CAPACITAÇÃO DOS QUADROS TÉCNICOS DAS AUTARQUIAS DOS AÇORES EM PLANEAMENTO DE AÇÃO CLIMÁTICA





1. Contextualização e Políticas de Ação Climática

26 de outubro de 2023

MAC 2014-2020 Cooperação Territorial | Interreg | Fundo Europeu de Desenvolvimento Regional | EUROPEAN UNION | PLANCLIMAC | GOVERNO DOS AÇORES | Secretaria Regional do Ambiente e Alterações Climáticas

CAPACITAÇÃO DOS QUADROS TÉCNICOS DAS AUTARQUIAS DOS AÇORES EM PLANEAMENTO DE AÇÃO CLIMÁTICA

Climate resilient practices in the built environment

Oliwia Jackowska (Consultora)

MAC 2014-2020 Cooperação Territorial
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Secretaria Regional do Ambiente e Alterações Climáticas

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Principles of **climate resilient** design

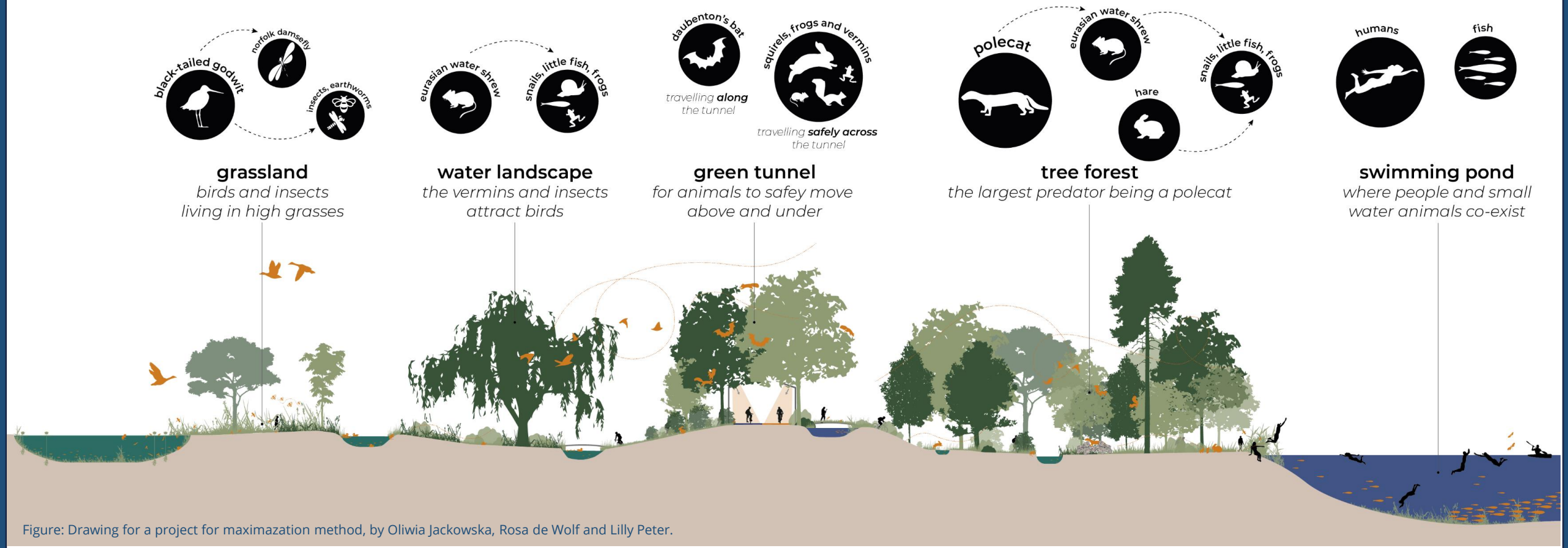


Figure: Drawing for a project for maximazation method, by Oliwia Jackowska, Rosa de Wolf and Lilly Peter.

Principles of **climate resilient** design

- **Climate adaptation** should increase the resilience of urban, rural and natural landscapes. Especially the built environment, including cities, is under a lot of pressure to protect its inhabitants.

