

# Towards Healthy, Regenerative and Circular Cities

A view into the future

Dr. Susana Saiz Alcazar  
02.12.2021

The **Future** is a narrative that we are writing today



# Cities are...

Polluting and Consuming Places

Cities are places with highest resource consumption, emissions and waste generation.

*„Cities are places where the climate battle will largely be won or lost“*

- Antonio Guterres, UN Secretary General



# The city

## impacts

ARUP

70%

of resources and energy consumed by cities

50%

of resources and energy consumed by cities out of total waste generated worldwide

7,6%

of the total land area is inhabited.

- Resources are used inefficiently.
- Spaces suffer from poor air quality, noise and light pollution.
- It has mobility problems and traffic congestion.

70%

of GHG emissions are attributable to cities

85%

of GDP is generated by cities

55%

of global population lives in cities (75% in Europe)

30% of food is thrown away, 95% of the time vehicles are not used.



## Cities are...

ARUP

Animate Places

During the lockdown we have re-discovered our intimate and fragile relationship with nature.

*“The silence meant we could suddenly hear frogs serenading each other and birds singing soaring orchestral farewells to winter.”*

- Bell Lack, Guardian



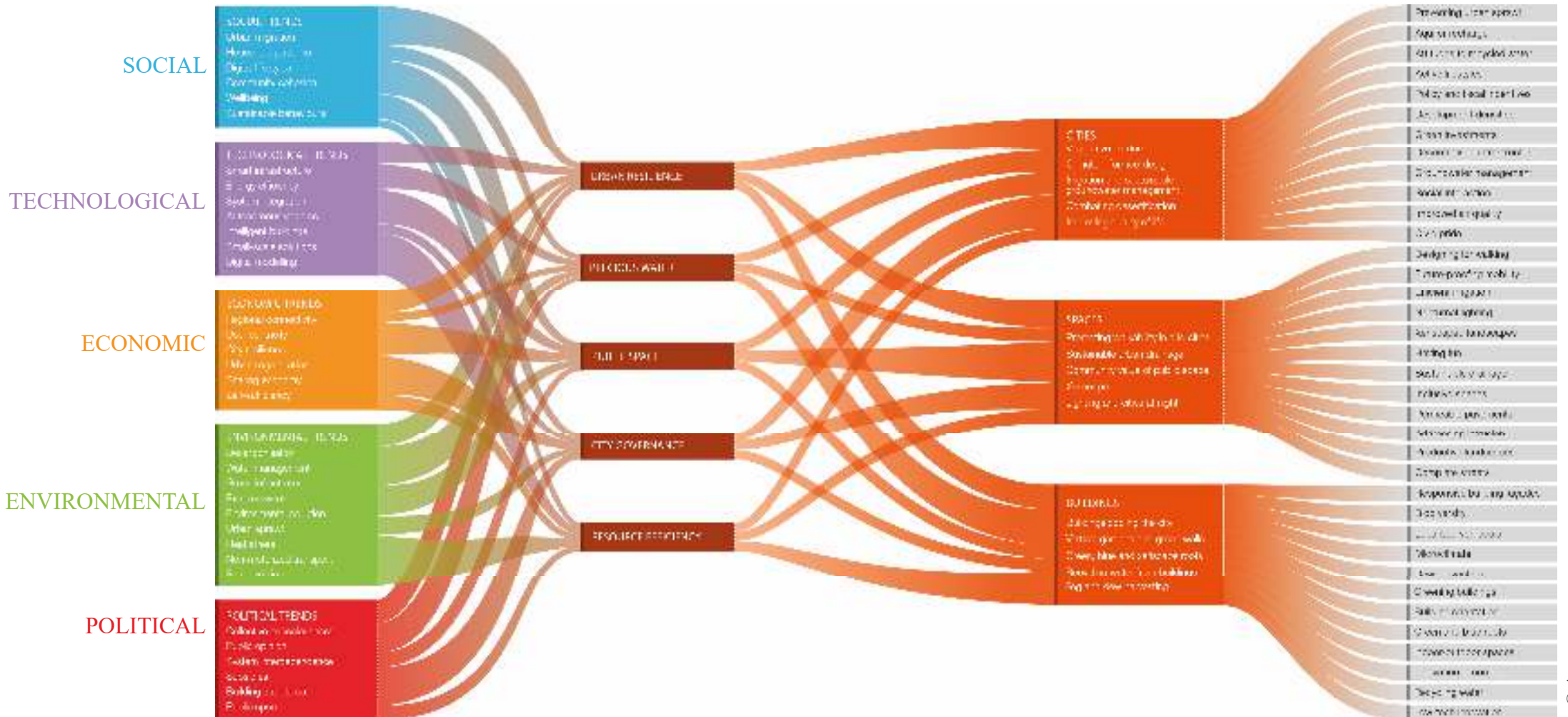
The challenges we are trying to tackle today all focus on the transformation of complex systems.

