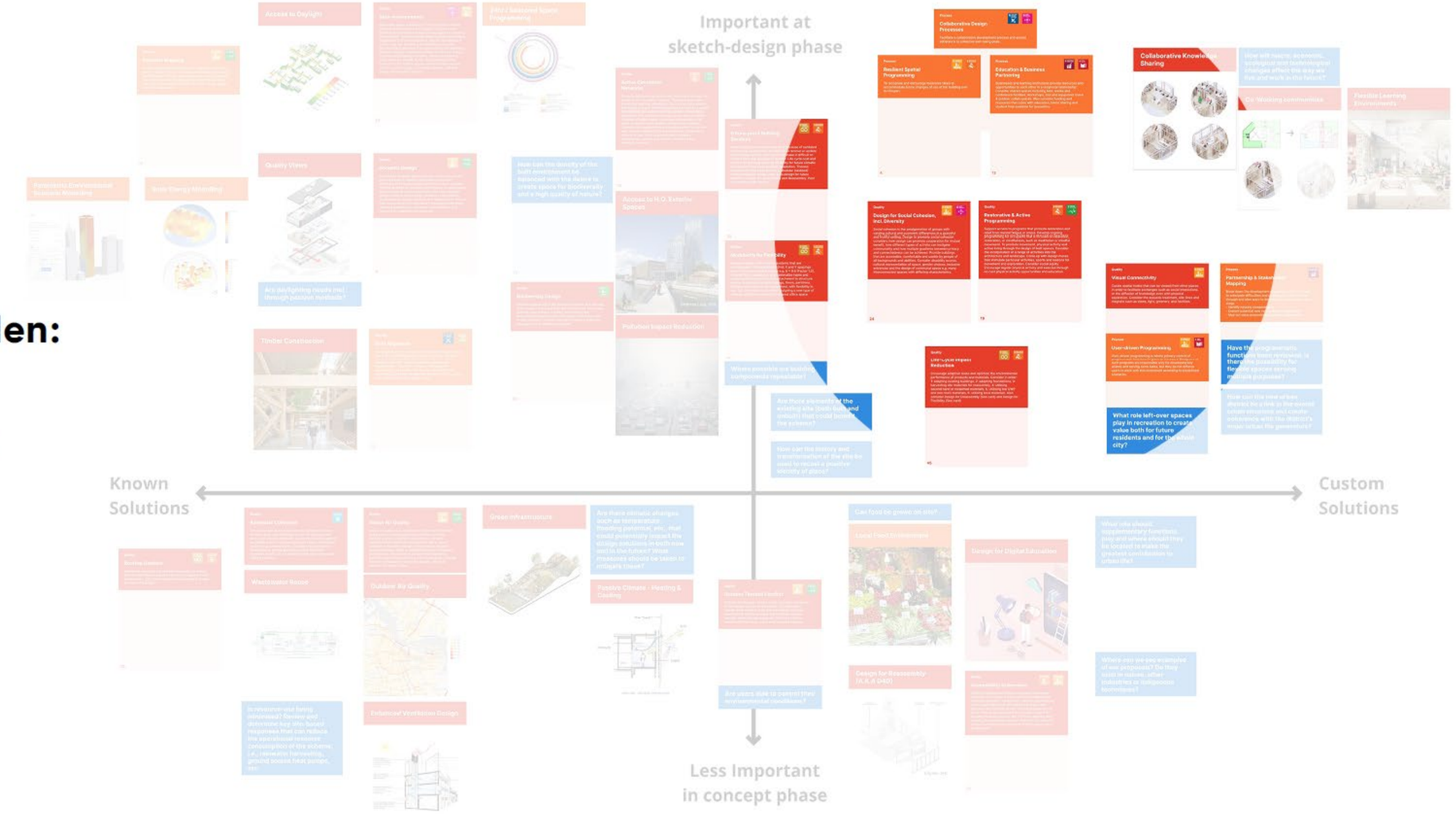


Prioritetskarta:



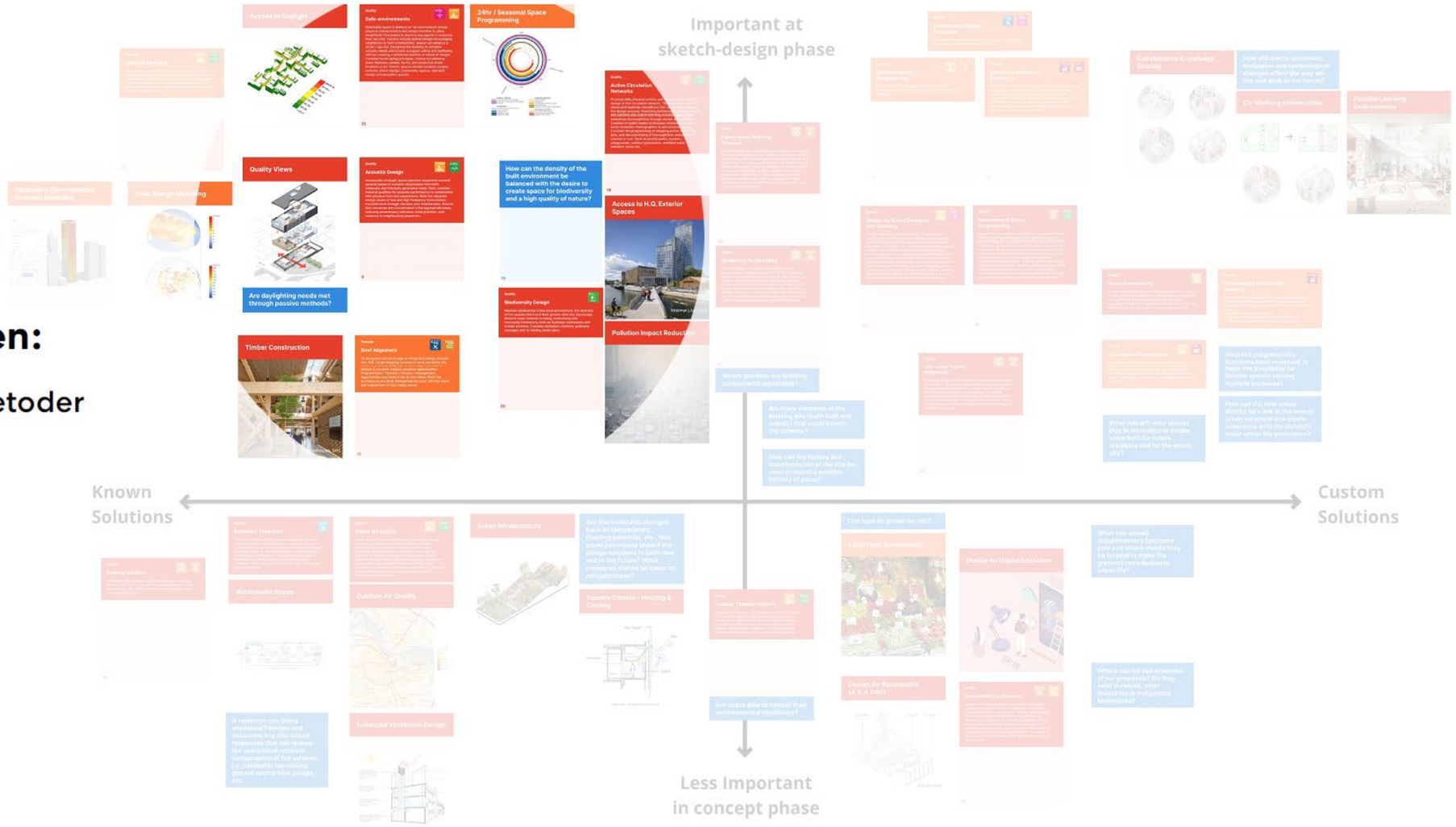
Fokusområden:

Viktiga
skräddarsydda
lösningar



Fokusområden:

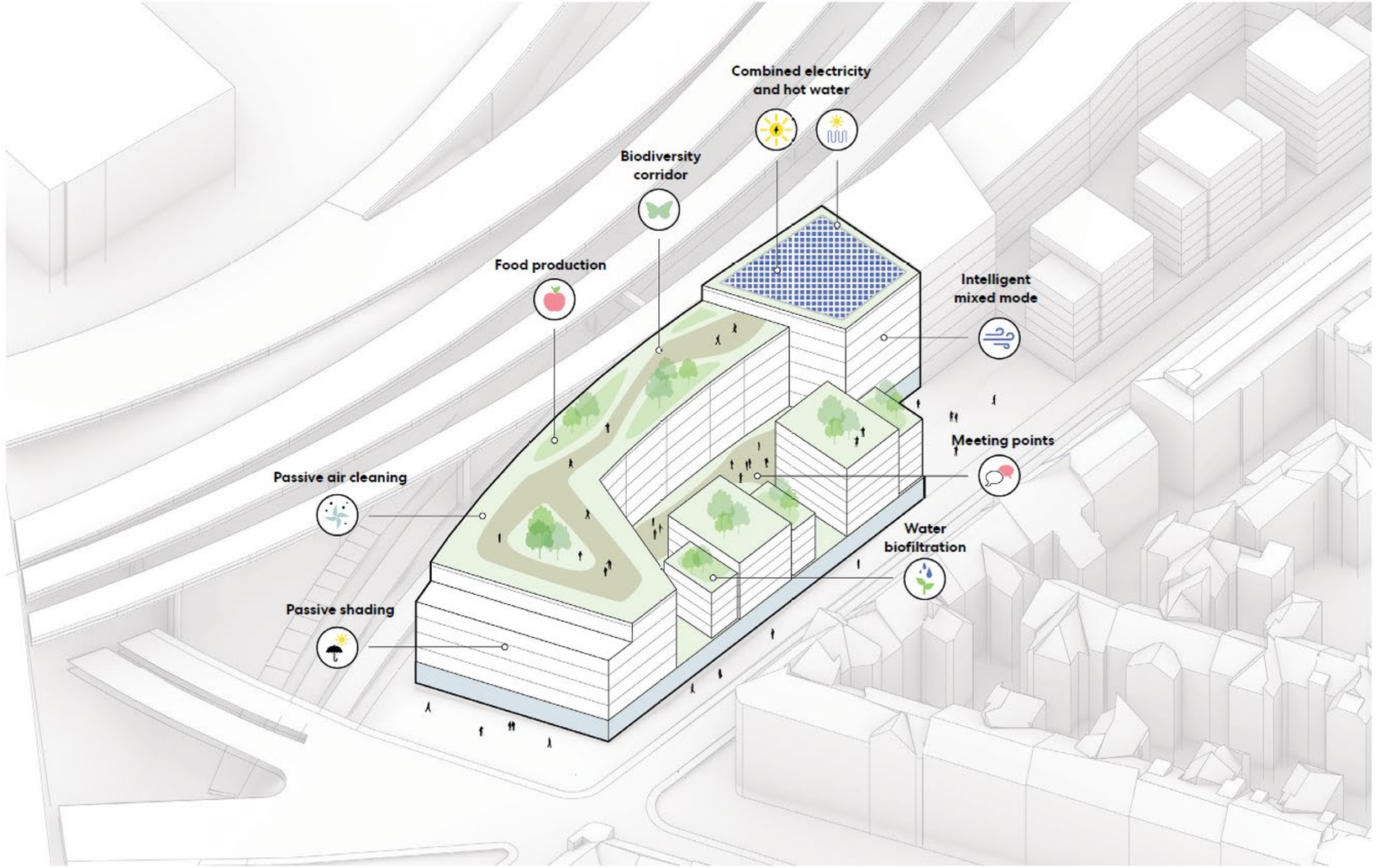
Välbeprövade metoder



Campus[f] Vision

Campus[f] som en destination i Skandinavien/ Klimatsmart & grönt

schmidt/hammer/
lassen/
architects/



Quality

Passive Climate - Heating & Cooling

Passive heating and cooling is the process of using environmental energy resources to help regulate internal temperature. E.g. by using a combination of massing, spatial design and materials (thermal mass, transparency etc.), thermodynamics of natural airflow, evaporation, or by using active systems that draw from natural energy resources (e.g. solar radiation, underground temperatures or water bodies). Consider deciduous planting and solar access.

Quality

Enhanced Ventilation Design

Expel internally generated pollutants and improve air quality in the breathing zone through an balanced supply of clean air. Consider ways of achieving high quality air without the loss of energy. Consider Airflow through space, Biofiltration of air, incorporation of air-cleaning water features, intake air quality, CO2 scrubbers for reticulated air in hot and cold climates, before fresh-air mechanical filters and air-to-air heat exchangers.

Quality

Green Infrastructure

Green Infrastructure (GI) seeks to protect and enhance nature and natural processes, consciously integrating spatial planning to create strategically planned networks of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services.

Quality

Rooftop Gardens

Implement structural and technical measures to reduce the cost and effort required for faculty management and maintenance. See Cards: (Design for Reassembly, Design for Future Flexibility)

Process

Local Food Environment

Support healthy food access and reduce environmental barriers to healthy eating. - consider spatial program, partnerships growing on site with food service, local supply opportunities e.g. market gardens, beekeeping, outdoor landscape. SHL innovation has a focus on design for urban food systems and a wealth of partners and resources that may assist in the design of foodscapes. It is a key component of both WELL and the Living Building Challenge certifications.

Campus[f] Vision

Campus[f] som en destination i Skandinavien/ 24h programmering

schmidt/hammer/
lassen/
architects/

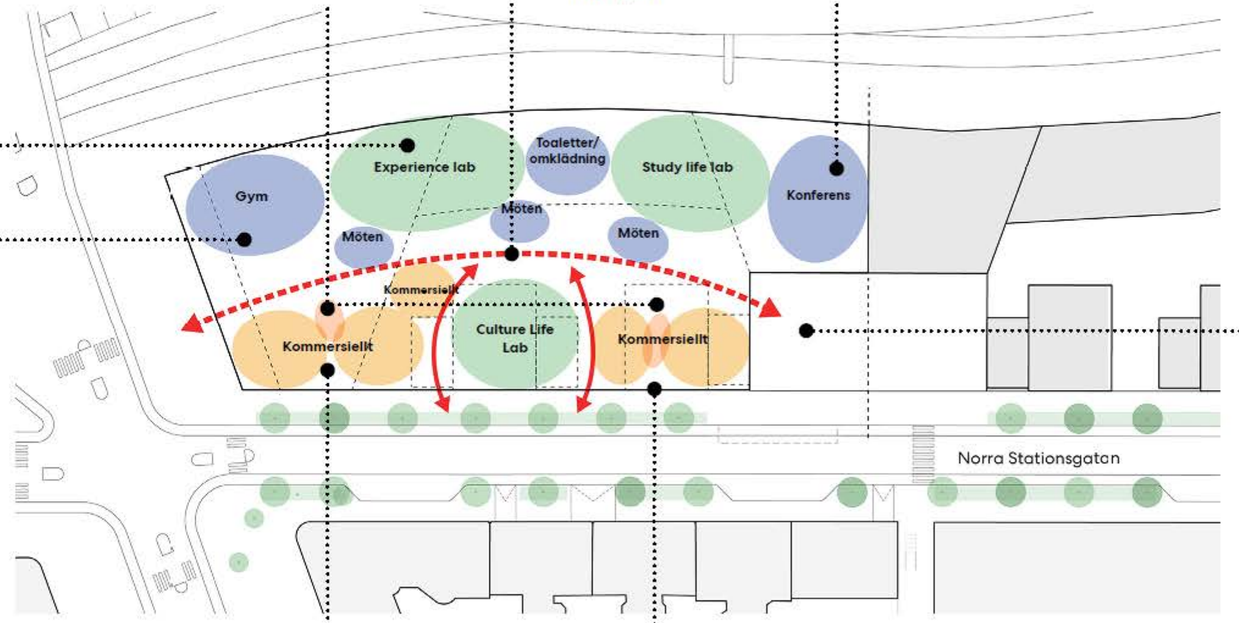
Individuell lobby
Hyresgäster kan komma in i byggnaden via egen entré med direkt tillgång till sina respektive våningsplan

Social sammankomst
Ett ombonat ankomsttorg välkomnar och bjuder in gäster till att stanna, äta, träffas, hälsa, leka..

Konferenscenter
Konferenscentret delas mellan användare av Campusen och gäster. Kan hyras till evenemang av tredje parter.

Lab

Fitness/Gym



Social Plaza
Ett grönt torg för möten och vistelse, med sittplatser

Caféer & restauranger
Restaurangerna ska erbjuda ett hälsosamt lunchalternativ till de anställda, samt se till att byggnaden är en destination även utanför arbetstid.

Gatufönster
Stora shoppingfönster avslöjar de invändiga funktionerna i byggnaden.

Process

24hr / Seasonal Space Programming

Planned spatial programming which maintains activity throughout the diurnal period ensures greater levels of activity, reducing the likelihood of anti-social behaviour, thus improving the safety and comfort of urban areas. SHL Innovation have created an AI template to generate 24Hr mapping for a site or space.

Process

User-driven Programming

User-driven programming is where primary control of programmatic functions is given to the users. Designers of such programs are responsible only for developing key wishes and solving some tasks, but they do not enforce users to work with this instrument according to predefined scenarios.

Quality

Accessibility to Services

Create an environment where occupants with limited capacities can remain in-place and have independent access to groceries, medications, medical appointments, and transportation and with limited assistance with personal care. Promote access to local amenities for all socio-cultural demographics for equitable living. This includes measures such as the "Common Amenity Area", meaning the communal space provided for the active or passive recreation and enjoyment of all occupants of a development.

Tool

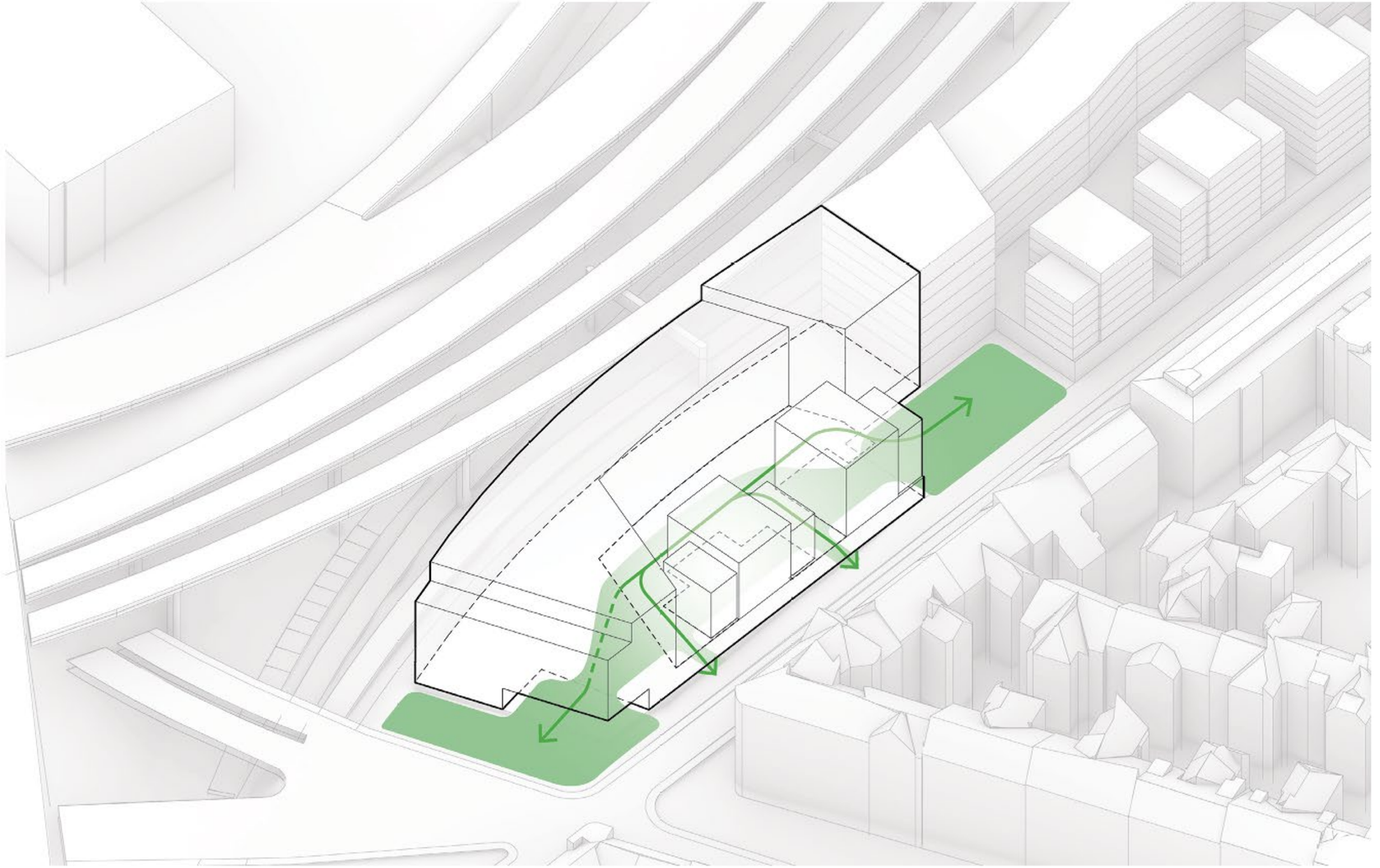
Free & Open Sports

Promote daily physical activity through accessible sports facilities available to and useable by all demographics.