- What does it mean? The climate adaptation strategies should improve the urban landscape's response to **shocks** and **stresses**.

Research for the project Recipe for Resilience, by Annam Irfan, Britt Hoornaert, Esmee Kuit, Patrick Tobias Maurer and Oliwia Jackowska at TU Delft.

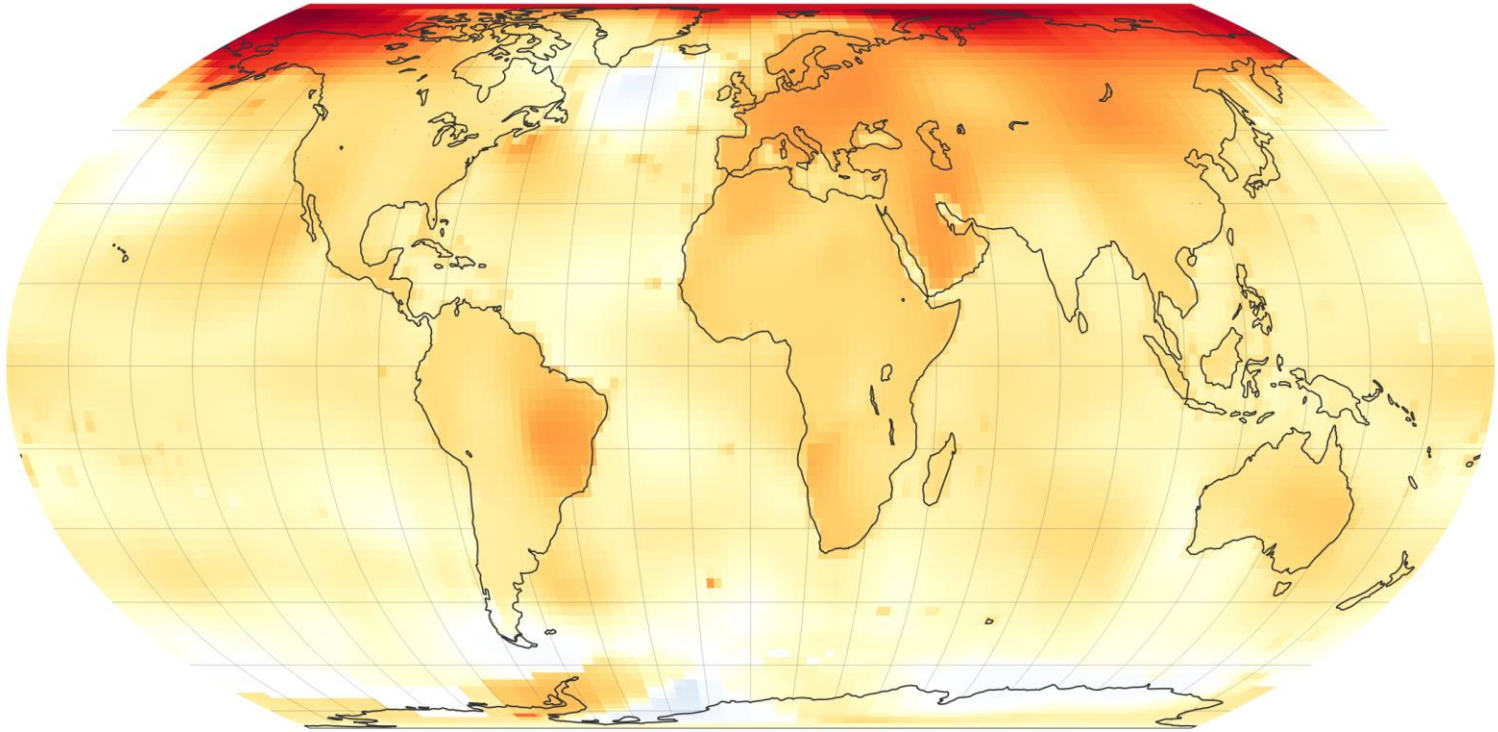
Source: Wojciech Wilczynski, Andrzej Luc

Figures: Learning from Wroclaw: How the City Benefits from Urban Resilience Enhancements

Research for the project Recipe for Resilience, by Annam Irfan, Britt Hoornaert, Esmee Kuit, Patrick Tobias Maurer and Oliwia Jackowska at TU Delft.