This requires integrated approaches across multiple components, actors and domains.

# Embracing complexity and ambiguity

## STEEP Methodology for Cities

ARUP



Towards a Healthy City

ARUP

# The Healthy City

ARUP



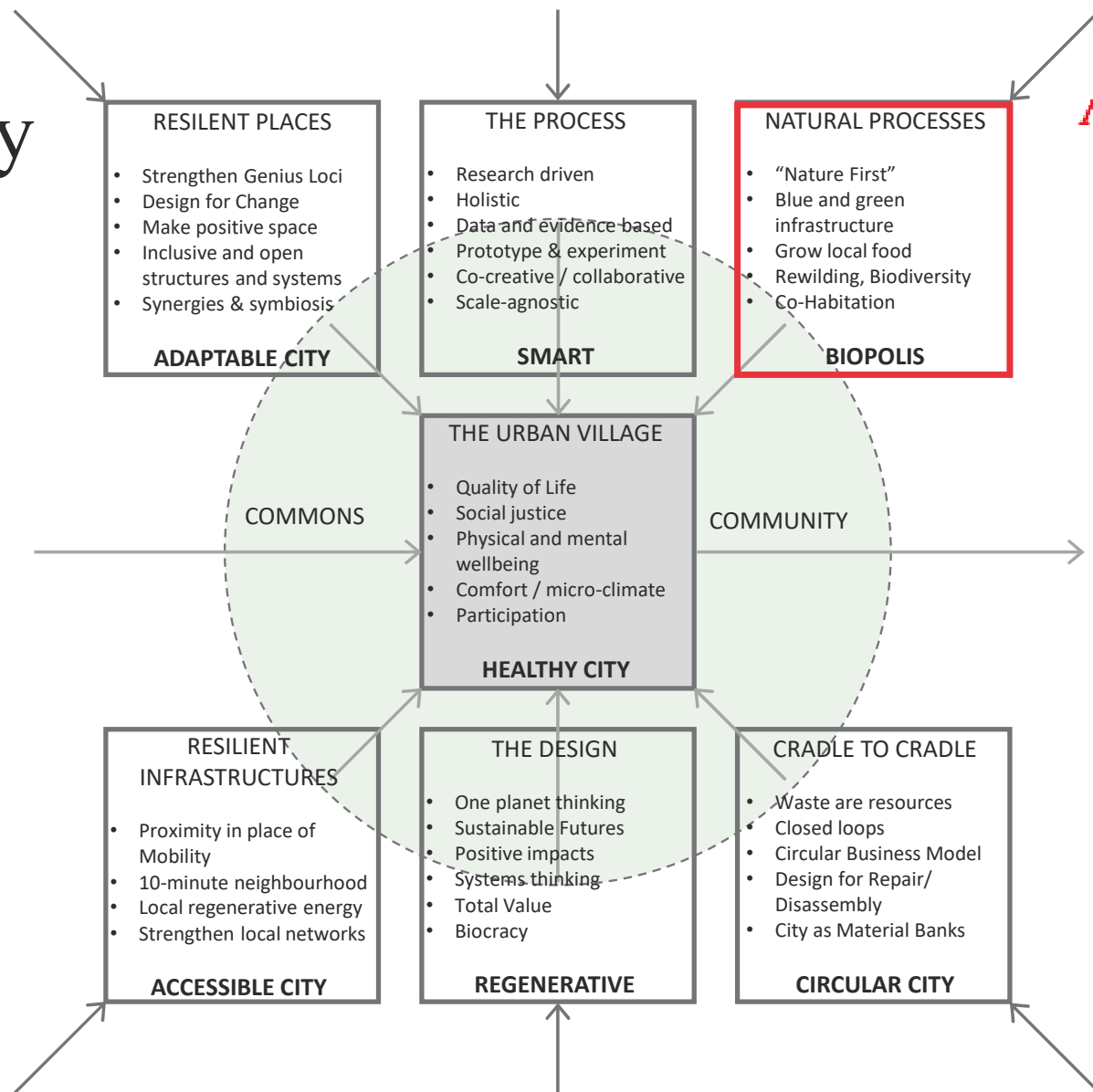
*“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being, without distinction of race, religion, political belief, economic or social condition.” WHO, 1948*