Campus[f] Vision

Campus[f] som en destination i Skandinavien/ Ett nätverk av aktiva flöden

schmidt/hammer/
lassen/
architects/



Quality

Active Circulation Networks

Promote daily physical activity and movement through the design of the circulation network. There are both agent based and heatmap simulations that can be done easily in the design process. Predicting bottlenecks can be a useful site planning and space-planning process. Encouraging pedestrian thoroughfares through design and simulation. Creation of public routes to increase interactions of all socio-economic demographics to aid social cohesion. Consider the programming of stopping points for the less-able, and the interlinking of thoroughfares and places of interest or rest. Such as pocket parks, squares, playgrounds, outdoor gymnasium, rewilded water retention zones etc.

Quality

Safe-environments

Defensible space is defined as "an environment whose physical characteristics and design function to allow inhabitants themselves to become key agents in ensuring their security" Factors include spatial design encouraging neighbours to form communities, natural surveillance & social / age mix. Designing the building to consider security needs and ensure occupant safety and wellbeing without creating a defensive position or sense of danger. Consider landscaping principles, natural surveillance, water features, swales, ha-ha, and protective street furniture or art. Interior spaces should consider access controls, atrium design, community spaces, stairwell design and reception spaces.

Quality

Visual Connectivity

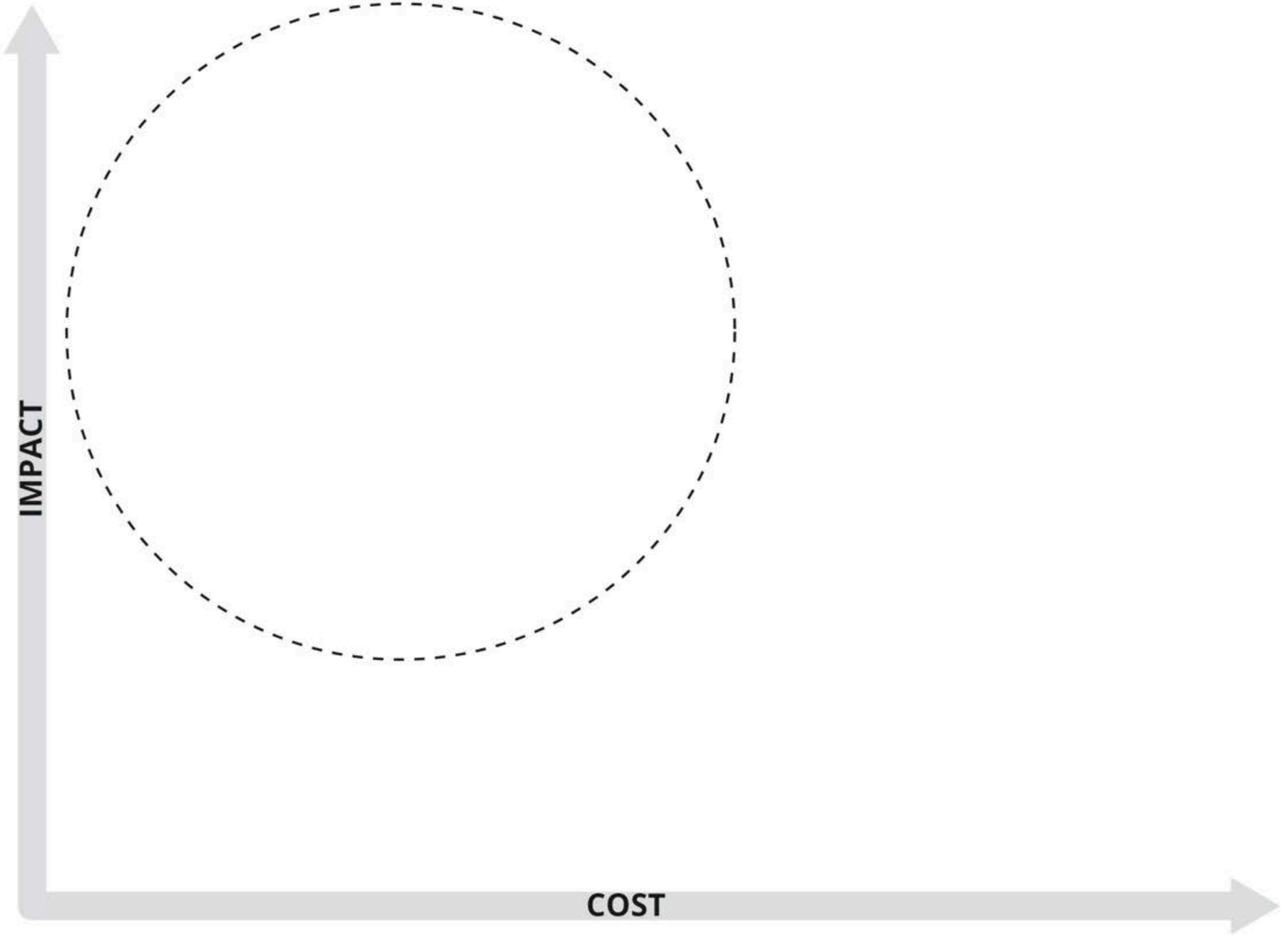
Curate spatial nodes that can be viewed from other places in order to facilitate exchanges such as social interactions, or the diffusion of knowledge even with physical separation. Consider the acoustic treatment, site-lines and magnets such as views, light, greenery, and facilities.

Quality

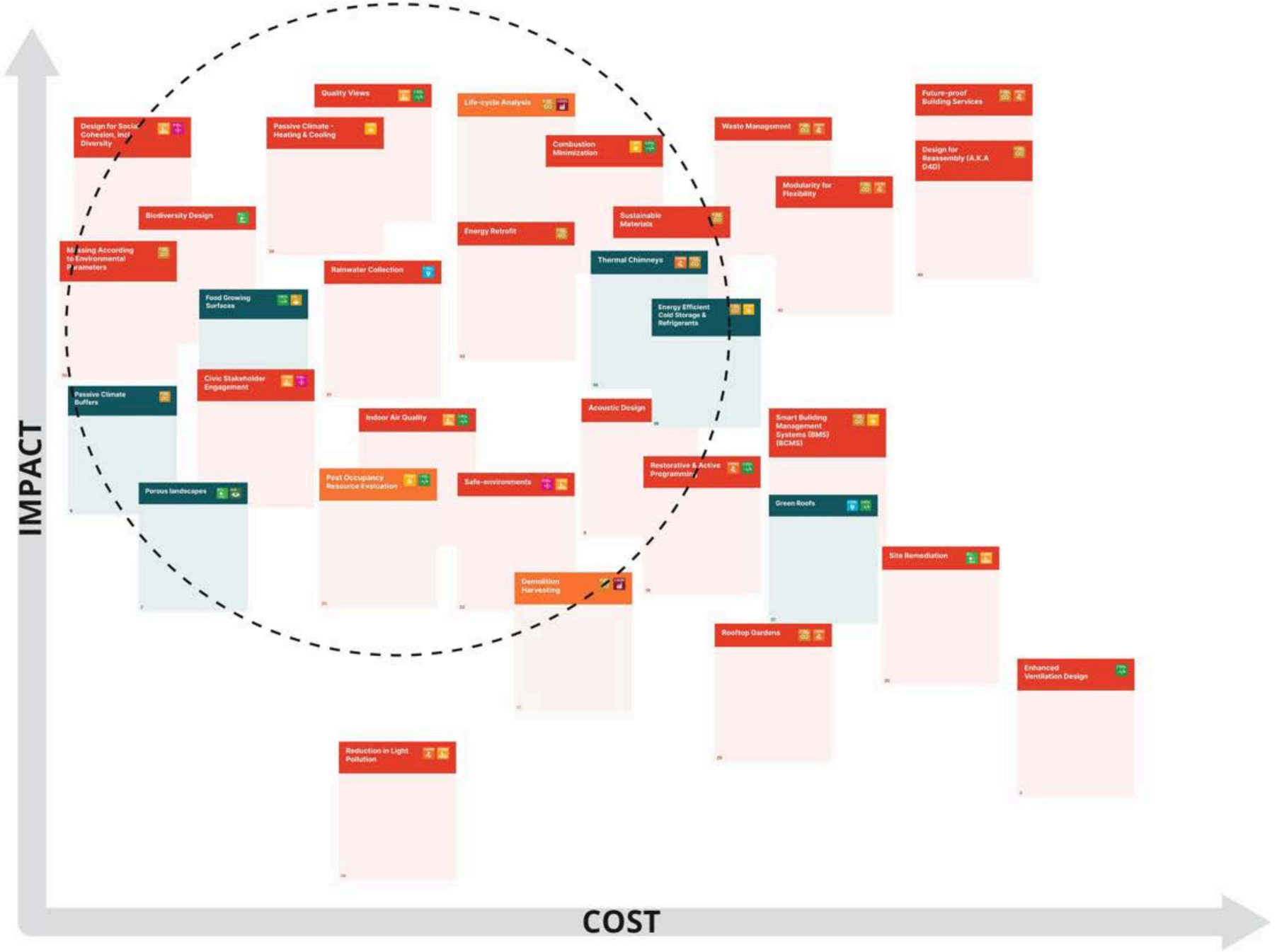
Access to H.Q. Exterior Spaces

Support occupant well-being by incorporating the natural environment through interior and exterior design. Consider multiple spatial thresholds between exterior and interior as well as bringing exterior elements inside.

Prioritising

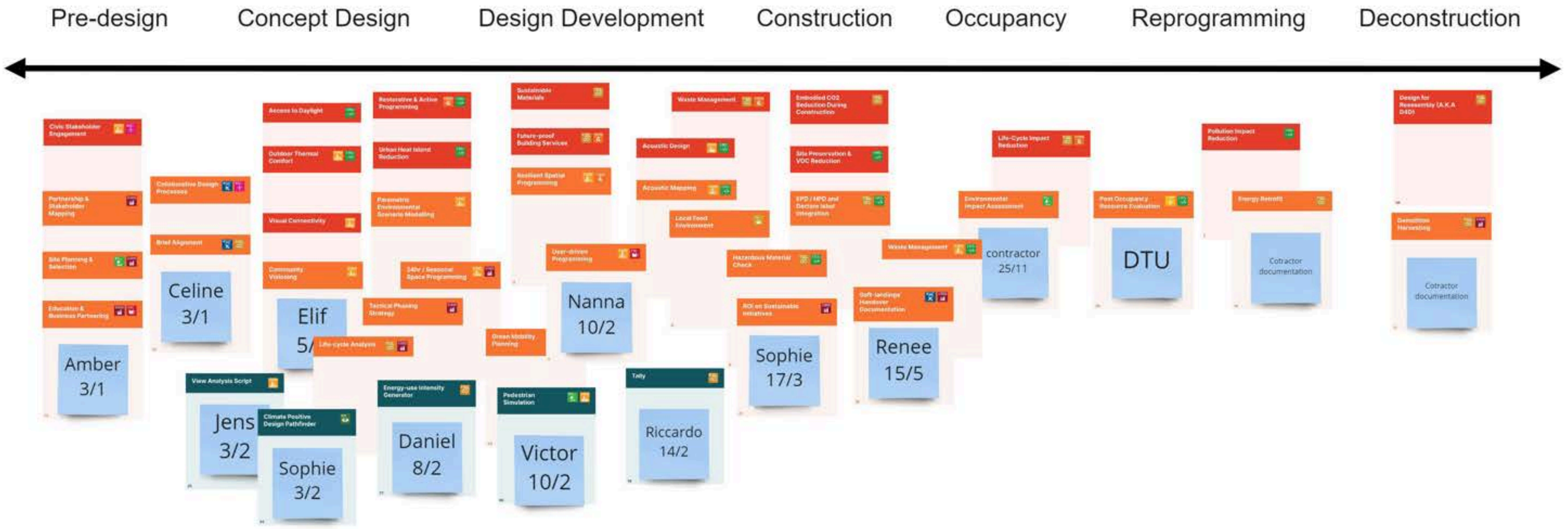


Prioritising

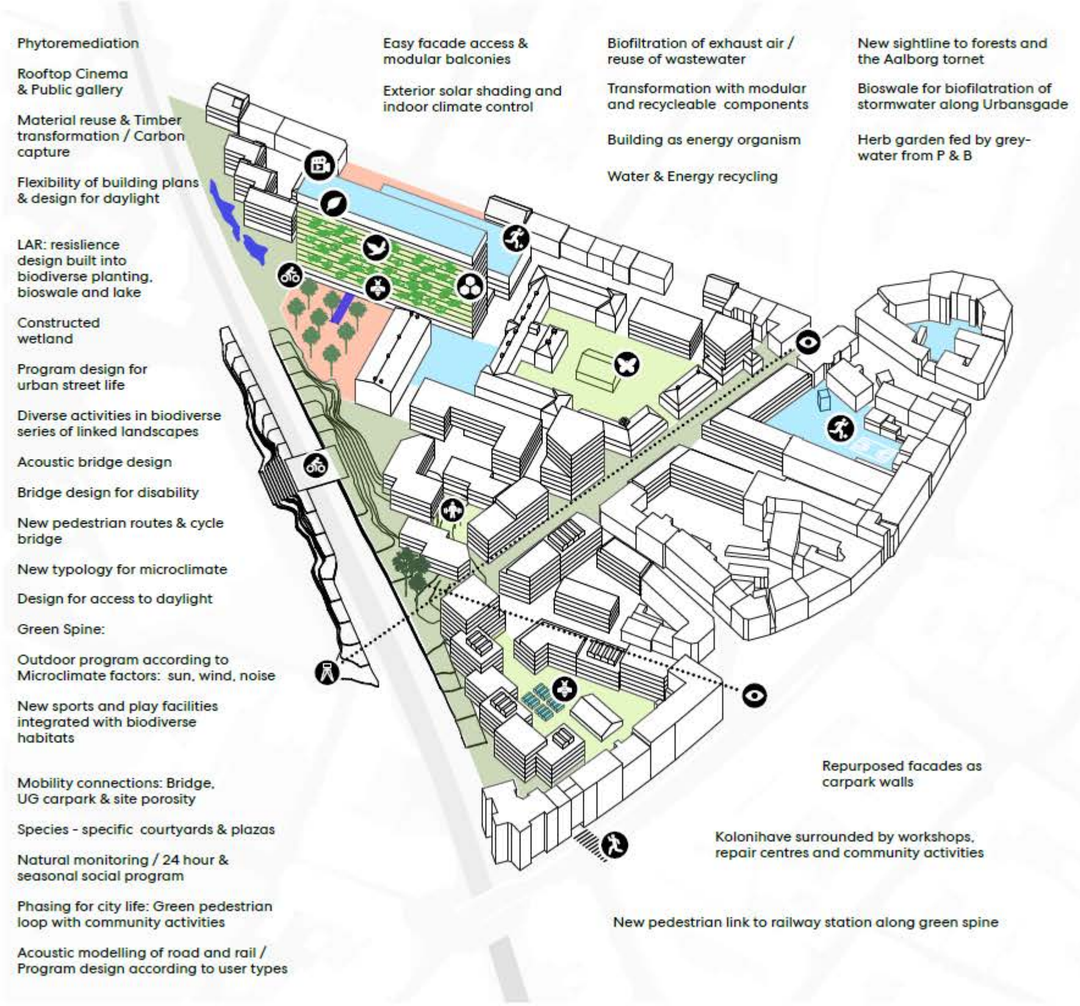


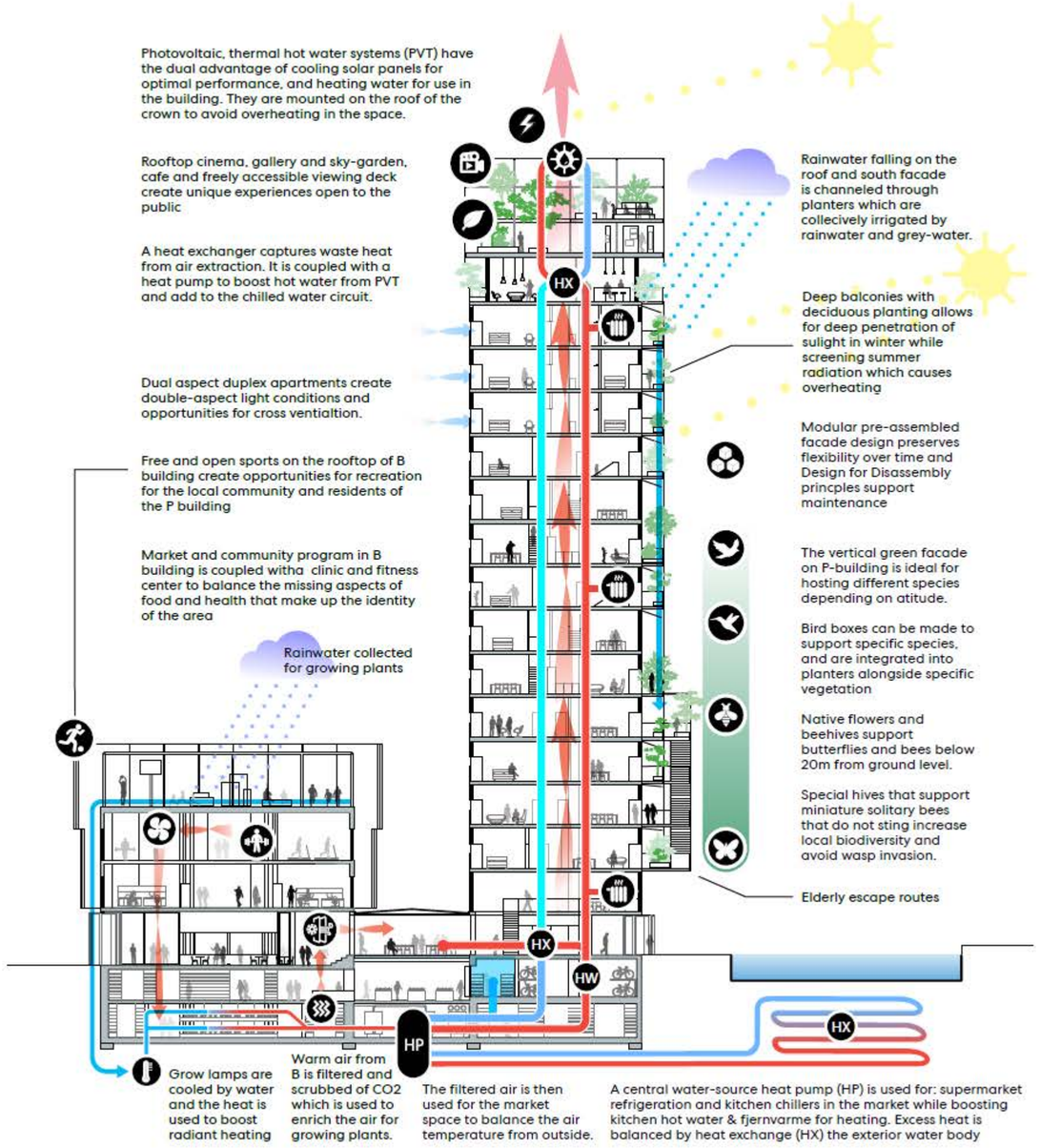
Project timeline:

Map: Qualities, Processes, Tools,

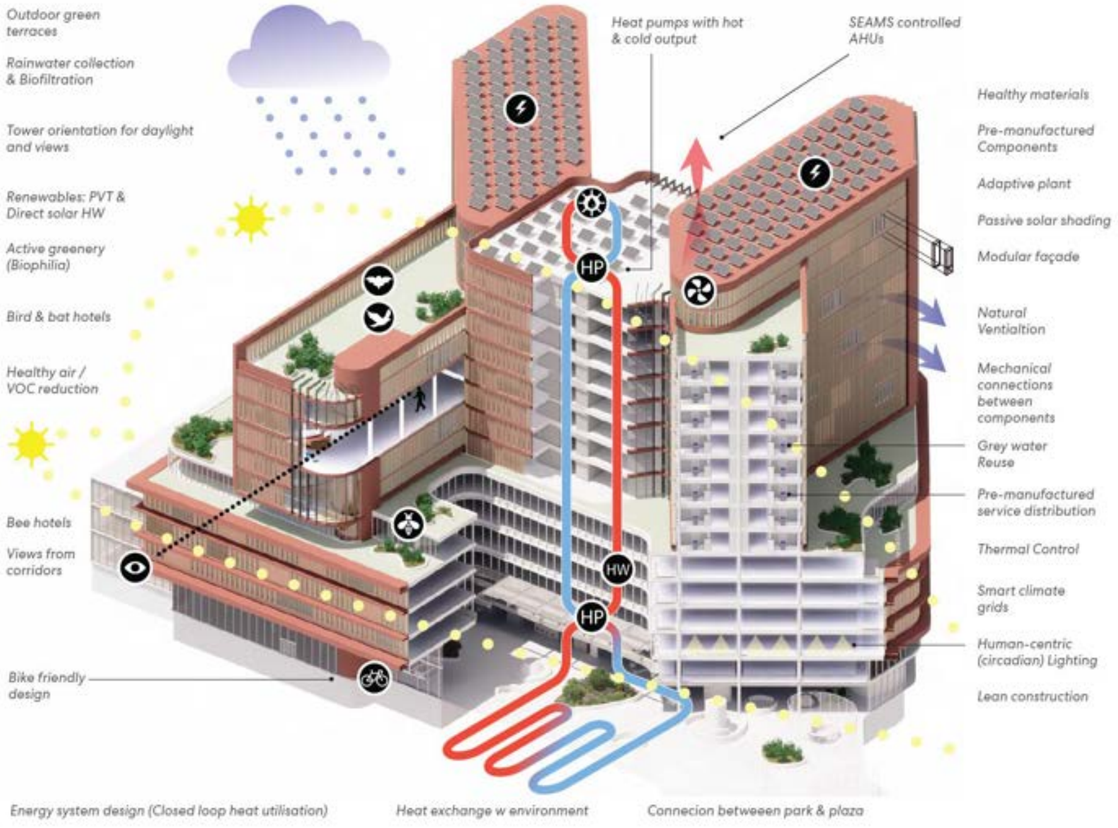


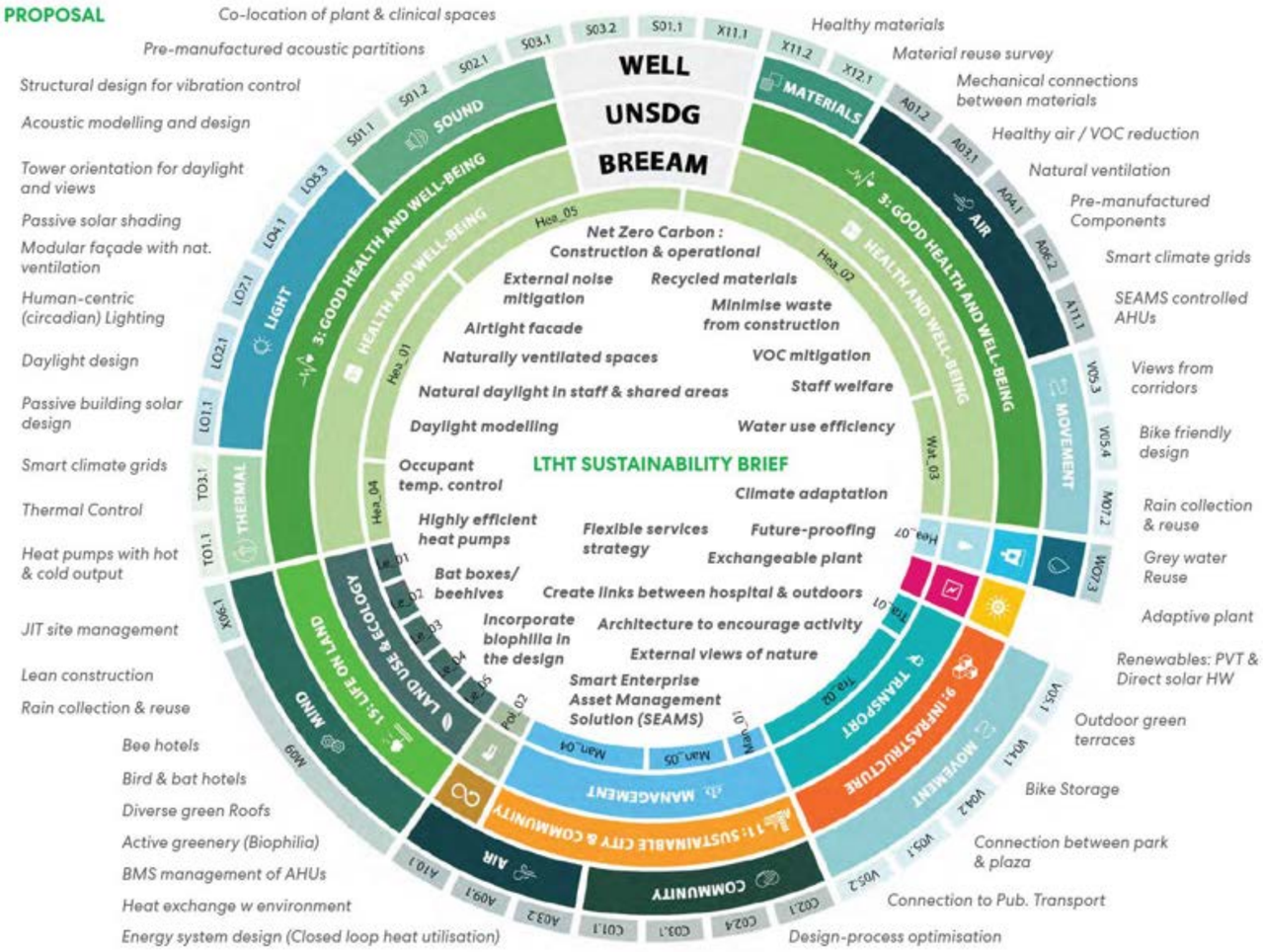
Solutions...


Phytoremediation
Rooftop Cinema & Public gallery
Material reuse & Timber transformation / Carbon capture
Flexibility of building plans & design for daylight
LAR: resislience design built into biodiverse planting, bioswale and lake
Constructed wetland
Program design for urban street life
Diverse activities in biodiverse series of linked landscapes
Acoustic bridge design
Bridge design for disability
New pedestrian routes & cycle bridge
New typology for microclimate
Design for access to daylight
Green Spine:
Outdoor program according to Microclimate factors: sun, wind, noise
New sports and play facilities integrated with biodiverse habitats
Mobility connections: Bridge, UG carpark & site porosity
Species - specific courtyards & plazas
Natural monitoring / 24 hour & seasonal social program
Phasing for city life: Green pedestrian loop with community activities
Acoustic modelling of road and rail / Program design according to user types
Easy facade access & modular balconies
Exterior solar shading and indoor climate control
Biofiltration of exhaust air / reuse of wastewater
Transformation with modular and recycleable components
Building as energy organism
Water & Energy recycling
New sightline to forests and the Aalborg tornet
Bioswale for biofilatration of stormwater along Urbansgade
Herb garden fed by grey-water from P & B
Repurposed facades as carpark walls
Kolonihave surrounded by workshops, repair centres and community activities
New pedestrian link to railway station along green spine


Photovoltaic, thermal hot water systems (PVT) have the dual advantage of cooling solar panels for optimal performance, and heating water for use in the building. They are mounted on the roof of the crown to avoid overheating in the space.
Rooftop cinema, gallery and sky-garden, cafe and freely accessible viewing deck create unique experiences open to the public
A heat exchanger captures waste heat from air extraction. It is coupled with a heat pump to boost hot water from PVT and add to the chilled water circuit.
Dual aspect duplex apartments create double-aspect light conditions and opportunities for cross ventialtion.
Free and open sports on the rooftop of B building create opportunities for recreation for the local community and residents of the P building
Market and community program in B building is coupled witha clinic and fitness center to balance the missing aspects of food and health that make up the identity of the area
Rainwater collected for growing plants
Rainwater falling on the roof and south facade is channeled through planters which are collecively irrigated by rainwater and grey-water.
Deep balconies with deciduous planting allows for deep penetration of sulight in winter while screening summer radiation which causes overheating
Modular pre-assembled facade design preserves flexibility over time and Design for Disassembly princples support maintenance
The vertical green facade on P-building is ideal for hosting different species depending on atitude.
Bird boxes can be made to support specific species, and are integrated into planters alongside specific vegetation
Native flowers and beehives support butterflies and bees below 20m from ground level.
Special hives that support miniature solitary bees that do not sting increase local biodiversity and avoid wasp invasion.
Elderly escape routes
HX
HW
HP
Grow lamps are cooled by water and the heat is used to boost radiant heating
Warm air from B is filtered and scrubbed of CO2 which is used to enrich the air for growing plants.
The filtered air is then used for the market space to balance the air temperature from outside.
A central water-source heat pump (HP) is used for: supermarket refrigeration and kitchen chillers in the market while boosting kitchen hot water & fjernvarme for heating. Excess heat is balanced by heat exchange (HX) the exterior water body

Harmonisation of design intent / universal language / certification targets





Adaptive Transformation

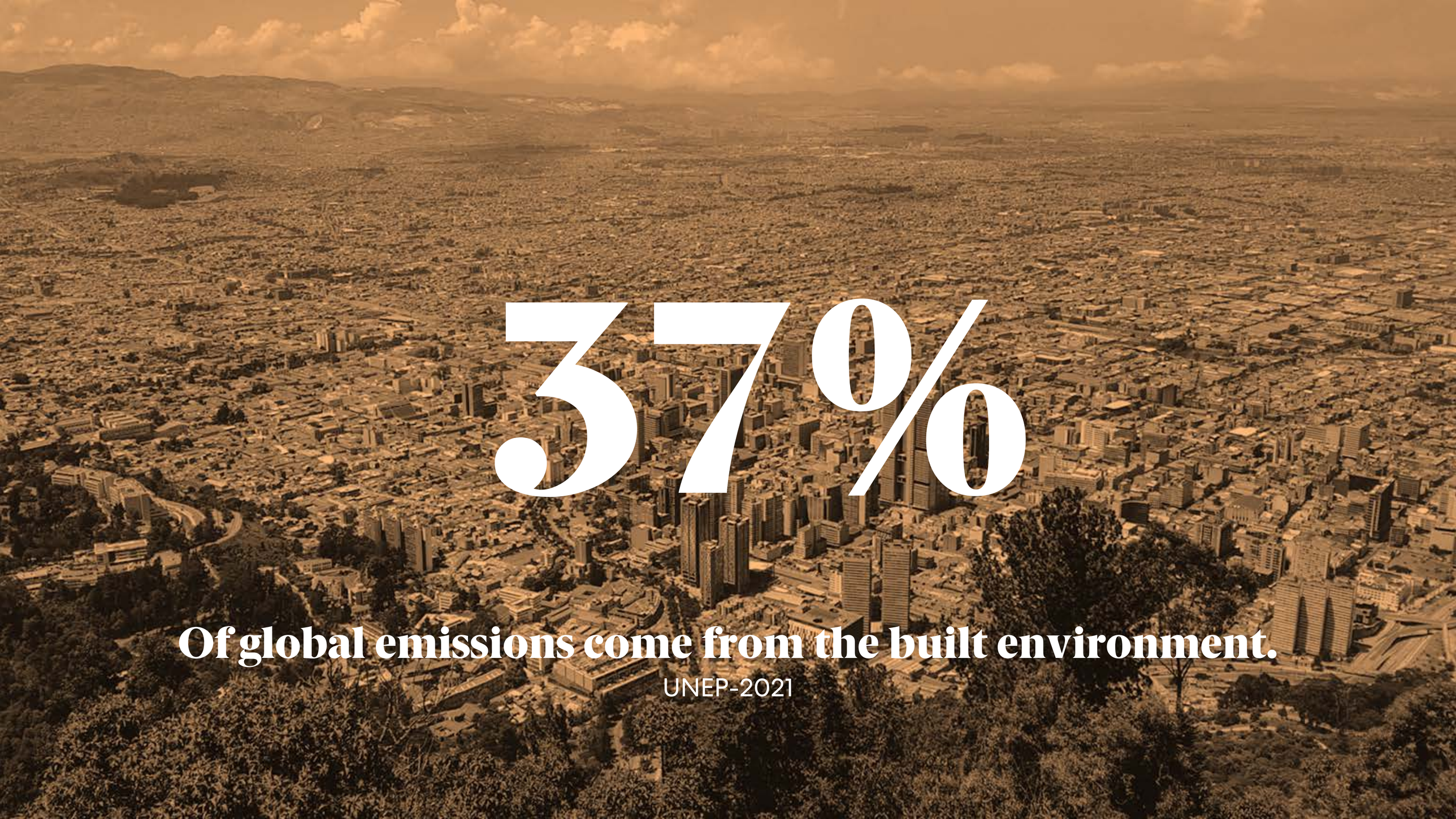
Green strategy / SHL

01. The big picture

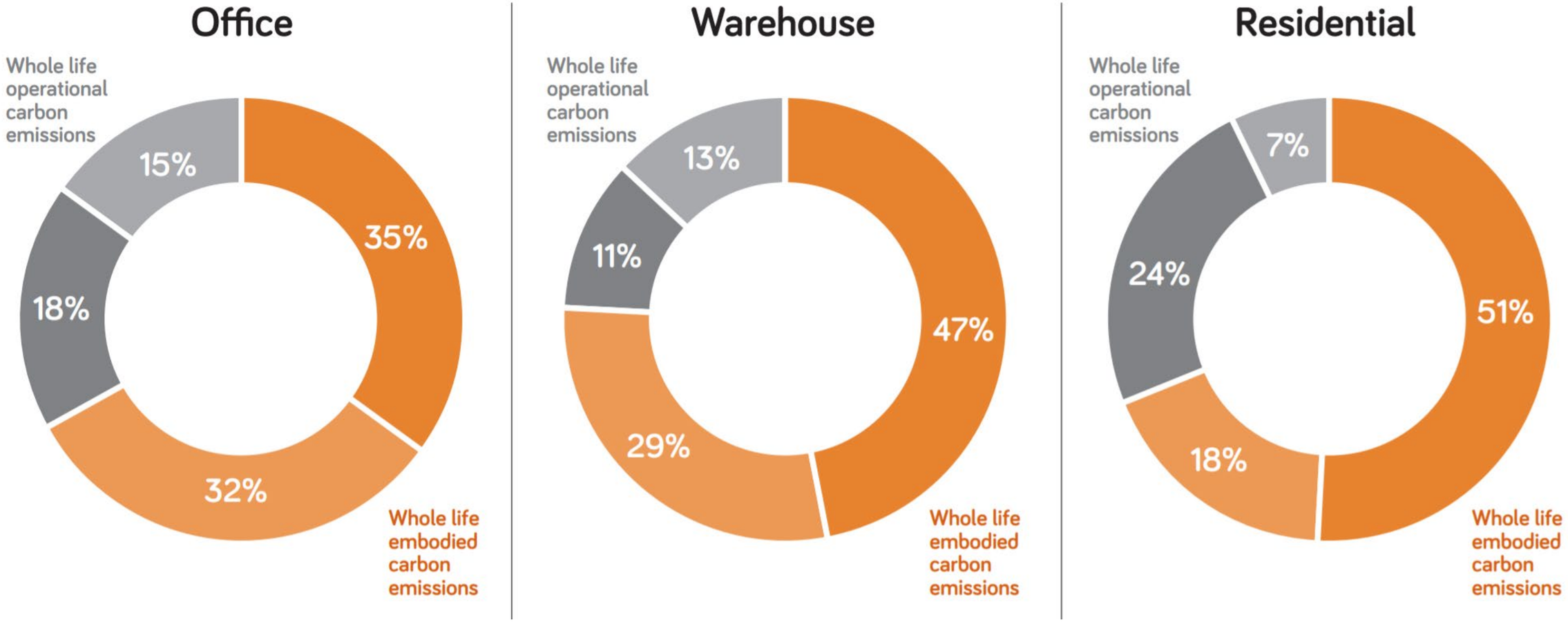
02. Holistic Sustainability

03. Adaptive Transformation

04. Get In touch


37%
Of global emissions come from the built environment.
UNEP-2021

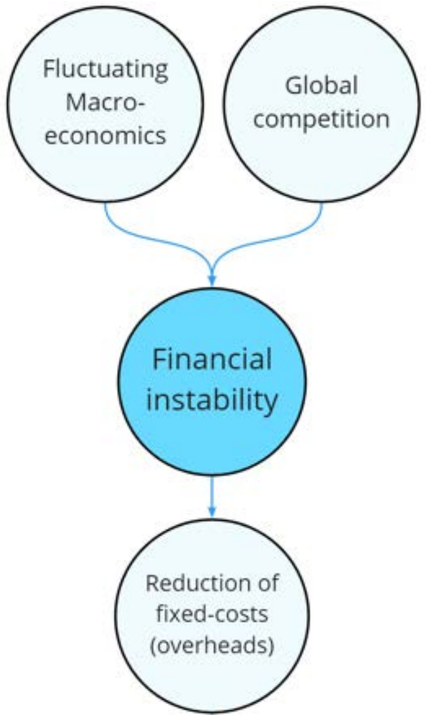
Embodied carbon by typology



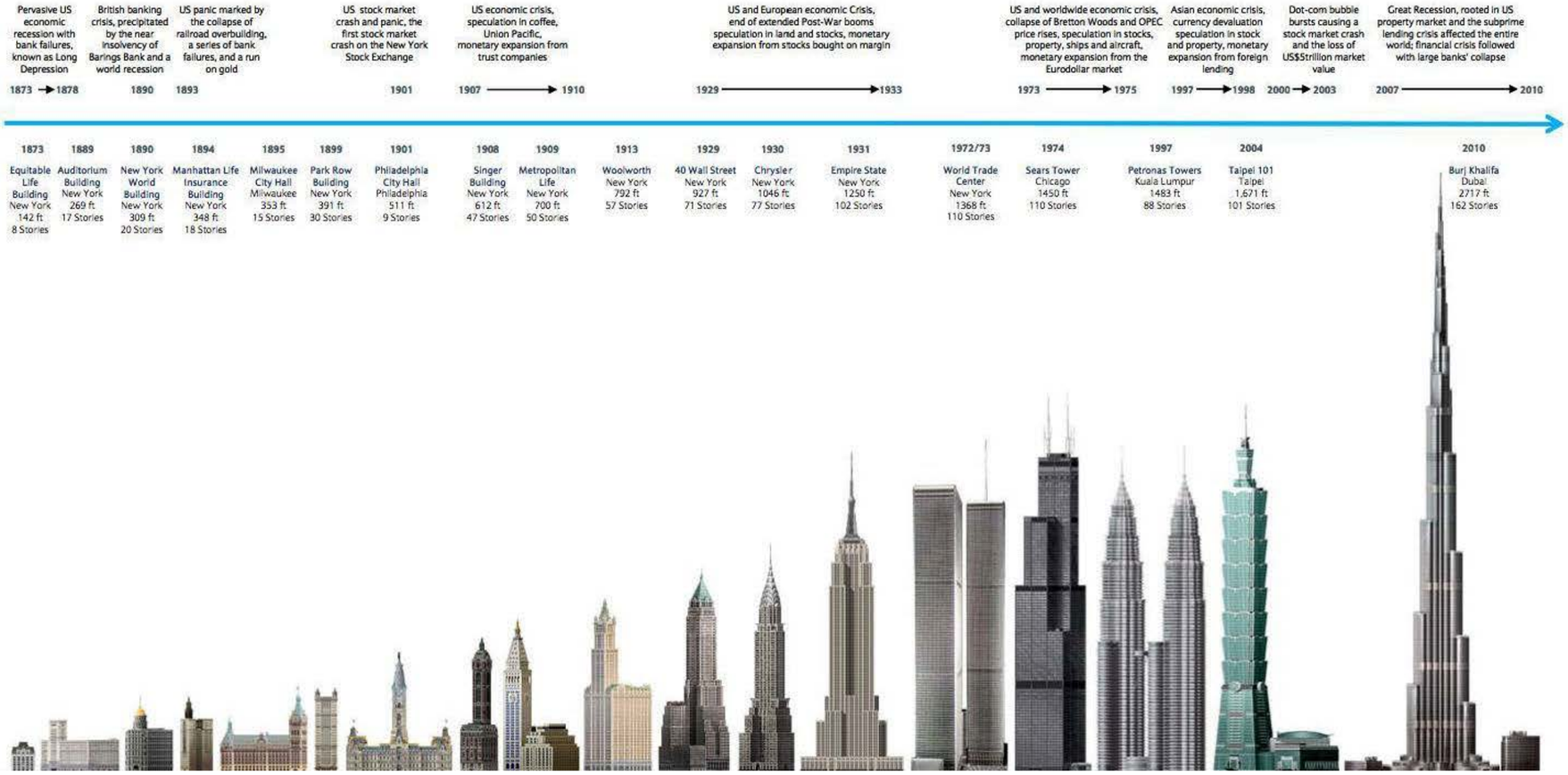
- RIBA Sustainable Outcomes Guide

80%
of buildings in 2050 have already been built.
Our priority is decarbonising our existing stock.