Shocks can be slow-onset like drought, or relatively rapid onset like fluvial, coastal or flash flooding, disease outbreak or other natural disasters.

Stresses are ongoing factors such as population pressure, climate variability, rising temperatures or chronic poverty.



Research for the project Recipe for Resilience, by Annam Irfan, Britt Hoornaert, Esmee Kuit, Patrick Tobias Maurer and Oliwia Jackowska at TU Delft.

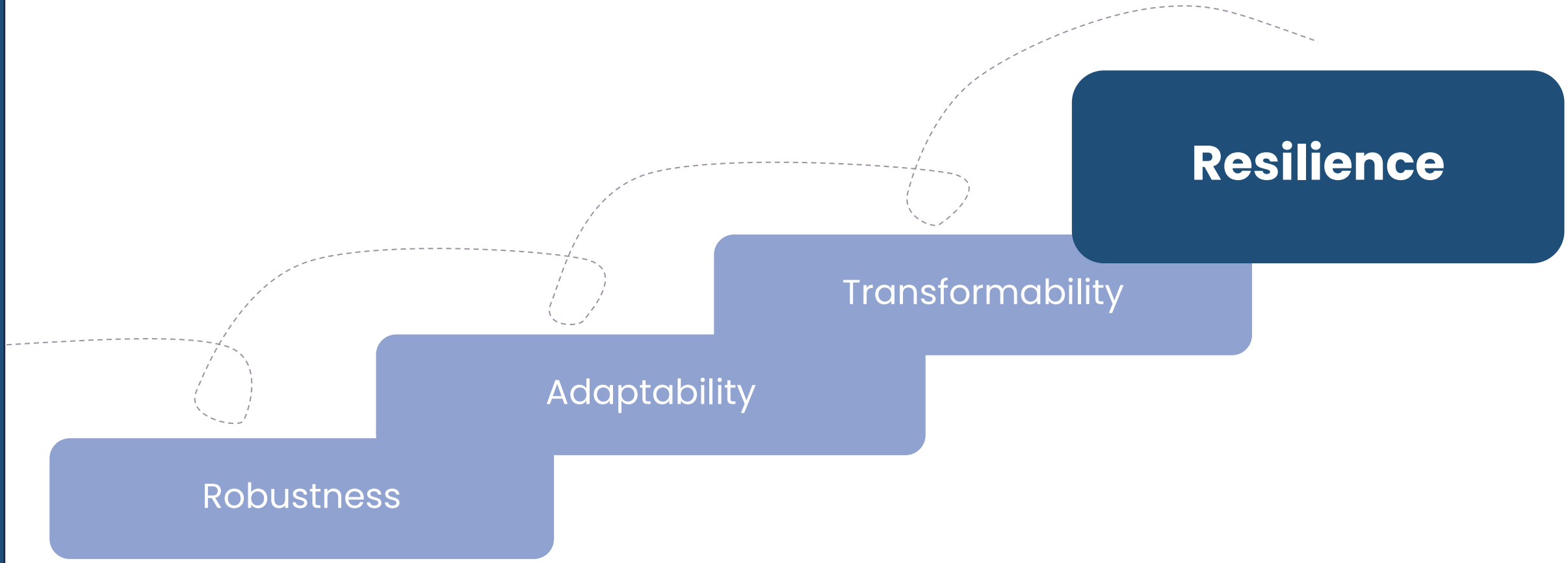
Figure from https://earthobservatory.nasa.gov/world-of-change/global-temperatures

Climate resilience framework

- To respond to these challenges, according to literature (by de Graaf and Ovink) the five pillars of **climate resilience framework** are:

  - threshold capacity
  - coping capacity
  - recovery capacity
  - adaptive capacity
  - transformative capacity

The Five Pillars of Climate Resilience by Rutger de Graaf and Hank Ovink.