A healthy city is defined by a **process**, not an outcome. It is one that **continually creates and improves its physical and social environments** and expands the community resources that enable people to mutually support each other in performing all the functions of life and developing to their maximum potential.

# The Healthy City

HCR by Luc Eekhout/EVR

ARUP



Based on Compass by Luc Eekhout (KUL / EVR Architects)

Towards a Regenerative City

ARUP

# The Regerative City

From technical design to living systems design

ARUP



# The Regerative City

Ecosystem Services

ARUP

## Ecological Benefits

- Improved visual amenity
- Enhanced microclimate
- Improved air quality
- Improved biodiversity
- Reducing ambient noise

## Economical Benefits

- Increased property prices
- Increased land values
- Faster property sales
- Encouraging investments
- Improving areas for tourism

## Social Benefits

- Encouraging phys. activity
- Improved child development
- Improved mental health
- Lowering stress
- Increasing social cohesion

# Nature & Culture

Spirn, 1998

ARUP

*“The human habit of constructing dualisms runs deep: us and them, city and wilderness, nature and culture. But, similarity and difference need to be held simultaneously: the us in the them and the them in the us; the role of natural processes in cities and of human imagination in wilderness; the symbiosis of nature and culture. We need to shift from a focus on the Other to a reverence for all life, to a delight in diversity.”*