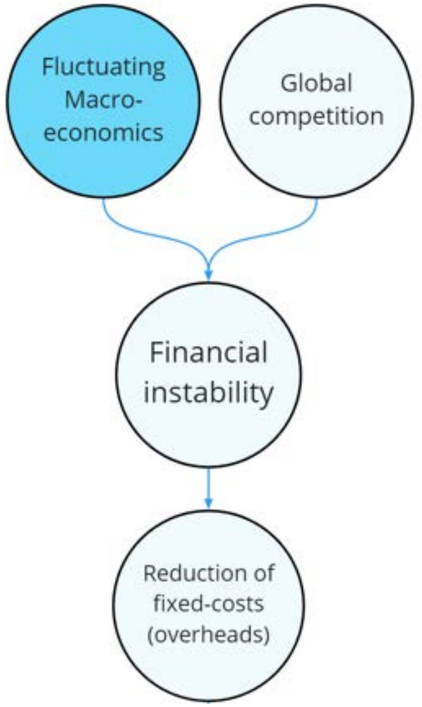
A building lifespan is dictated not by the quality of its construction but by market forces & trends



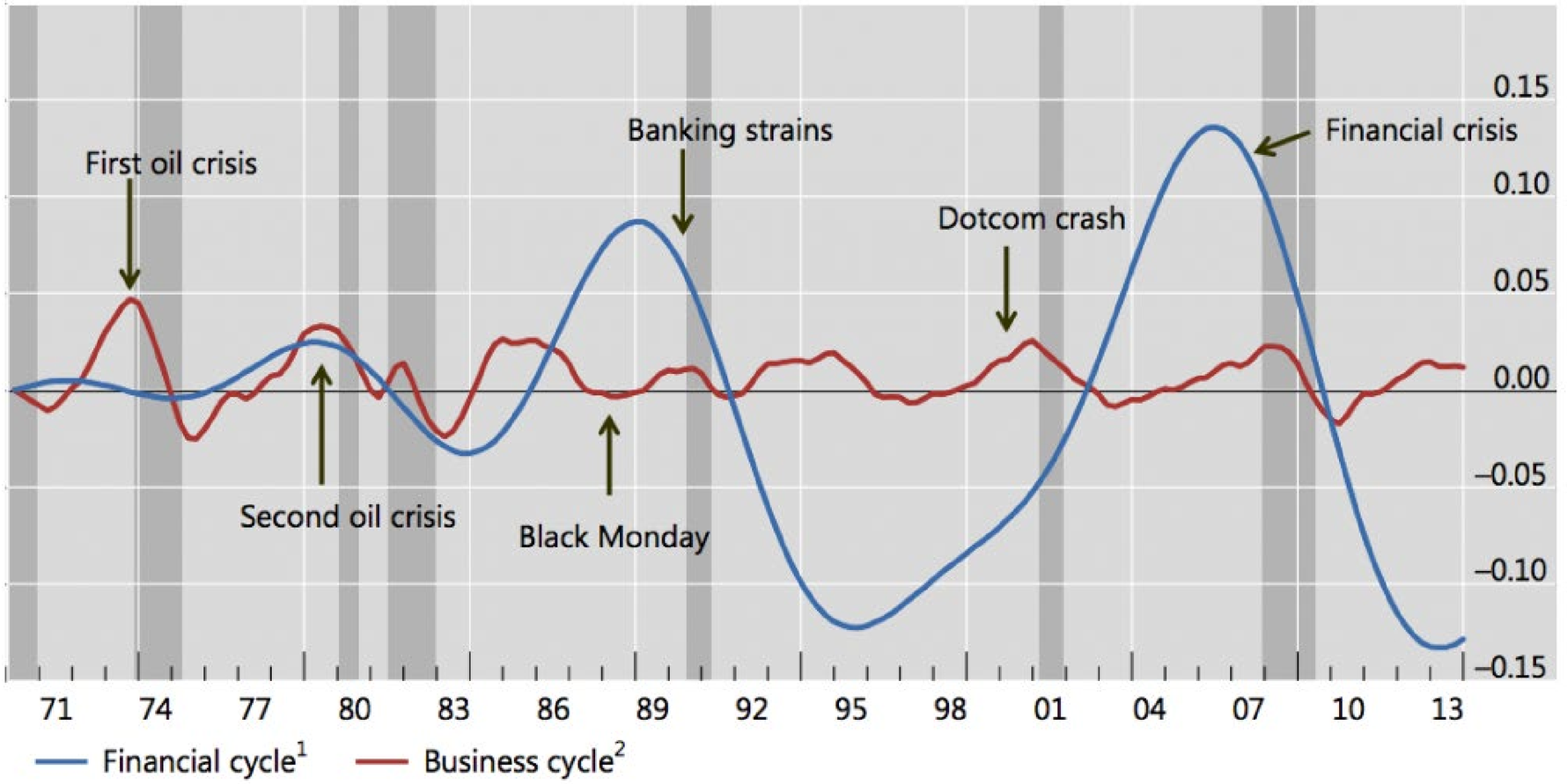
The **Skyscraper Index** showed that the worlds tallest buildings have arisen on the eve of economic downturns. (Fortune Sept.5 2005)

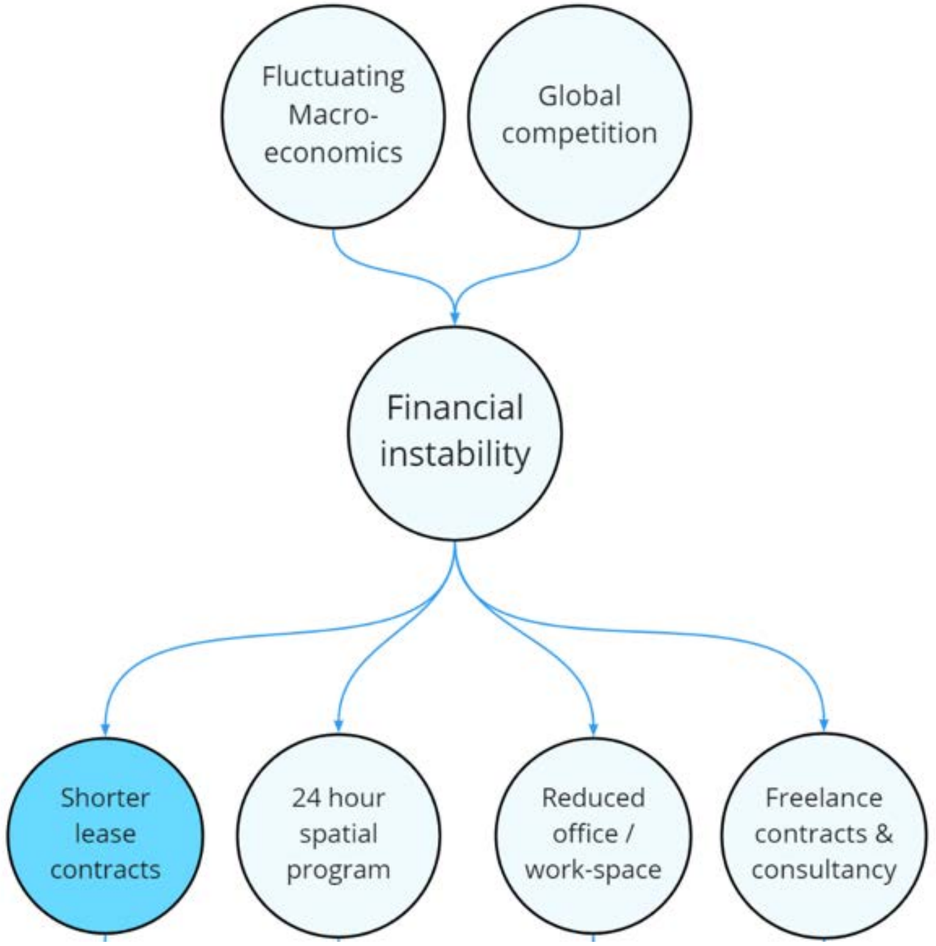


Risk



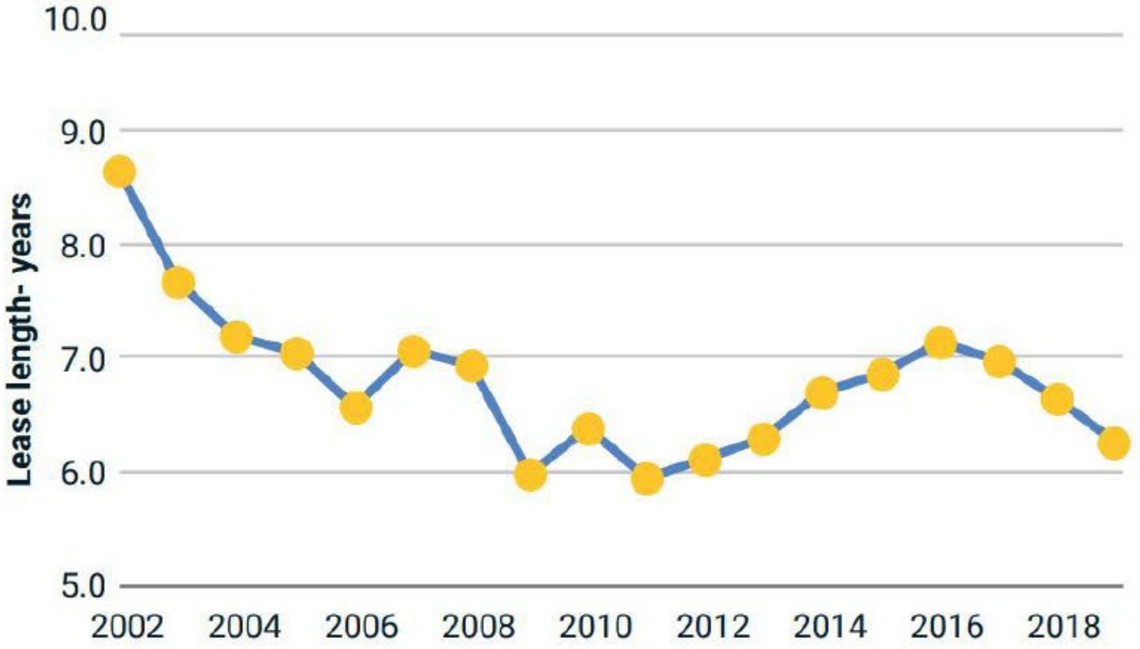
Drehmann 2012 > Adjusted financial & real estate fluctuation VS adjusted GDP





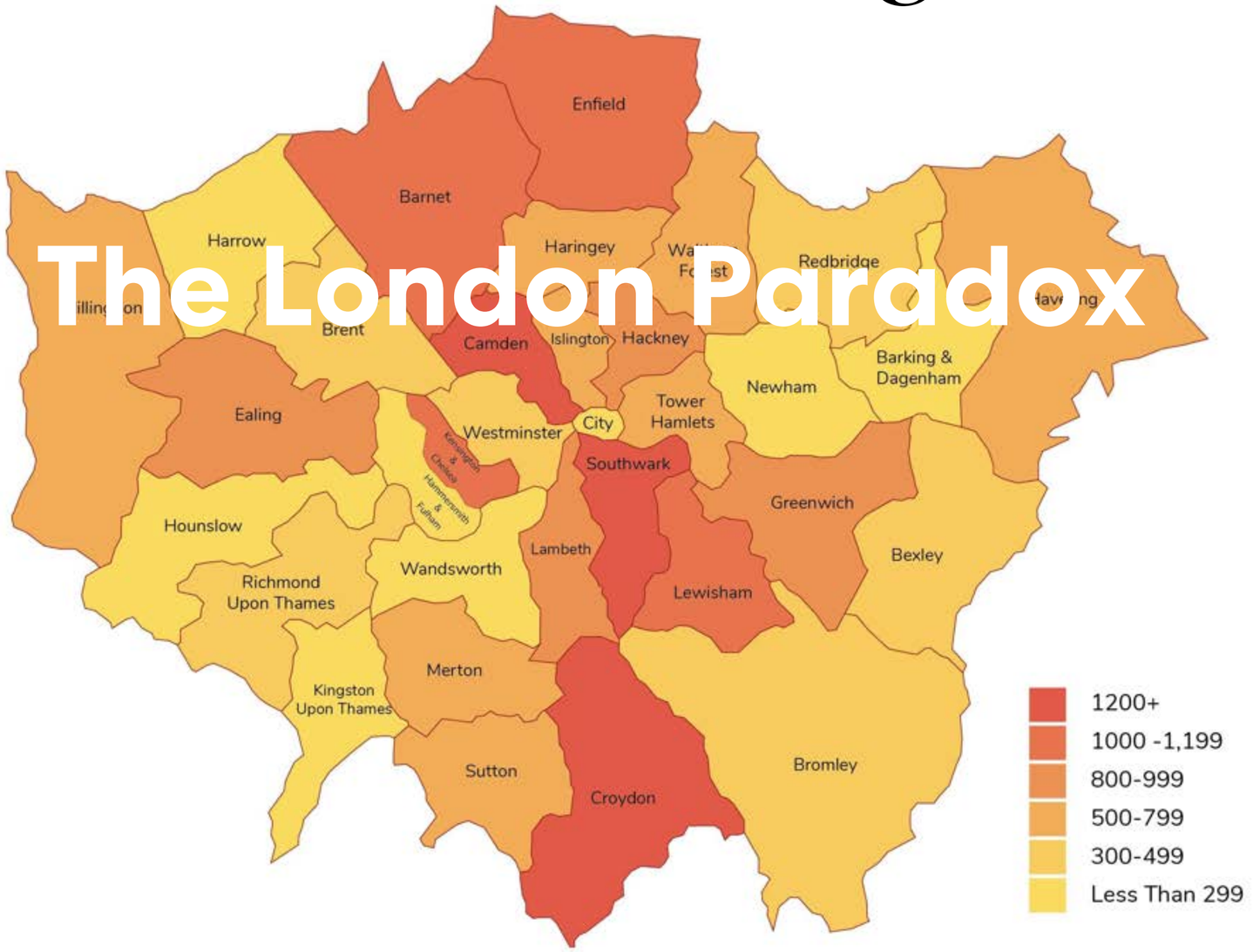
Unweighted lease length

Unweighted full term; Ignoring breaks & including short leases



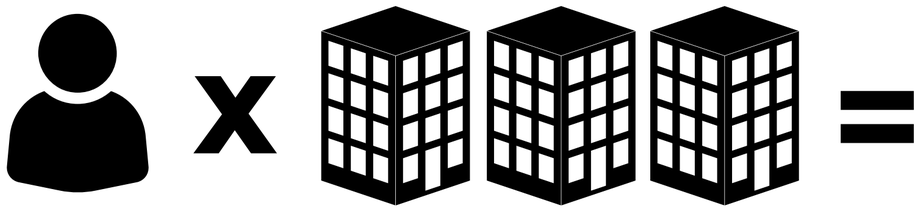
Shorter leases

Artificial demand for building...

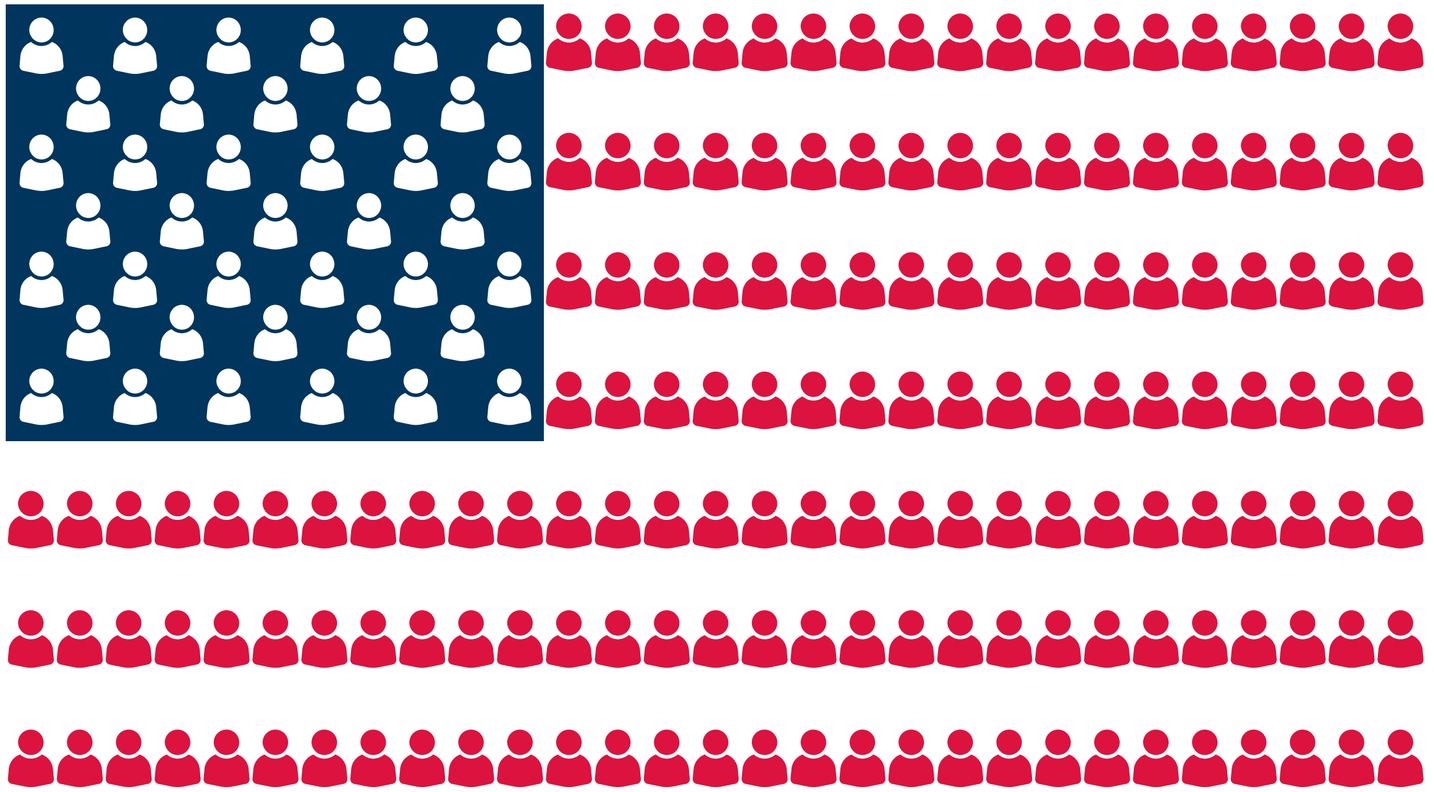


Real-estate as a token

Embodied carbon...