Research for the project Recipe for Resilience, by Annam Irfan, Britt Hoornaert, Esmee Kuit, Patrick Tobias Maurer and Oliwia Jackowska at TU Delft.

Resilience

Robustness

Resilience

Robustness

Indoor space:

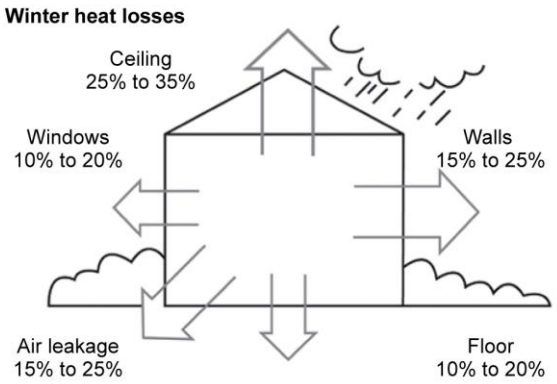
- *thermal insulation* to resist rising temperatures

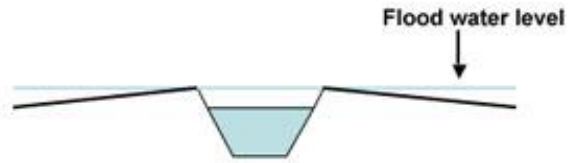
- *robust and safe housing* in the event of extreme event

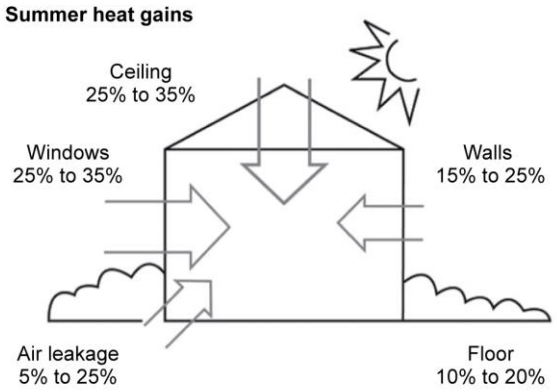
Outdoor space:

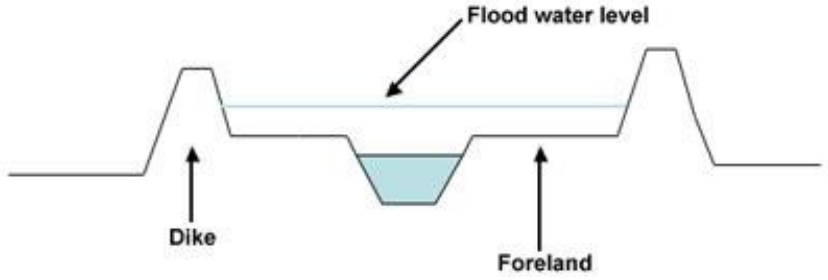
- *robust infrastructure* to continue vital processes

- flood defences, *resistance* to extreme events









Figures: Diagram of river with and without dikes, by K. JAN OOSTHOEK; Typical heat losses and gains without insulation in a temperate climate, SEAV (2002), updated in Energy Smart Housing Manual (2018)

Resilience

Adaptability

Resilience

Adaptability

Indoor space:

- *shading systems* to optimise the heating from the sun (passivhaus)

- *energy alternatives* such as sun and wind power, less usage

Outdoor space:

- *management of rainwater* as part of the urban structure, e.g. water squares.

- *inclusive* outdoor cooling spaces, e.g. water fountains and sprinklers

Figures: ALVENTOSA MORELL ARQUITECTES BUILDING OF 54 SOCIAL HOUSING IN INCA, BALEARIC ISLANDS.. INCA, SPAIN, PHOTO BY JOSÉ HEVIA. Dutch Water Sector, Rotterdam Water Square by De Urbanisten.

Resilience

Transformability

Resilience

Transformability

Indoor space:

- *full energy transition to green energy* to power households etc.