# Towards a Circular City

ARUP

# A Circular Built Environment

ARUP

Six key circular interventions can be identified for the built environment

## Principles of the Circular Economy defined by the Ellen MacArthur Foundation



Design out waste  
and pollution



Keep products and  
materials in use



Regenerate  
natural systems

## High impact interventions applicable in the built environment for design and operation



Construction

Enhance building utilisation

Switch to low-carbon materials

Use materials efficiently

Recover, reuse, repurpose materials



Operation

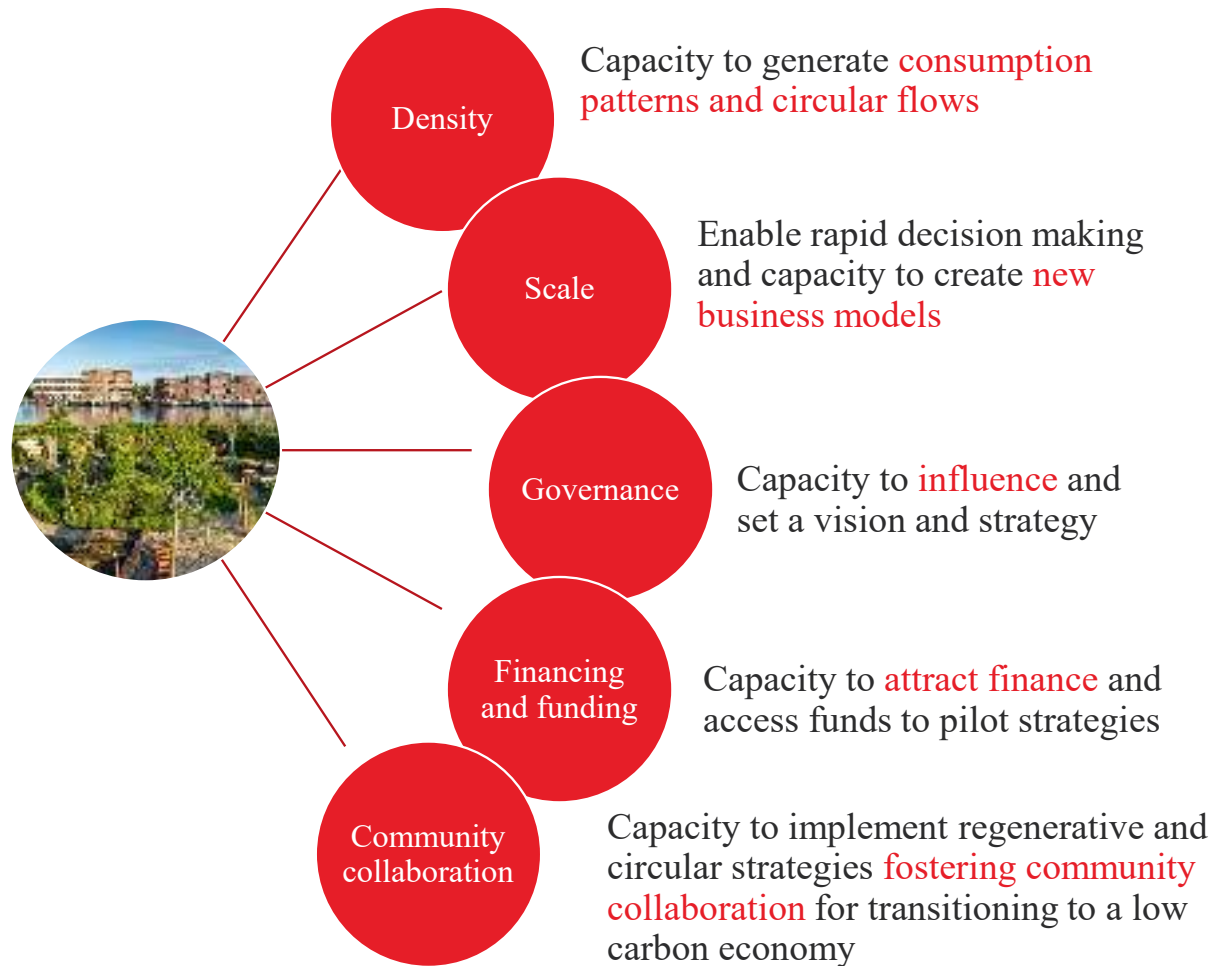
Energy retrofit

Low-carbon building services

# Seizing the opportunity

Neighbourhoods and communities

ARUP



Cities can be catalysts for the transition to the healthy, regenerative and circular model.

How a healthy, regenerative and circular  
city looks like?