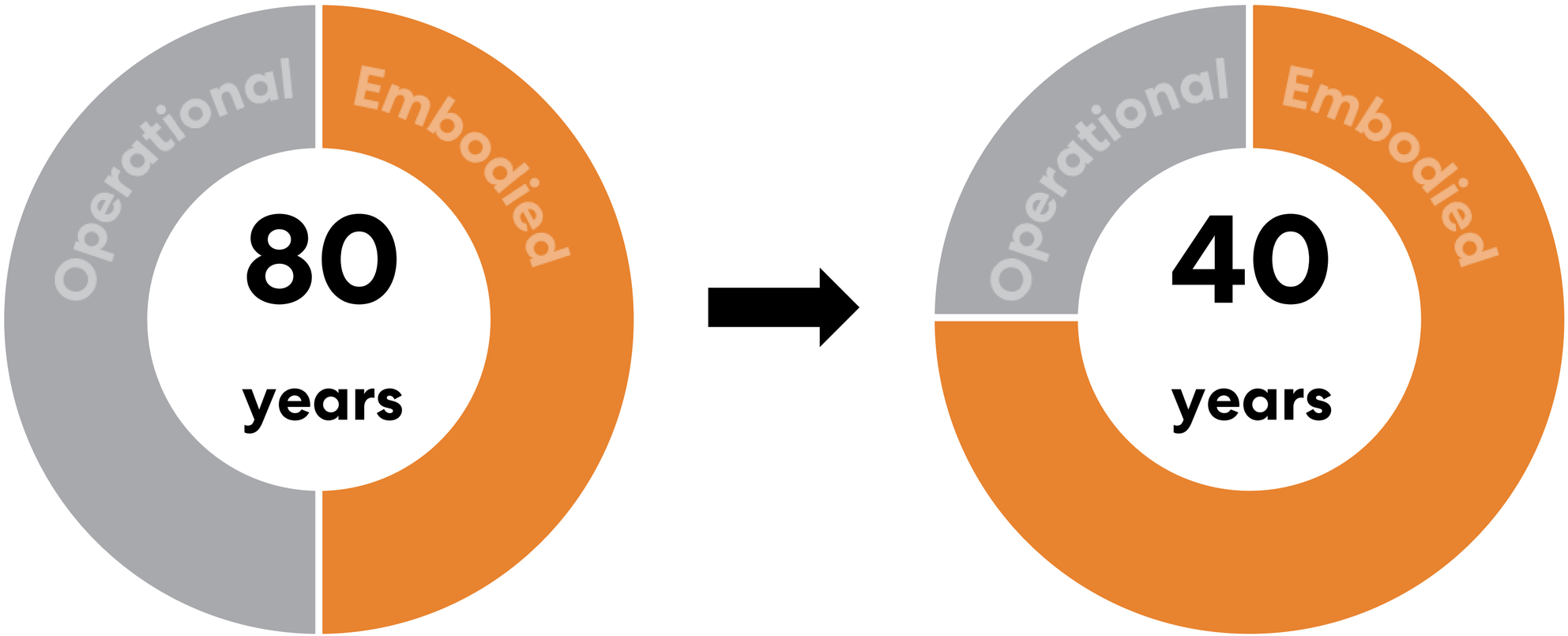


1 architect x 3 office towers =



162 American lifetimes of carbon

Embodied Carbon vs Lifespan



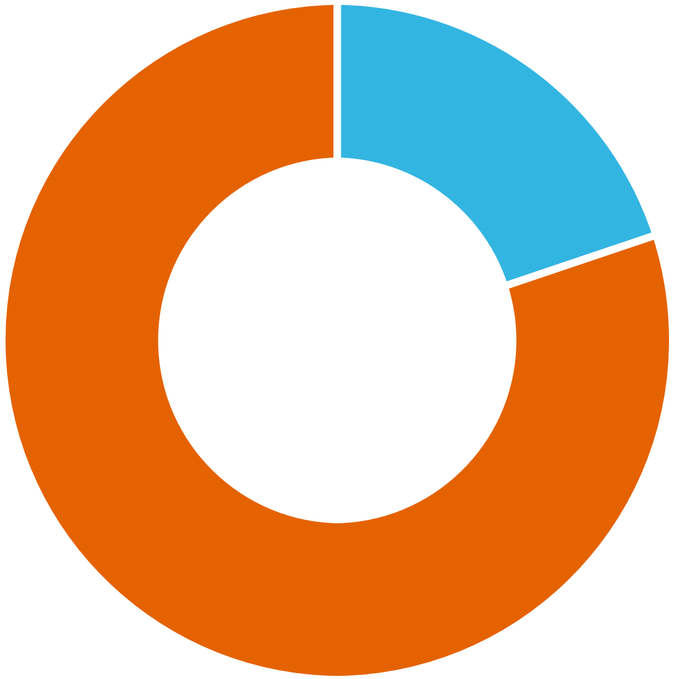
Culture shift

The average commercial building now lasts 50 years and is engineered to last 500 years

— Getty Colloquium 2015 / Independent May 2015

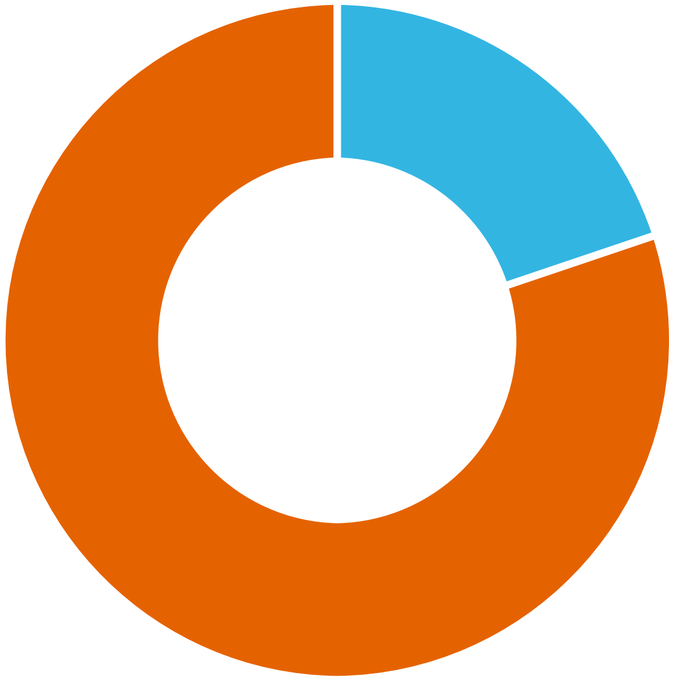
90%?
What if we focused more on transforming our existing buildings?

Thought experiment:

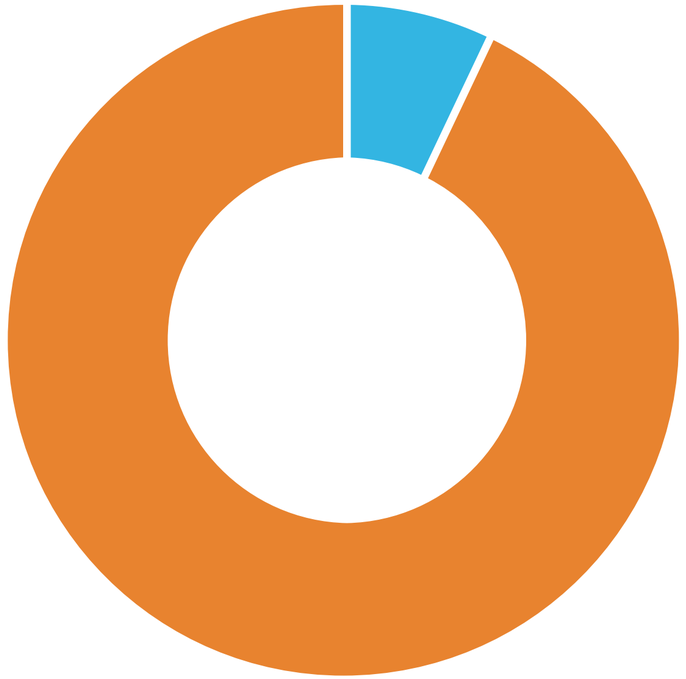


20% new until 2050

Thought experiment:

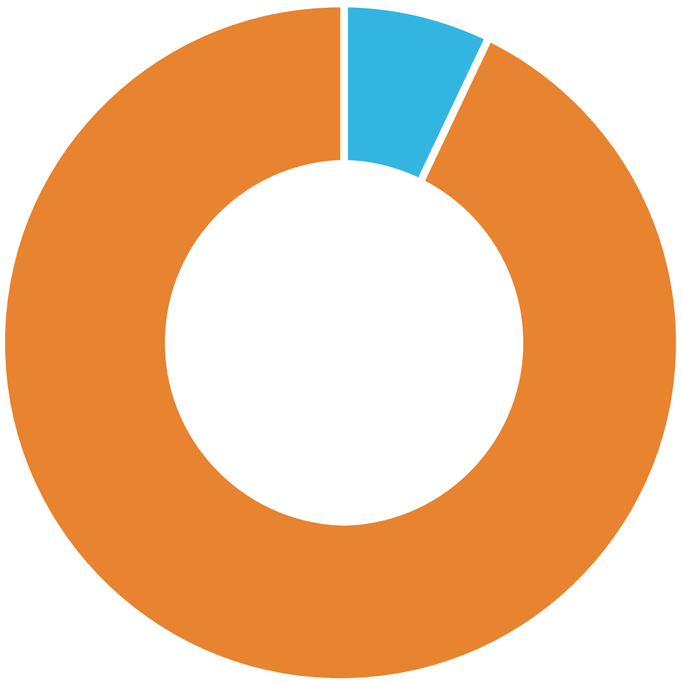


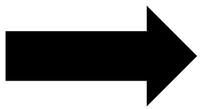
20% new until 2050

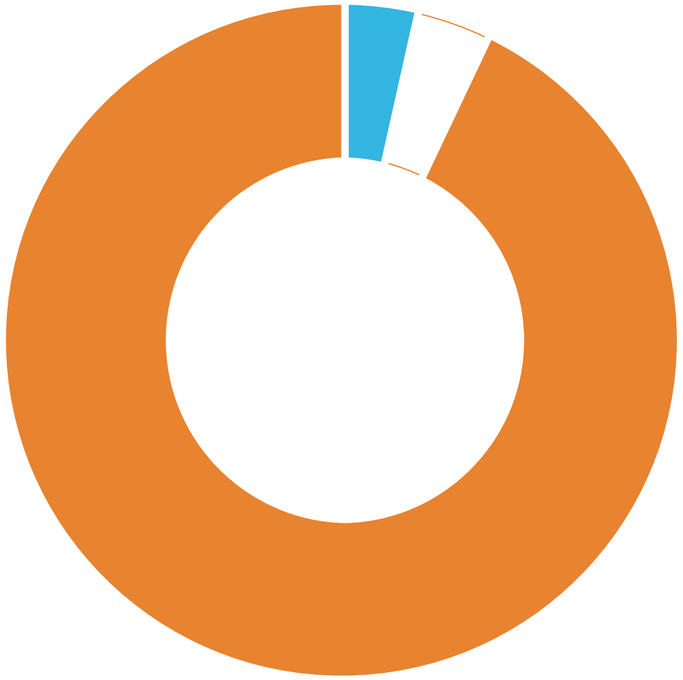


Only represents a fraction of operating carbon

Thought experiment:





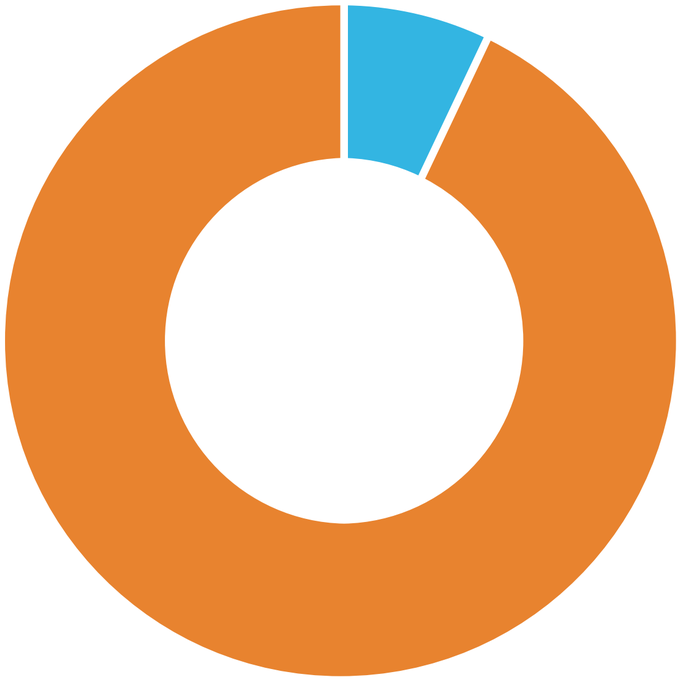


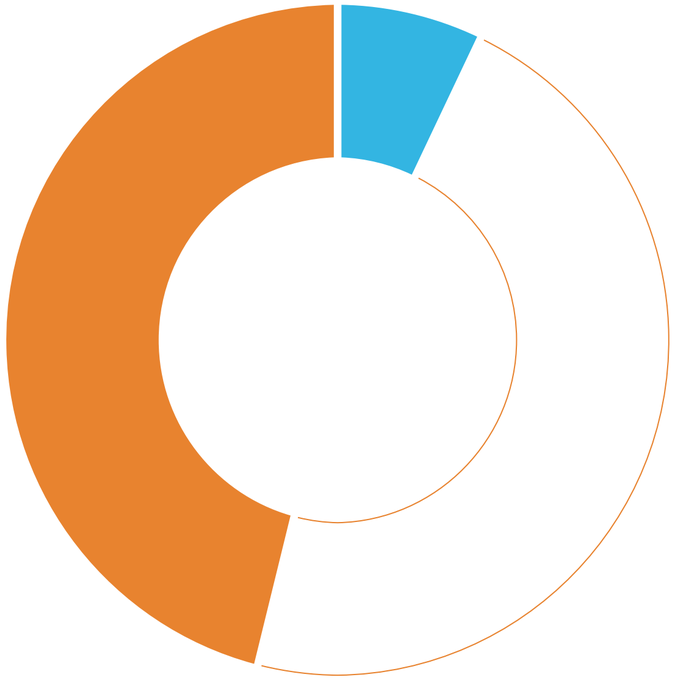
Operating carbon

New build

Reducing this by 50% only leads to a small gain

Thought experiment:





Operating carbon

Existing buildings

Improving existing buildings by 50%

DENMARK

ministry of the
interior and housing
National Strategy for
Sustainable Construction
Denmark, April 2021

Belgium

be circular be.brussels

FR | NL | IN

LOGIN

Construction : la réglementati

About | Sectors | Levers | Calls for projects | Support offer

Research: Construction: regulation as a lever for better resource management

UNITED KINGDOM

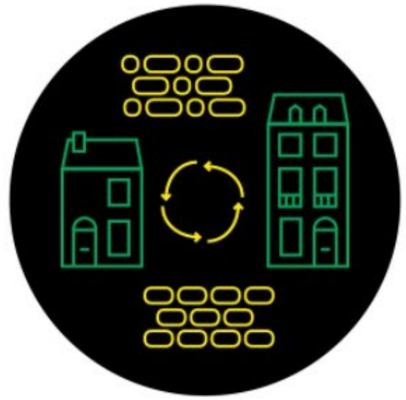
The three demands of RetroFirst

Tax

Tax
Cut VAT rate on refurbishment, repair and maintenance from 20 per cent to 5 per cent

Policy

Policy
Promote the reuse of existing building stock and reclaimed construction material by introducing new clauses into planning guidance and the building regs



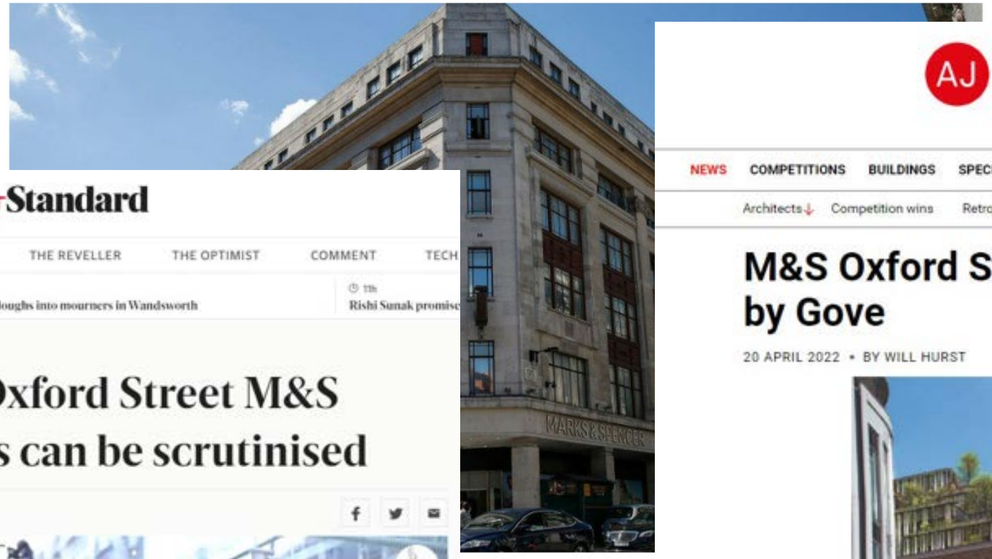
Procurement

Procurement
Stimulate the circular economy and support a whole-life carbon approach in construction by insisting that all publicly funded projects look to retrofit solutions first

UNITED KINGDOM

Marks & Spencer: Demolition of Oxford Street store put on hold

19 April



ford Street store has
further scrutiny.