- *self-sufficient houses and regions*, importance of local resources

Outdoor space:

- *"patchwork" urbanism / capacity planning for nature,* e.g. sponge city

- *de-centralised urban spaces* e.g. 15-minute city

- *cities built according to the new climate*

Figures: White Arkitekter + ReGen Villages Create First Circular, Self-Sufficient Communities for Sweden, Archdaily; Sponge City: Adapting to Climate Change in Sustainability Report 2016-17 by Drainage Services Department.

Resilience

- Robustness
- Adaptability
- Transformability

To happen at all scales of intervention

Architecture	material
	building
	street
Urban Design	public spaces
	city
Urban Planning	natural landscape
	infrastructure
	regional planning
	policy planning

Urban Metabolism Rotterdam

Rotterdam, The Netherlands

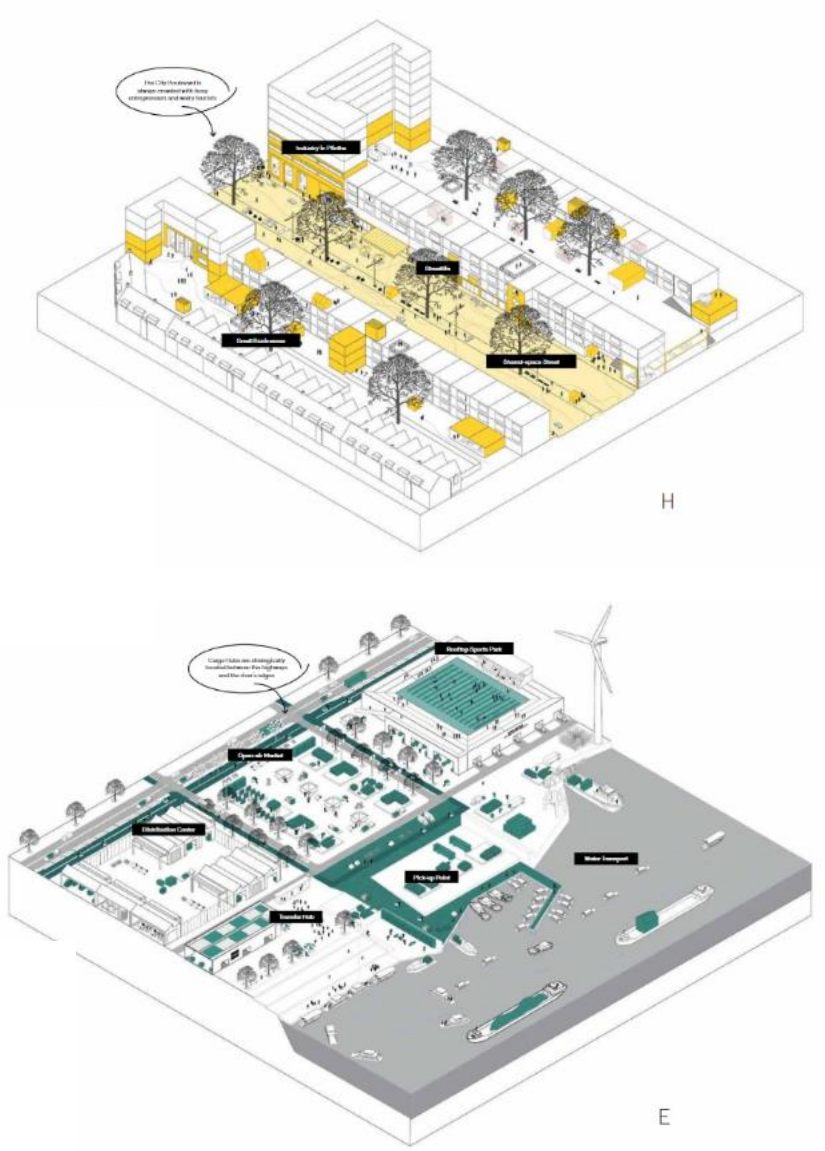
FABRICations, in collaboration with Gemeente Rotterdam, IABR, JCFO and TNO.

Strategy, research project.

Regional and city scale.

Urban Metabolism is a joint project to address the challenges of continued city expansion with Rotterdam being **crucial as a central port city in Europe**. The research highlights **nine urban flows** to be optimized for a **sustainable urban landscape**.