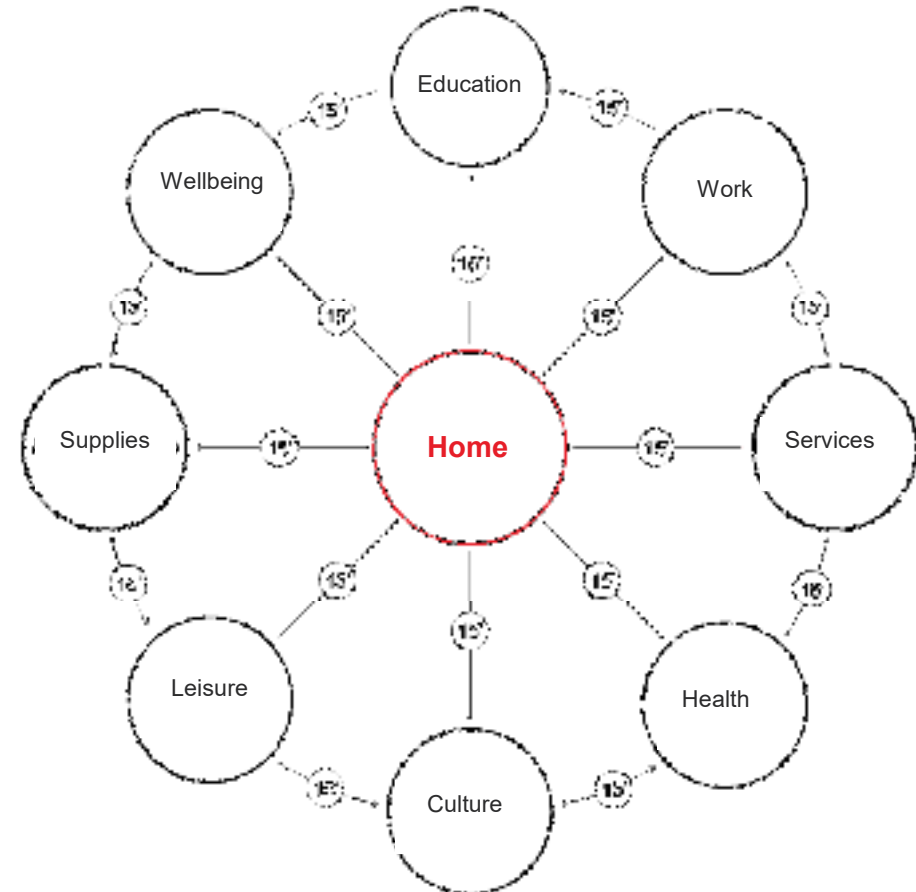
ARUP

# Healthy and prosperous city

ARUP

## Pillars of a healthy city

- **Well-being.** A green and thriving community neighbourhood meets the needs of its inhabitants and enhances the quality of life.
- **Resilience.** Its inhabitants, businesses and systems can survive and thrive by adapting to climate-related or other shocks they experience.
- **Equity.** All residents can access goods, services, education and employment in a fair and inclusive manner
- **Healthy.** The urban realm provides a vibrant, safe, connected, healthy and welcoming environment with a scale that encourages physical activity and healthy habitat.



*15 min city model*

# WildWestEnd

Regenerative

Central London's largest property owners are working in partnership with London Wildlife Trust, Mayor of London and Arup to encourage birds, bees and bats back into the heart of London, and create greater connections with nature for residents, visitors and workers to enjoy.



# Quantifiable Benefits

Regenerative

ARUP

## SELF REPORTED WELL-BEING



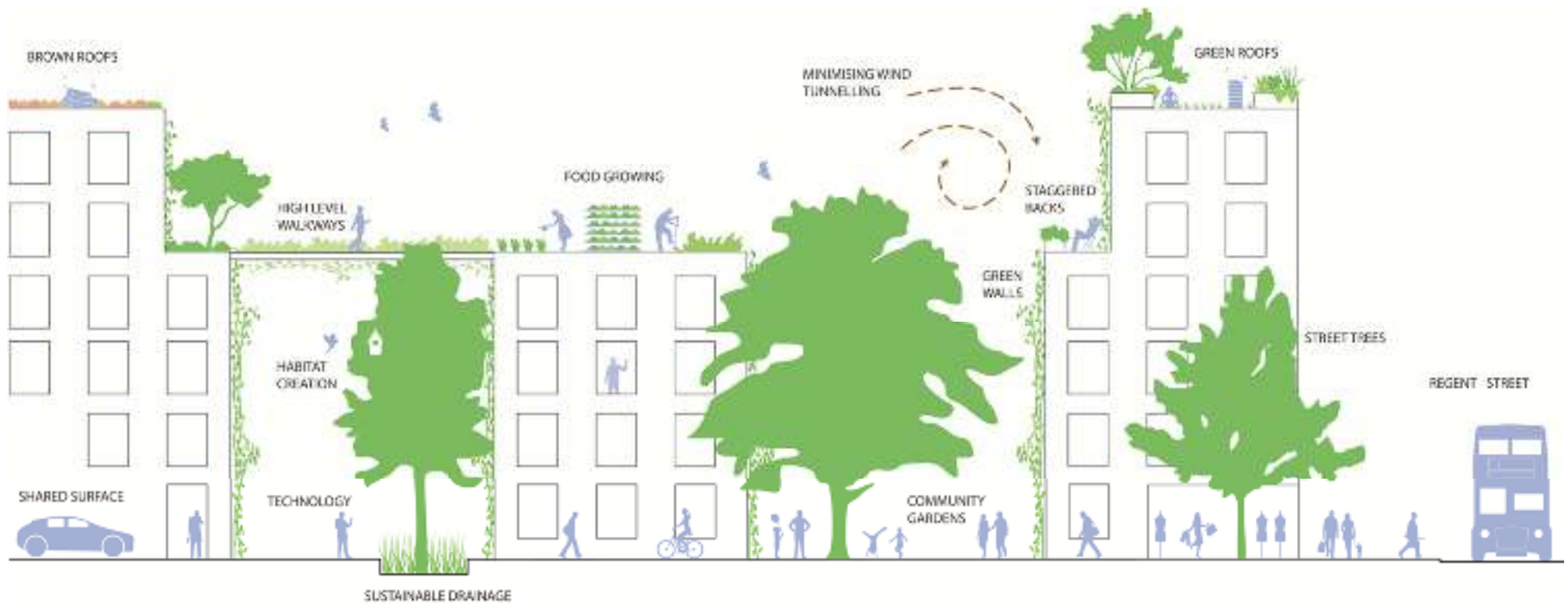
wildernessgracie Came across this lovely #WildWestEndGarden yesterday. Completely transformed this road..