Evening Standard

ES MONEY CULTURE INSIDER THE ESCAPIST THE REVELLER THE OPTIMIST COMMENT TECH

47m Five in hospital after pensioner ploughs into mourners in Wandsworth

11h Rishi Sunak promise

NEWS › POLITICS

Government blocks Oxford Street M&S demolition until plans can be scrutinised

VIEW 10 COMMENTS

AJ Architects' Journal

NEWS COMPETITIONS BUILDINGS SPECIFICATION PRACTICE MAGAZINES LIBRARY PODCASTS EVENTS JOBS

Architects Competition wins RetroFirst Climate change Crossrail Opinion RIBA Grenfell Tower

M&S Oxford St demolition scheme halted by Gove

20 APRIL 2022 • BY WILL HURST

CANADA

ÉLABORATION DE POLITIQUES | ENVIRONNEMENT

Federal tax policy incentivizes demolition over reuse

Canada's tax system has favoured destruction of buildings – heritage or otherwise – since the 1940s. This culture of obsolescence isn't sustainable.

par Marc Denhez, Ken Grafton

23 juin 2021

schmidt/hammer/
lassen/
architects/

AdaptiveTransformation

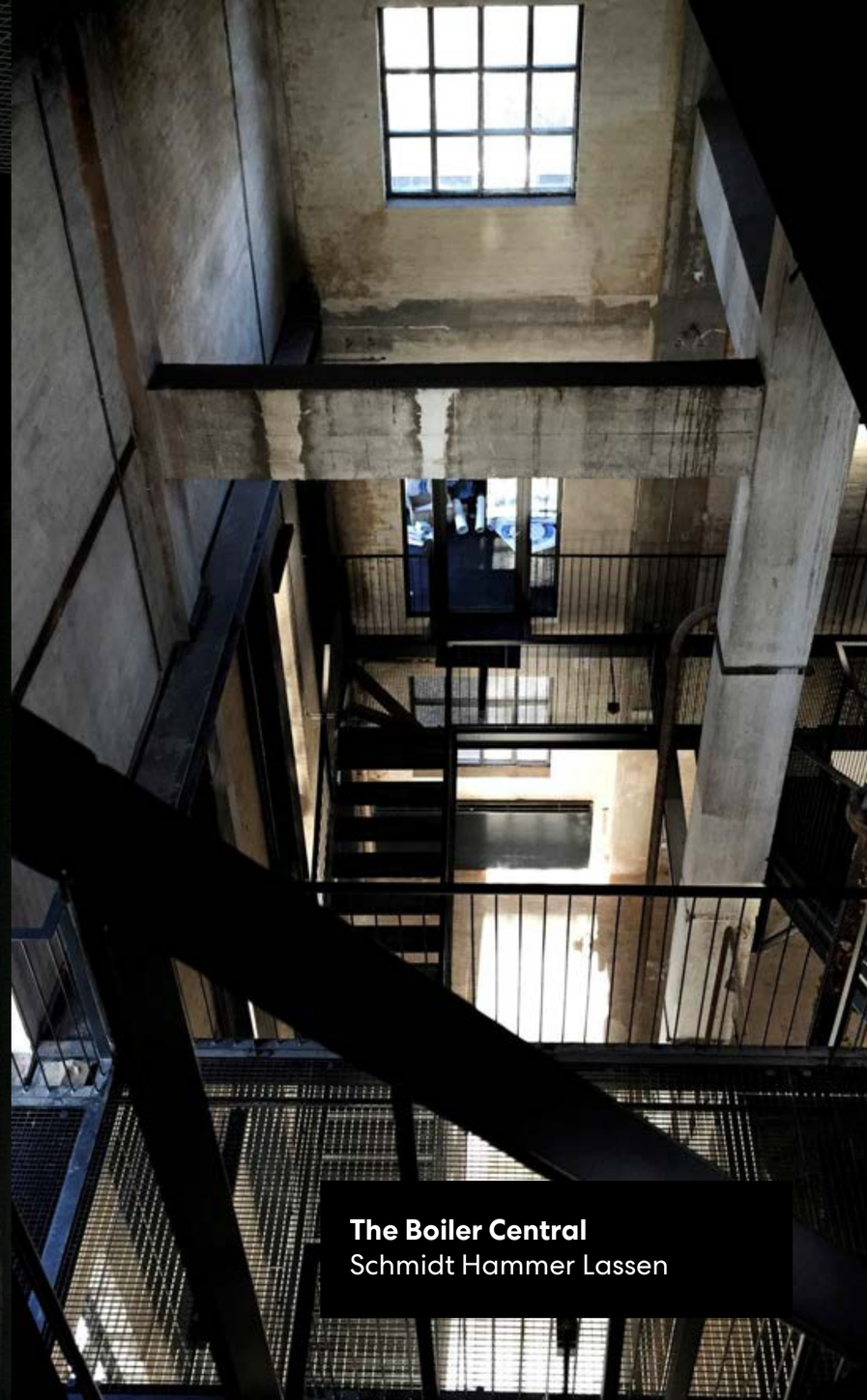
(doing more with less)

‘Prosthetic’ architecture

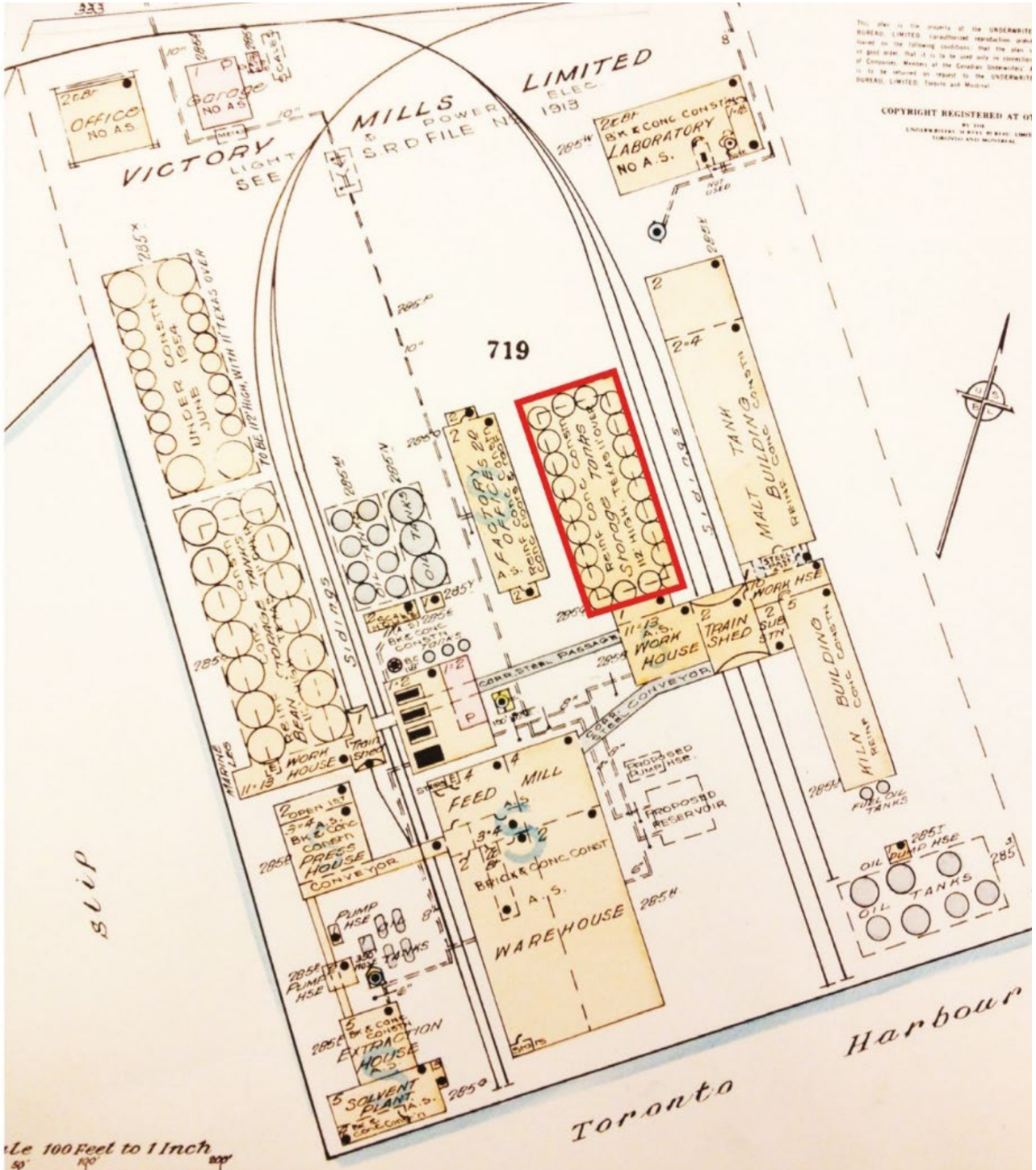
The Boiler Central
Schmidt Hammer Lassen

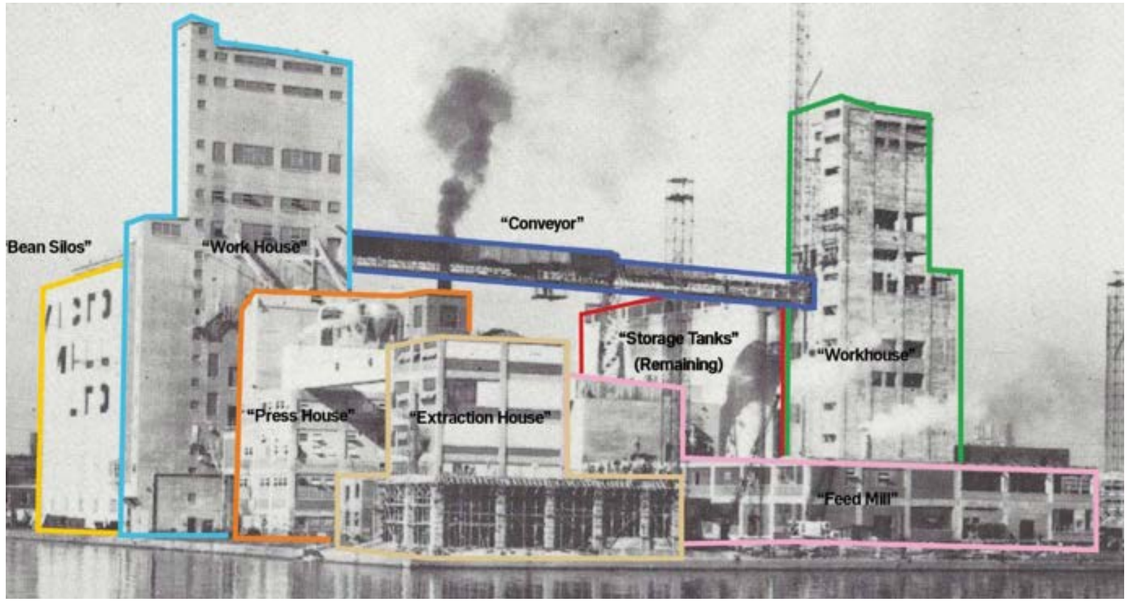
We have an obligation to ask... ‘What qualities exist?’

The Boiler Central
Schmidt Hammer Lassen

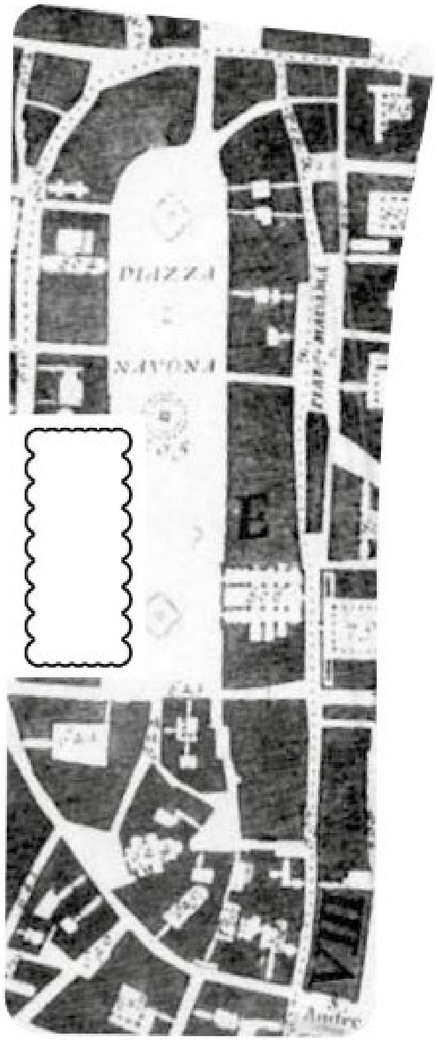


The Boiler Central
Schmidt Hammer Lassen





Victory Silo
Schmidt Hammer Lassen



Victory Silo
Schmidt Hammer Lassen

Victory Silo
Schmidt Hammer Lassen

Victory Silo
Schmidt Hammer Lassen

‘Parasitic’ architecture

schmidt/hammer/
lassen/
architects/

“What is the least we can do for the greatest effect?”

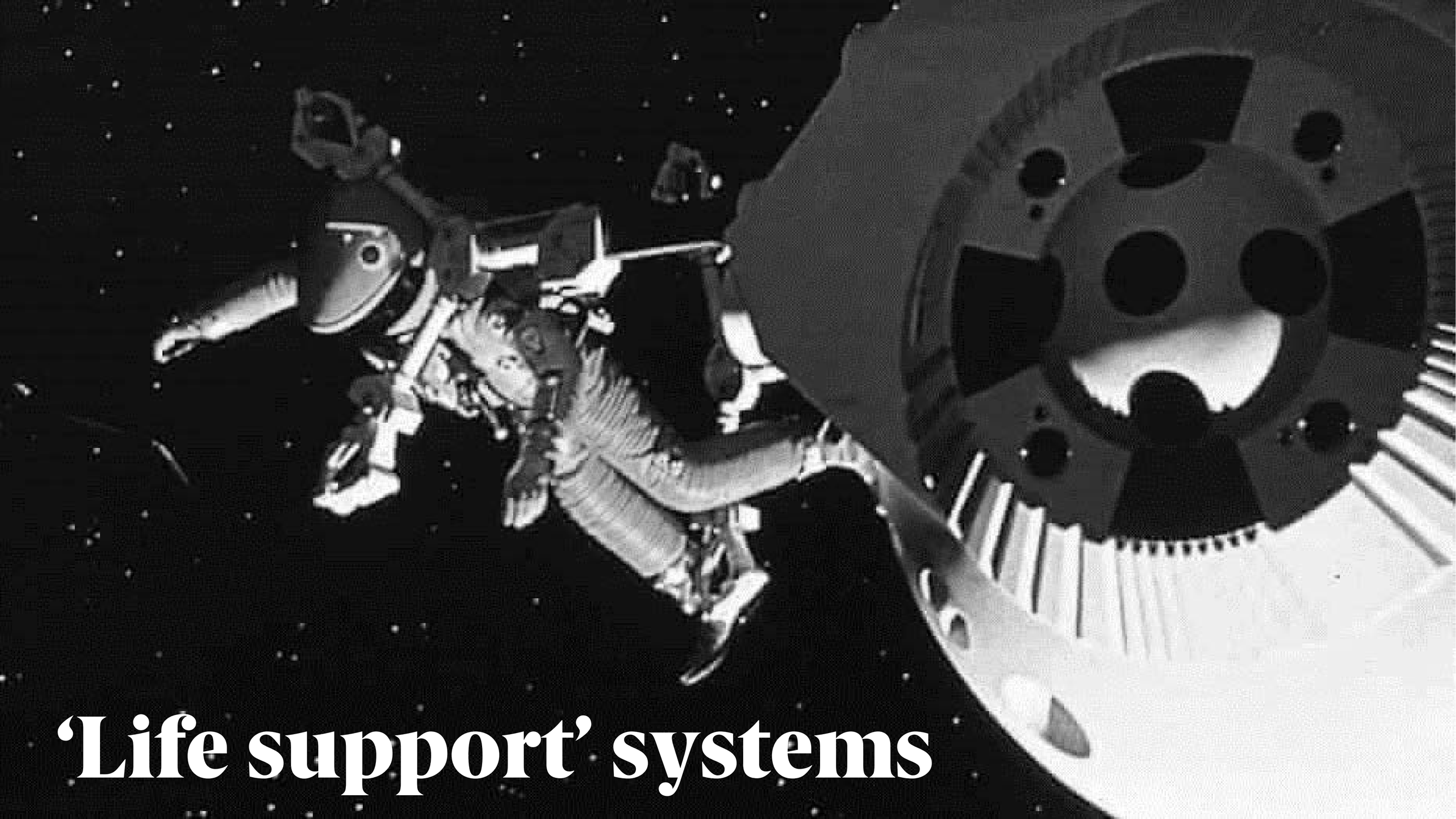
The Spinning Mills
Schmidt Hammer Lassen

The Spinning Mills

Client: Vejle Municipality / Realdania Funds
Size: 12,000 square meters
Completion Date: 2009