These are: Goods, People, Waste, Biota, Energy, Food, Fresh, Water, Sand & Clay, Air..



Source: Urban Metabolism Rotterdam, FABRICations, Gemeente Rotterdam, IABR, JCFO and TNO.

evaluation: pros and cons

Pros:

- holistic approach to strategy
- research framework created for resilient future of overloaded port cities
- choice of a strategic point for the whole region of Europe
- supported by the city council

Cons:

- a theoretical project
- does not consider specific implications and context

Vienna's urban parks

Vienna, Austria

Alois-Drasche-Park, Esterházypark

Strategy, urban design, urban planning, community participation.

City and neighbourhood scale.

Source: Alois-Drasche-Park ist der Lieblingsort auf der Wieden, MeinBezirk.at.

Vienna's Esterházypark of around 10,600 m2 was redesigned into Vienna's 1st **"Cooling Park"** in 2020. The cooling water in 3m high **mist showers** will help those suffering from heat in the summer – in line with city's climate plan.

Vienna has a tradition of **innovative urban strategies**. Some pilot project parks were designed under **Vienna's gender mainstreaming plan**. This is a great example of how **inclusive approaches** are great for **climate adaptations**.

evaluation: pros and cons

Pros:

- inclusive spaces
- cooling spots for heat stress
- supported by 2 year research
-the parks are beloved by the residents
- supported by the city council

Cons:

- the parks are still too small to provide green cooling effect
- the parks are still mostly paved, limiting its water absorption

Source: Alois-Drasche-Park ist der Lieblingsort auf der Wieden, MeinBezirk.at; Stadt Wien, Esterházy Park.

Watersquare Benthemplein

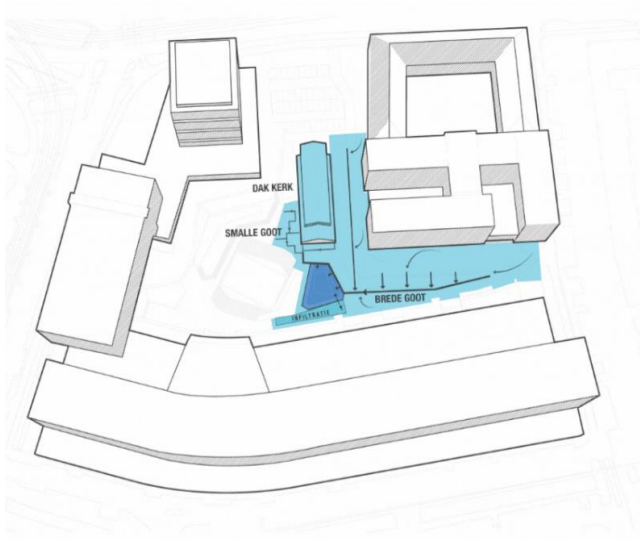
Rotterdam, The Netherlands

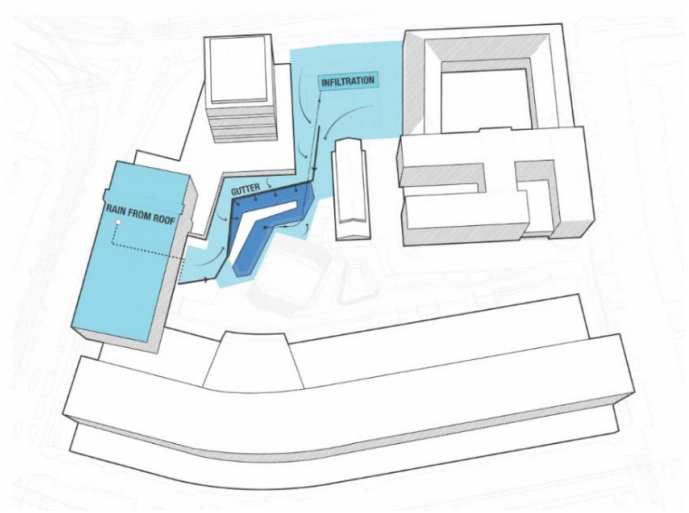
De Urbanisten, 2013

Strategy, urban design.