# Cities Alive

Regenerative

ARUP



# Urban Agriculture

Regenerative

ARUP



(C) Citiponics

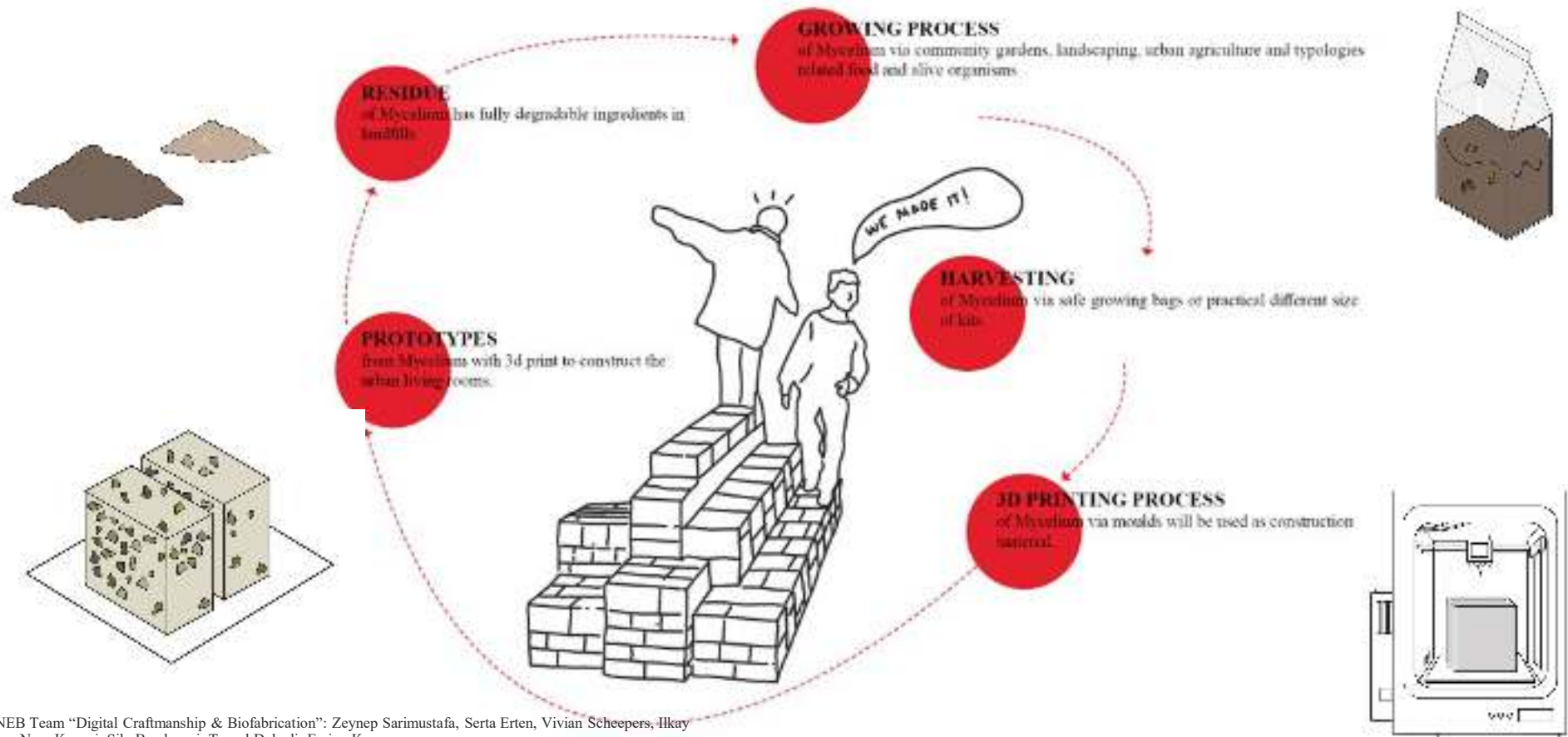
# Productive systems



# UTR / New European Bauhaus

ARUP

Circular bottom-up bio economy





ARUP

# Green and Thriving Neighbourhoods

A pathway to net zero, featuring the '15-minute city'