IBC
Schmidt Hammer Lassen

IBC
Schmidt Hammer Lassen

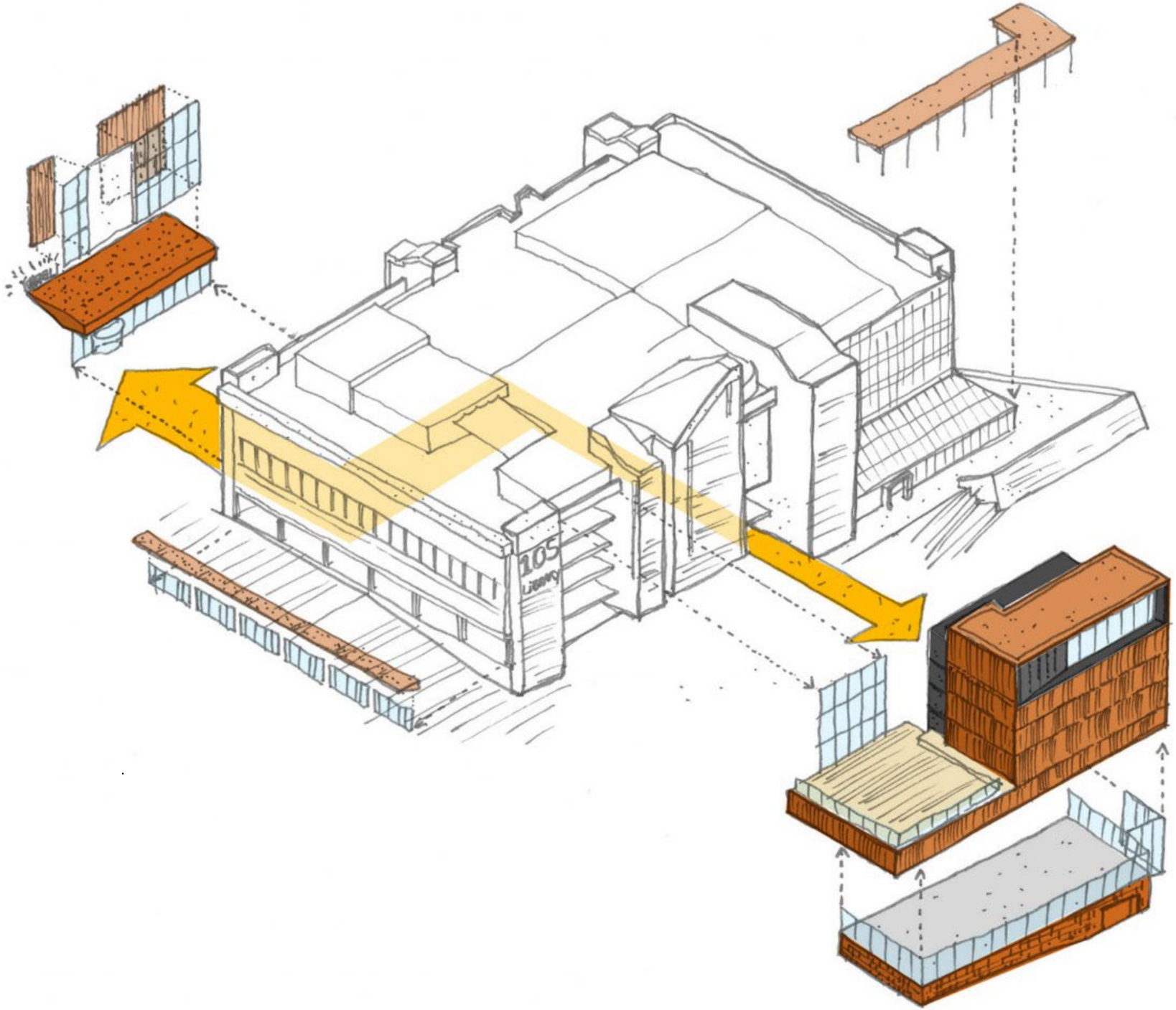


‘Life support’ systems

Curtain University Library
Schmidt Hammer Lassen

‘Life support’ systems

Curtain University Library
Schmidt Hammer Lassen



schmidt/hammer/
lassen/
architects/

New economic models for sustainability

Risk

Boston Seaport
Schmidt Hammer Lassen

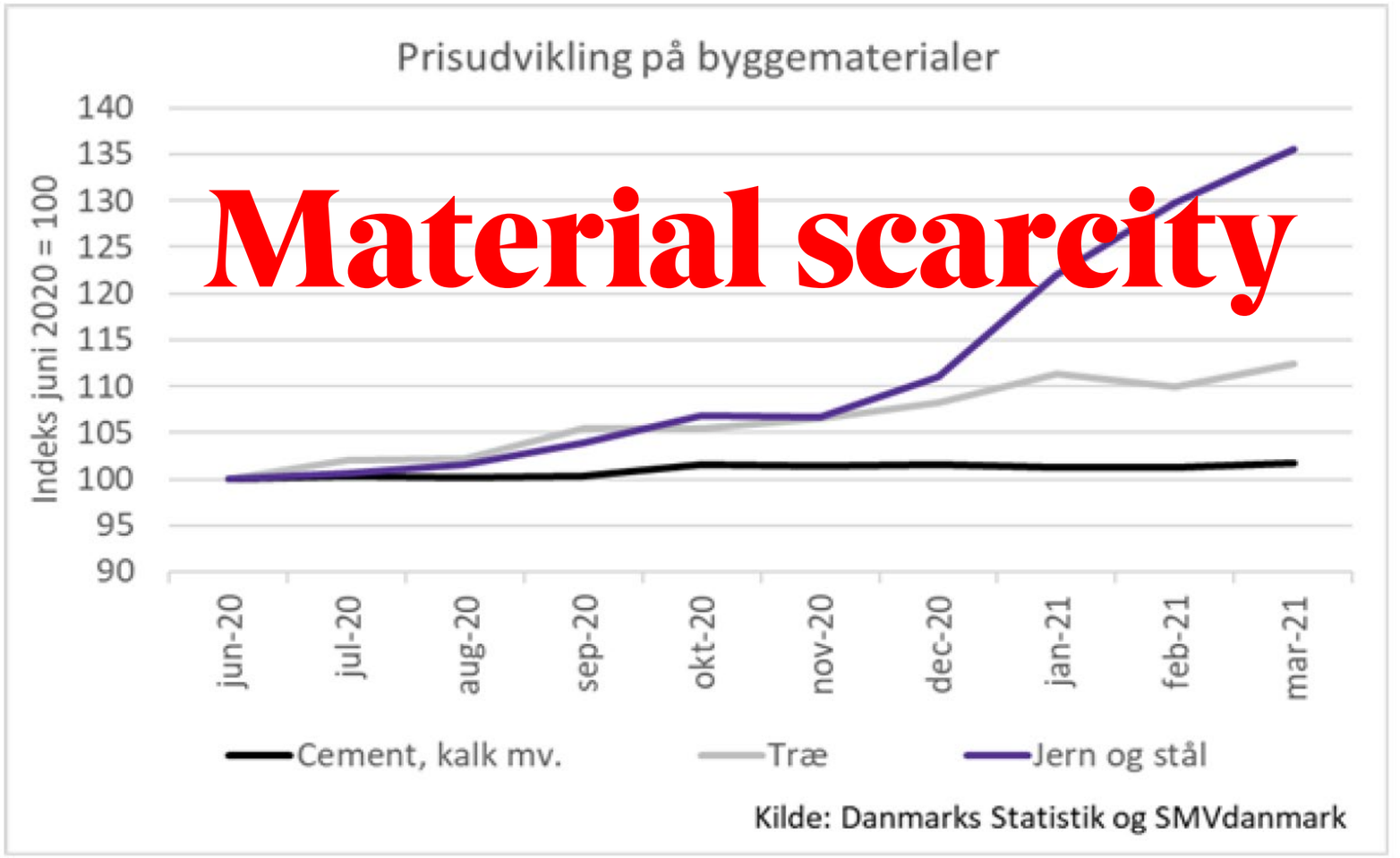
Reward

Boston Seaport
Schmidt Hammer Lassen

schmidt/hammer/
lassen/
architects/

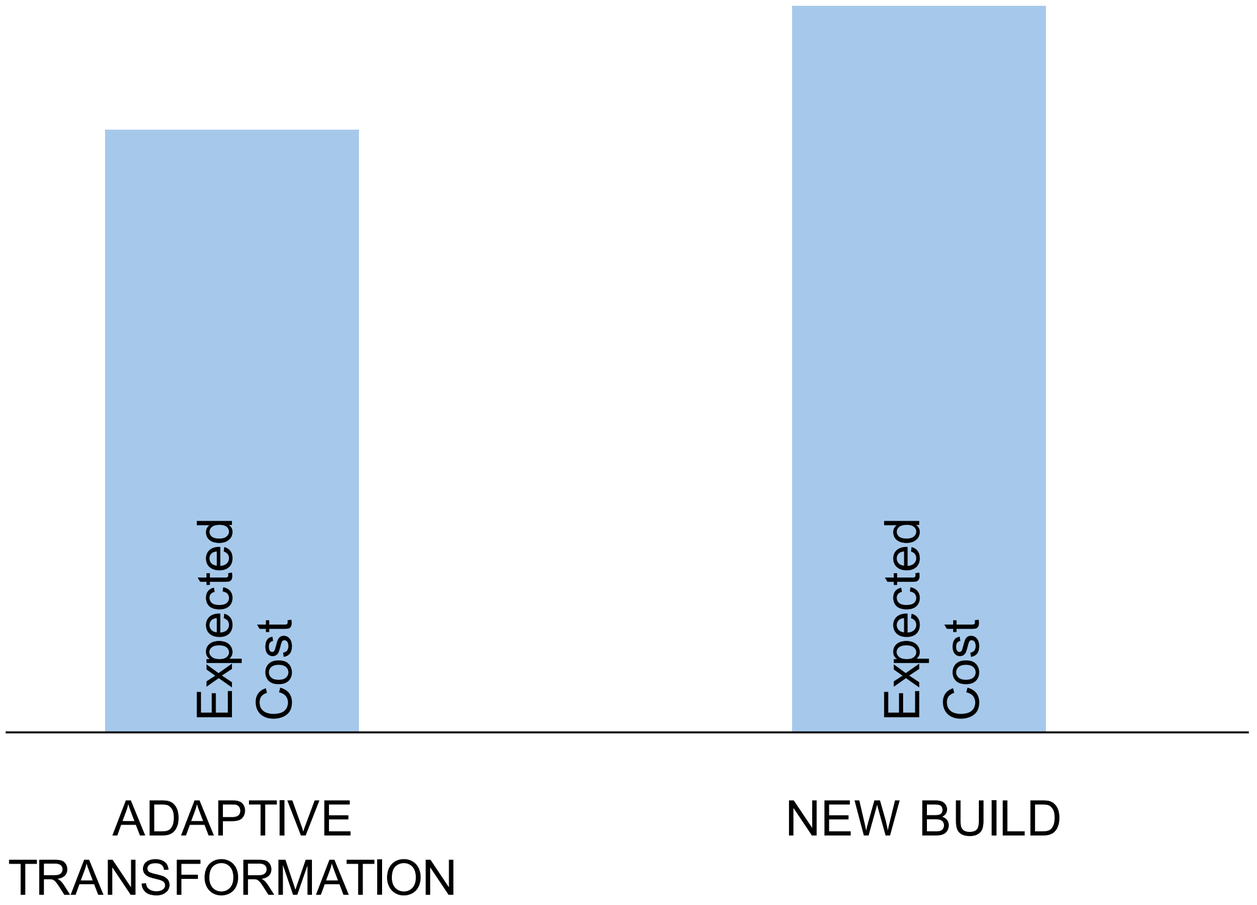
The Cost of building new is rising

STATISTICS DENMARK

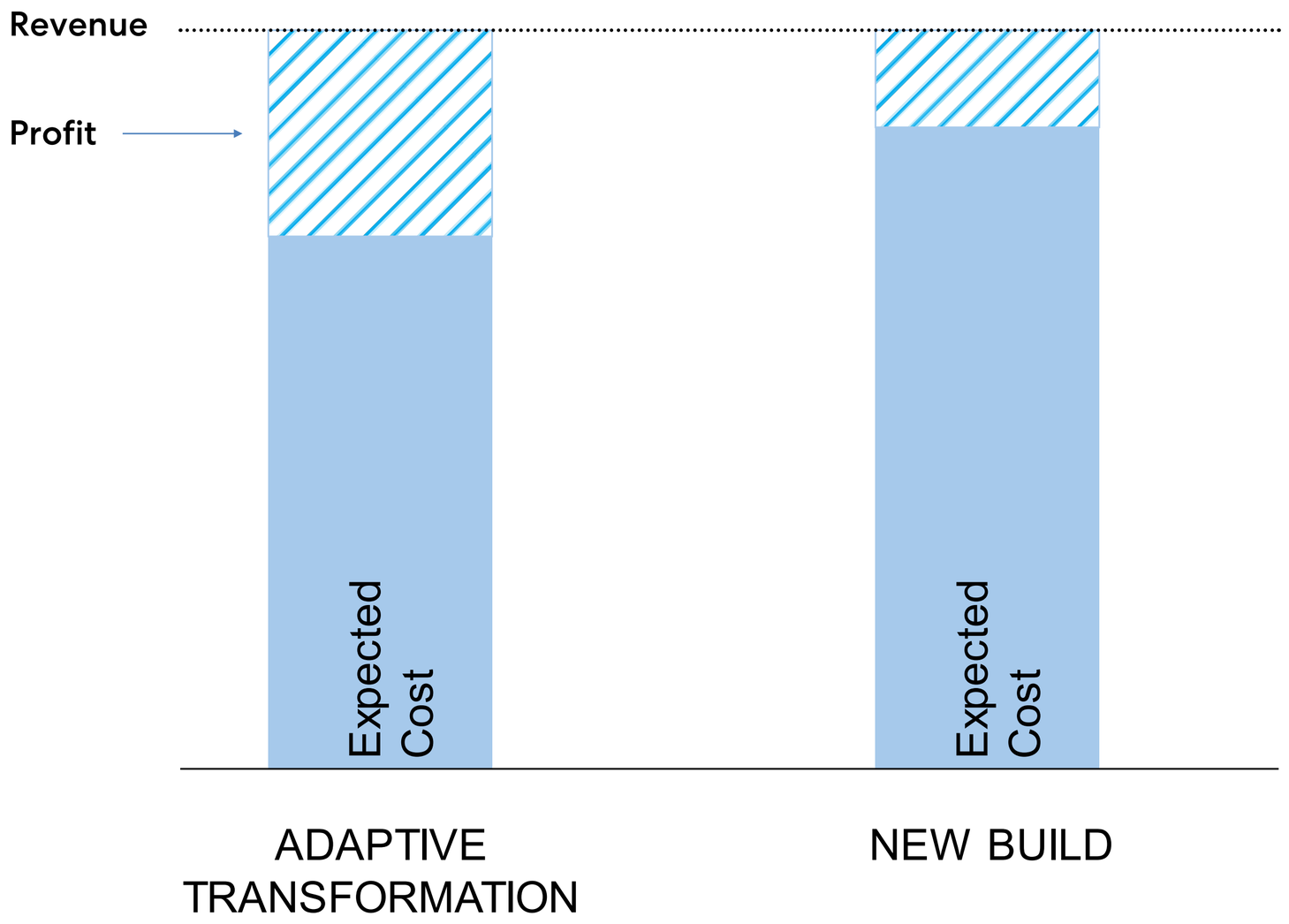


Material price: Steel

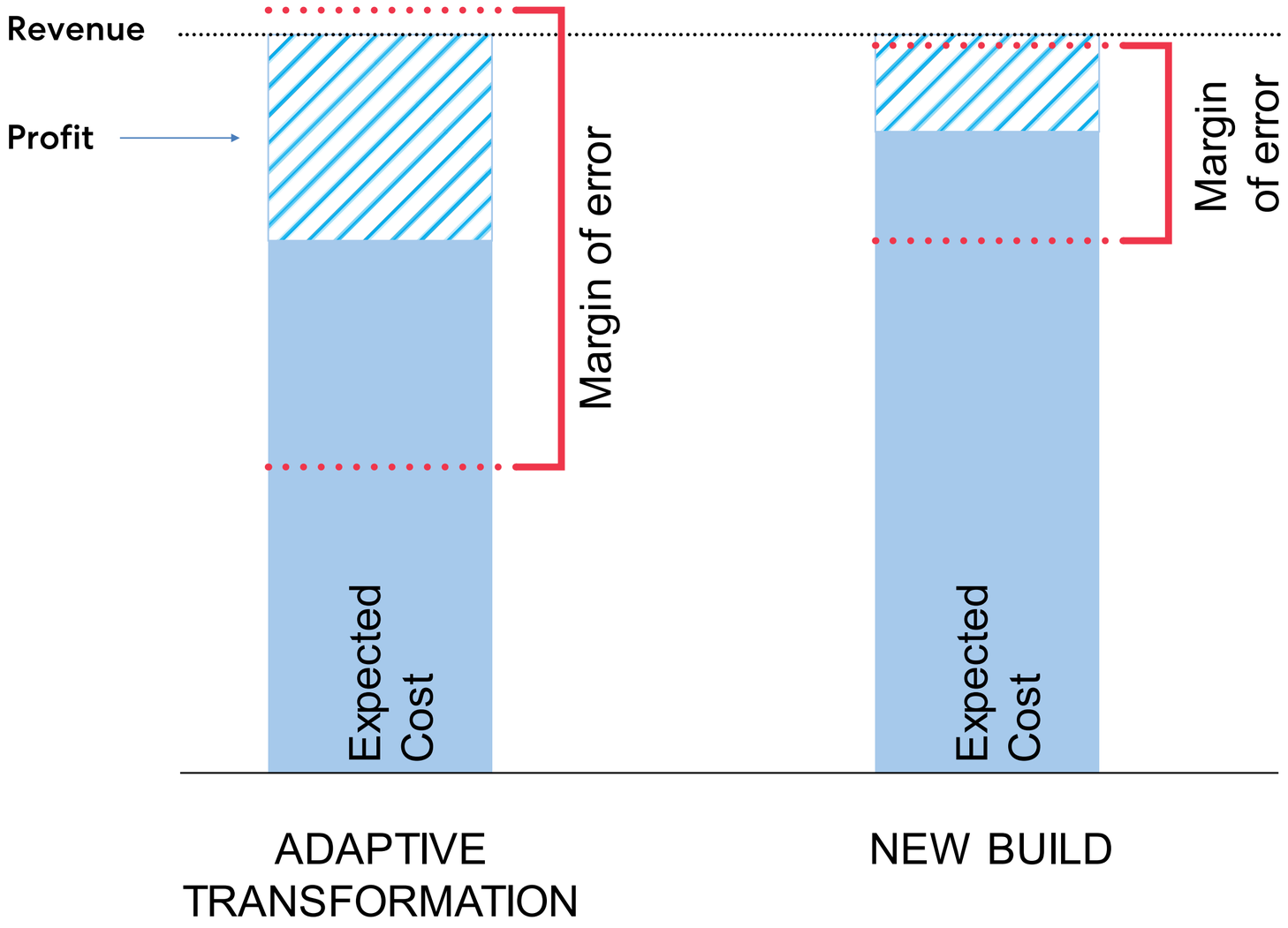
A good story...


Expected Cost
Expected Cost
ADAPTIVE TRANSFORMATION
NEW BUILD

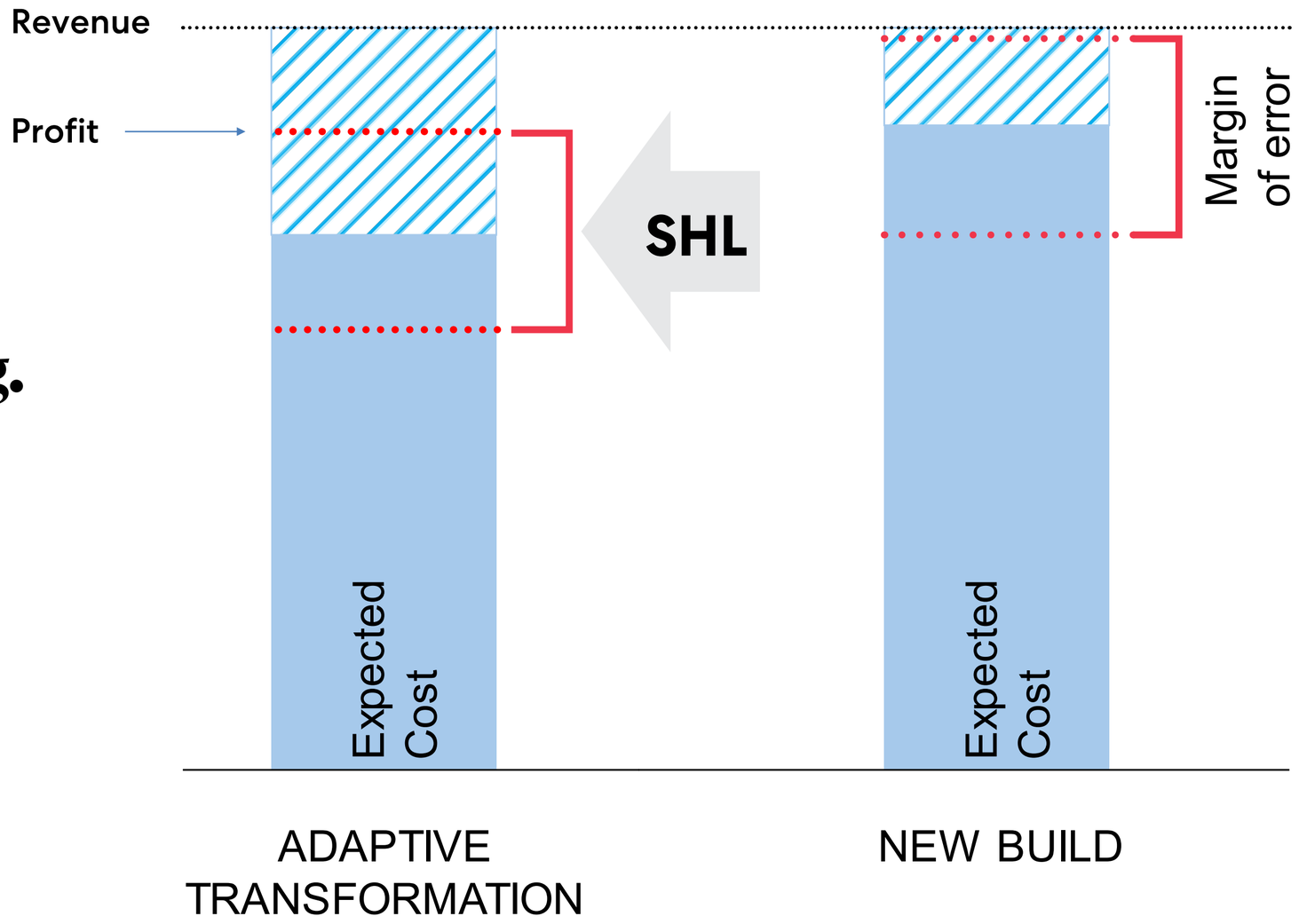
A good story...