City and neighbourhood scale.

Source: De Urbanisten.





evaluation: pros and cons

Pros:

- the square successfully collects water

- helps alleviate flooding risks

- provides social and sport function for nearby schools

- supported by city council, largely financed by water management departments

Cons:

- the square has deteriorated, needs regular maintenance after flooding

- The water collected is not used

"The water square Benthemplein holds a twofold strategy: it is public space and storm water storage combined in one space. The square is part of a strategy to increase climate resilience by adaptive measures. "

Source: De Urbanisten

Camden's Agar Grove

London, United Kingdom

Hawkins Brown, Mae, (Architype)

Strategy, urban design.

City and neighbourhood scale.

Source: De Urbanisten.

	Passivhaus standard	Part L1A 2013 approx
Energy requirements of the Passivhaus standard		
Heating energy demand, kWh/m²·yr	< 15	45
Primary energy load, kWh/m²/·yr	120	190
U Value for Windows, W/m²K	< 0.8	1.3-2.0
U Value for exterior shell components, W/m²K	< 0.15	0.15-0.35
Some of the comfort requirements of the Passivhaus standard		
Air quality	Good – 600ppm CO_2 above ambient	No standard
Overheating	Max 10% of the occupied year > 25°C	Max 1% >28°C
Surface temp (windows)	>17°C when -10°C outside	No standard
Surface temp	3-3.5°C below room temp.	No standard
Air-tightness, ACH @ 50Pa	0.6	0.6 - 3
Air-tightness, m³/m²·h @ 50Pa	2	2 - 10
Ventilation rate, l/s per person	8	10
Noise limit in bedroom, dBA	25	25

Britain's biggest Passivhaus including an 18-storey tower in Camden. Expert knowledge was combined by multiple experts to resolve this immense challenge. Especially as the environmental planning requirements that are not always compatible with Passivhaus principles.

Source: Max Fordham takes on Britain's biggest Passivhaus, ICIBSE Journal;

Government steps in over botched Agar Grove building, Anna Highfield, AJ

evaluation: pros and cons

Pros:

- more sustainable housing

- new research through this "pilot project"

- appealing design

Cons:

- high cost of construction

- complicated design and construction process

- In 2023, one of the buildings was deemed 'not fit for purpose' less than six years after completion and will be demolished

What is **greenwashing** and how to avoid it?

- **Greenwashing** is the practice of overemphasizing the perceived sustainability to appeal to the public.

- As you could notice - many of the examples focus on the threat of flooding rather than the threat of heat, as **the heat is a lot more challenging to address**.

- Additionally, a lot of these projects are based **in countries** that **are not** under the heat stress that Portugal is experiencing.

- Many *"green projects"* are often beautifully crafted designs for small communities. The cost of their construction impacts their scalability, and the small scale does not improve the climate adaptability as a whole.

Instead of praising specific projects and moving them into our context, we can learn from them in a **critical way**: *what works, what does not, is this applicable to our context and how can it improve the resilience of our urban landscape*?

In order to avoid greenwashing, we can…

What to do **instead**?

...refurbish, retrofit, renovate the existing urban fabric

- instead of building new.

Good

practices

Figures: Reabilitar para Revitalizar IFRRU 2020, “There are at least 44,000 dilapidated buildings in Lisbon which need renovating” idealista/news

...build accessible and sustainable public transport systems.

Figure: Berlin, Source: Sustainable mobility – made in Germany, Intelligent transport.

Good

practices

...ensure accessibility to robust and thermally safe housing.

Top down birds eye panoramic view of historic centre of Cascais, 30km west of Lisbon on the Portuguese Riviera, Cascais, Portugal, Europe, © lookphotos / robertharding

Good practices

...create inclusive, well-designed urban parks accessible for all.

Figure: Esterhazypark in Vienna. Source: Cooling Park Vienna Mariahilf, rain time, Photo Presseservice Wien © Carla Lo.

Good

practices

Obrigada pela atenção.

Boas práticas de adaptação

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