Revenue
Profit
Expected Cost
Expected Cost
ADAPTIVE TRANSFORMATION
NEW BUILD

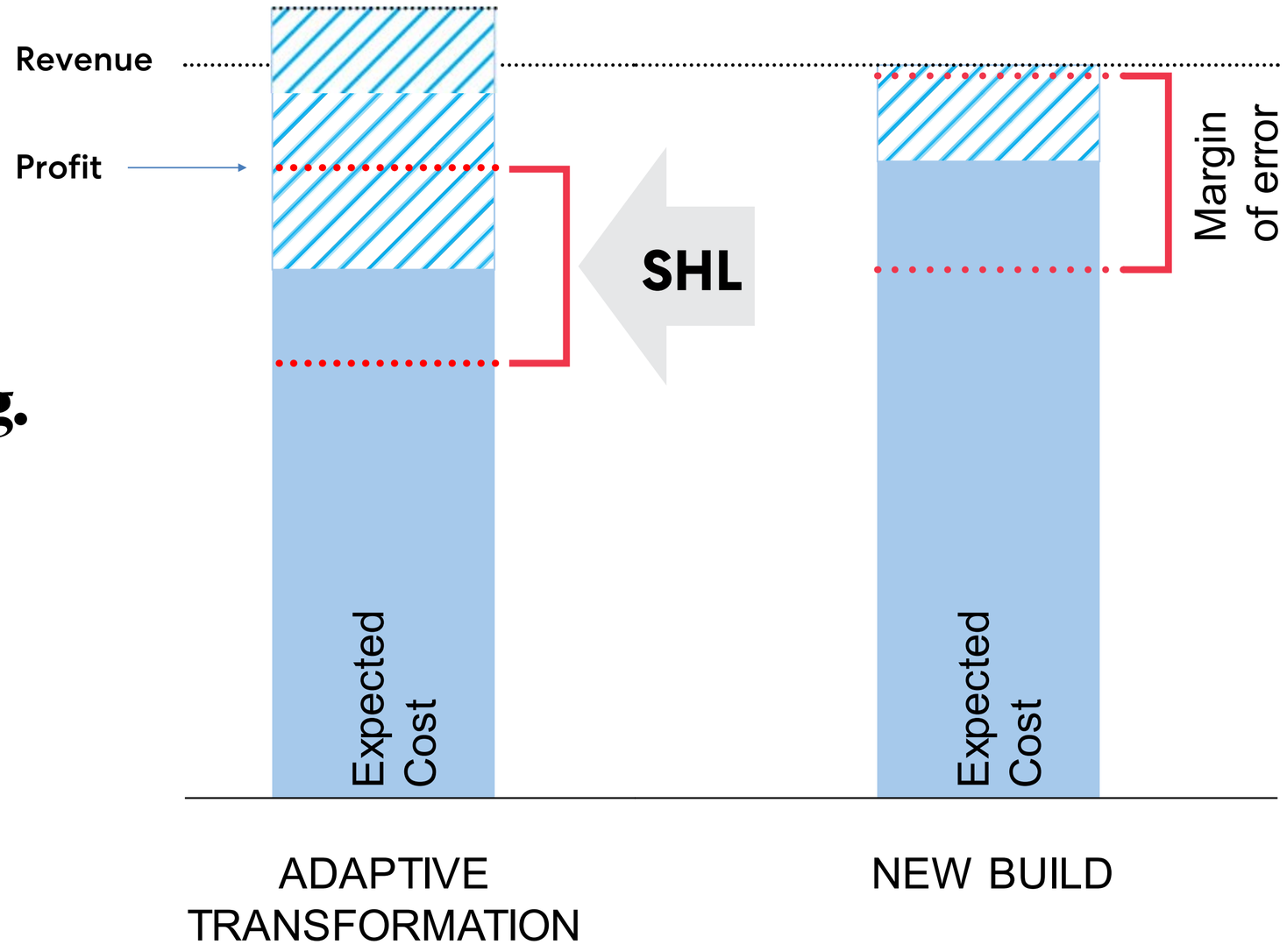
Turns bad.

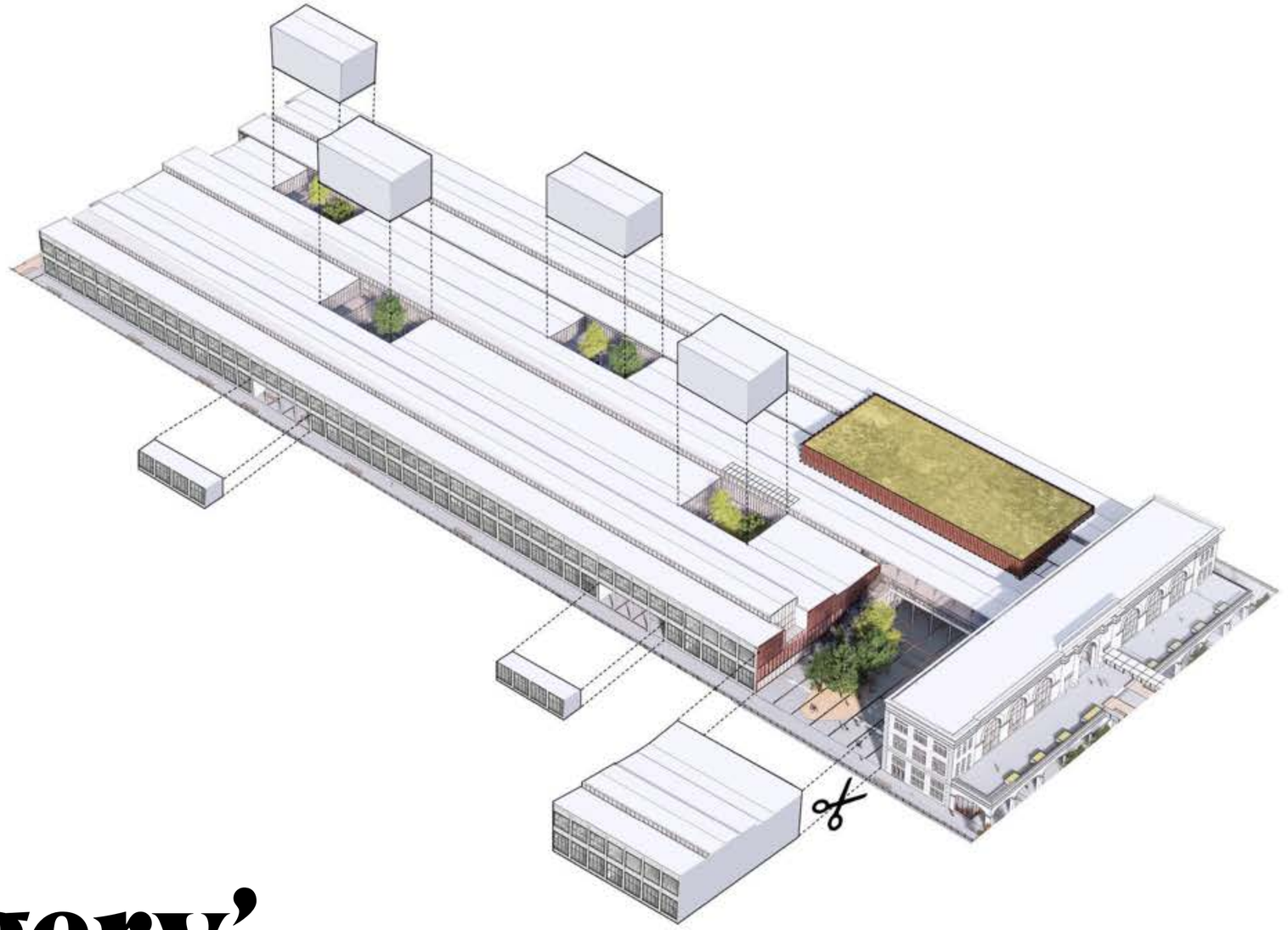

Revenue
Profit
Margin of error
Expected Cost
Margin of error
Expected Cost
ADAPTIVE TRANSFORMATION
NEW BUILD

But has a happy ending.



But has a happy ending.



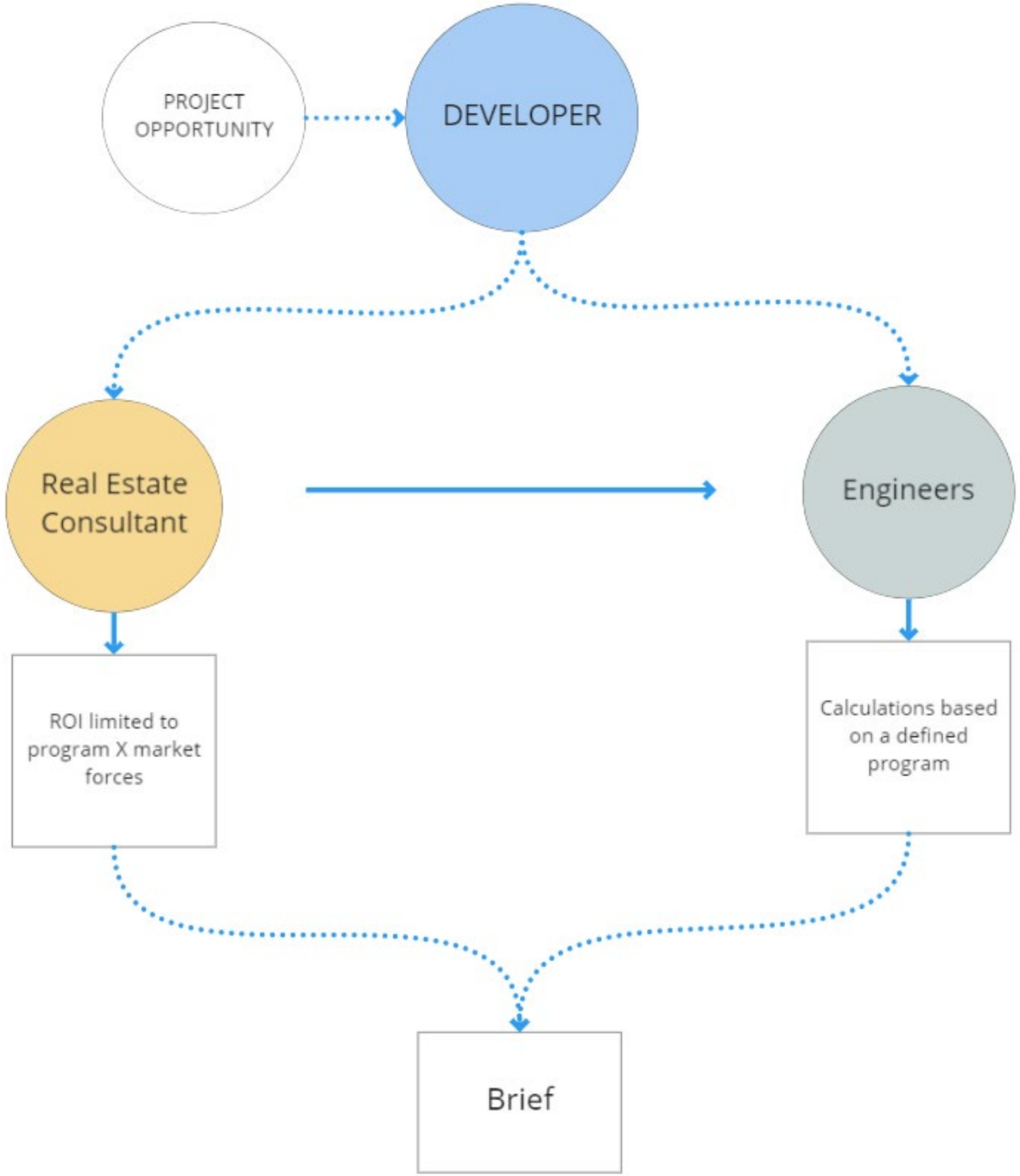


‘Surgery’

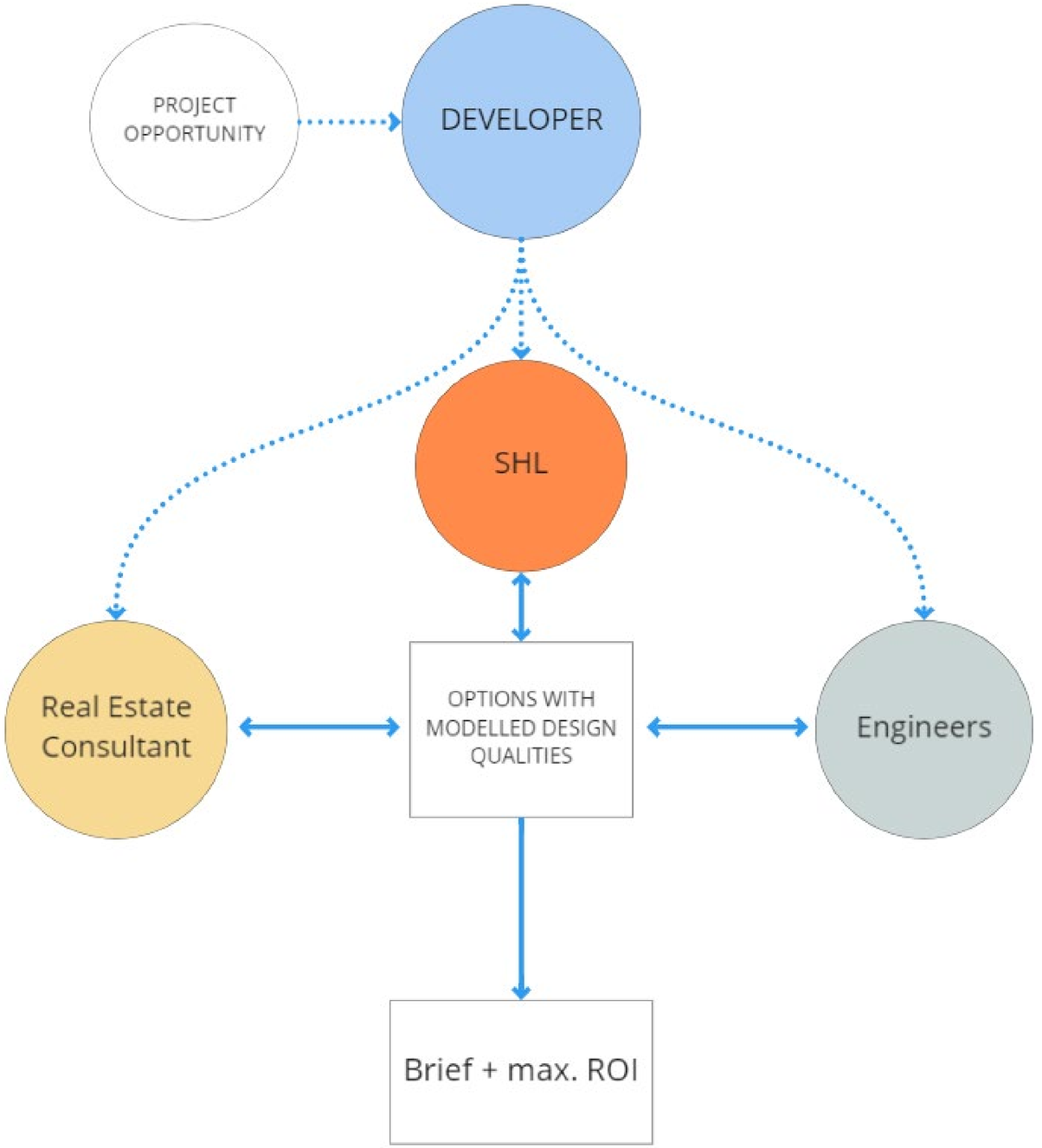
Boston Seaport
Schmidt Hammer Lassen

Boston Seaport
schmidt hammer lassen

Standard pre-design consultancy



Pre-design consultancy with SHL



Green strategy / SHL

01. The big picture

02. Holistic Sustainability

03. Adaptive Transformation

04. Get In touch

Vancouver
Sept. 28

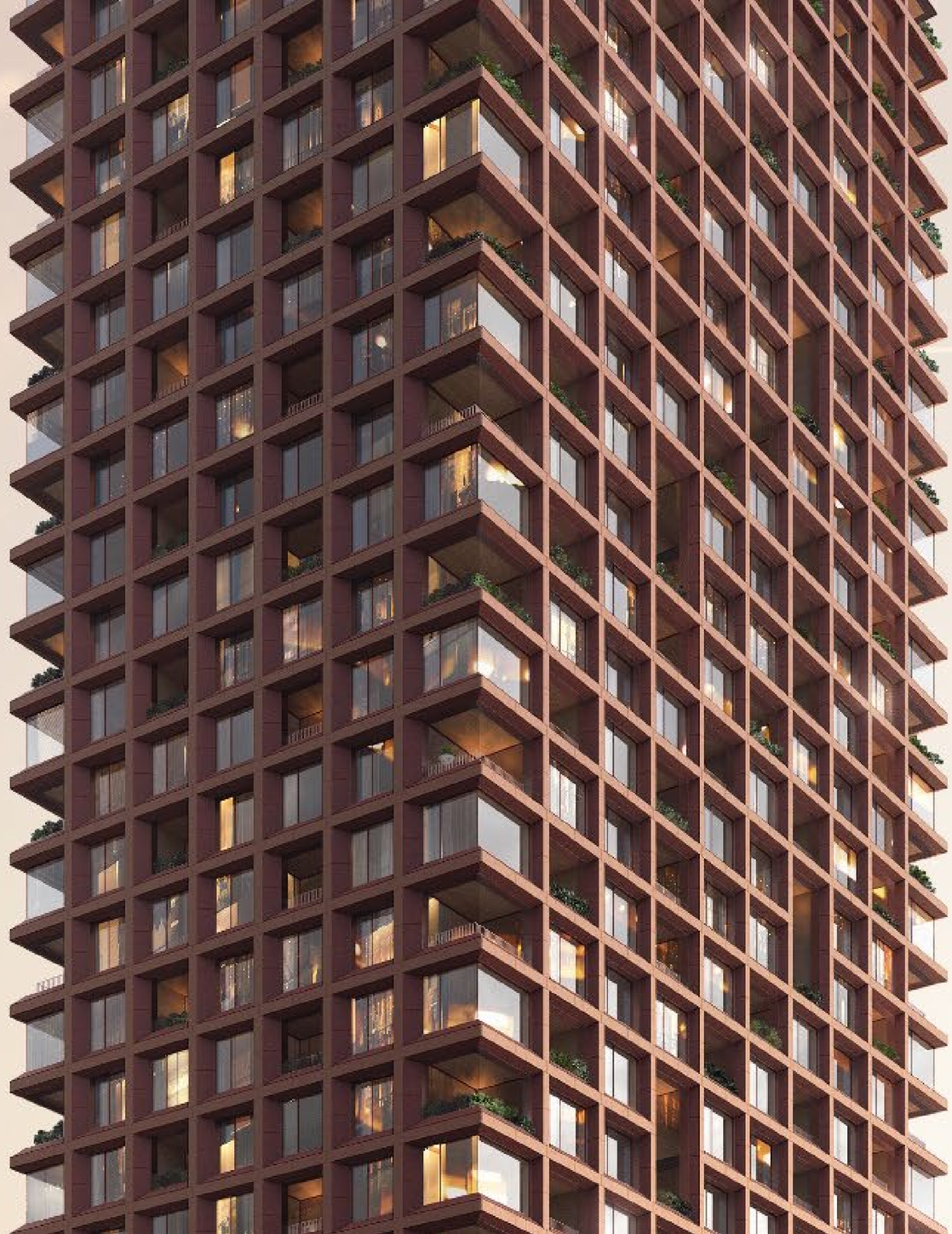
Adaptive Transformation

Vancouver

Oct. 13

CANBIM – Building Transformations

Timber Highrise Design



Toronto
Oct. 21-22

Adaptive Transformation

National Trust Conference 2022
The Heritage Reset: Making Critical Choices
Chelsea Hotel and Conference Centre, Toronto, Ontario
October 20 – 22, 2022

National Trust for Canada | CAHP | ACECP | Indigenous Heritage Circle • Cercle du patrimoine autochtone •