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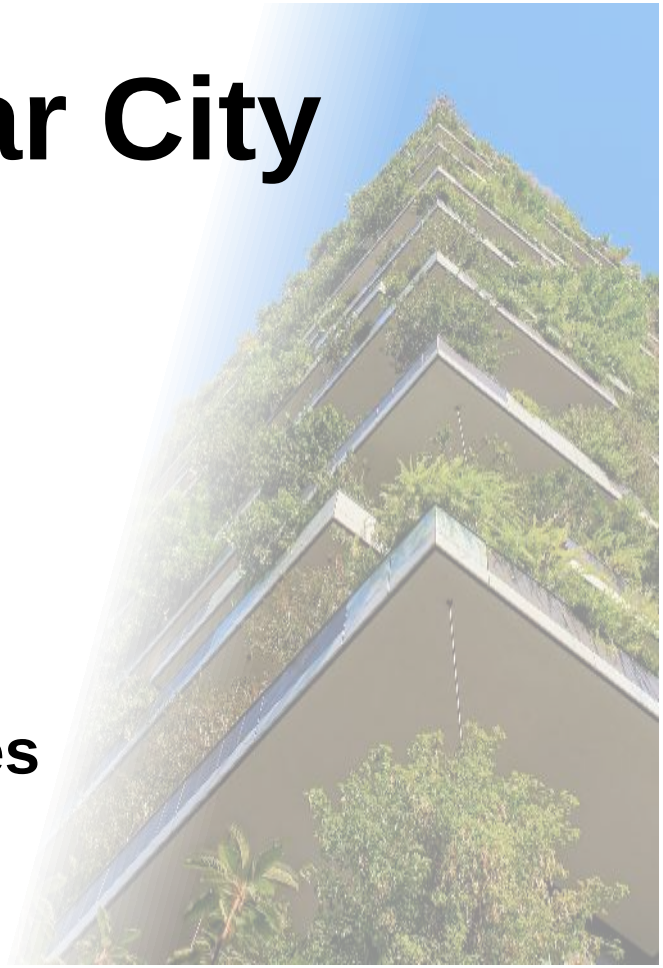
COST Action Circular City



Günter Langergraber
Chair, COST Action Circular City

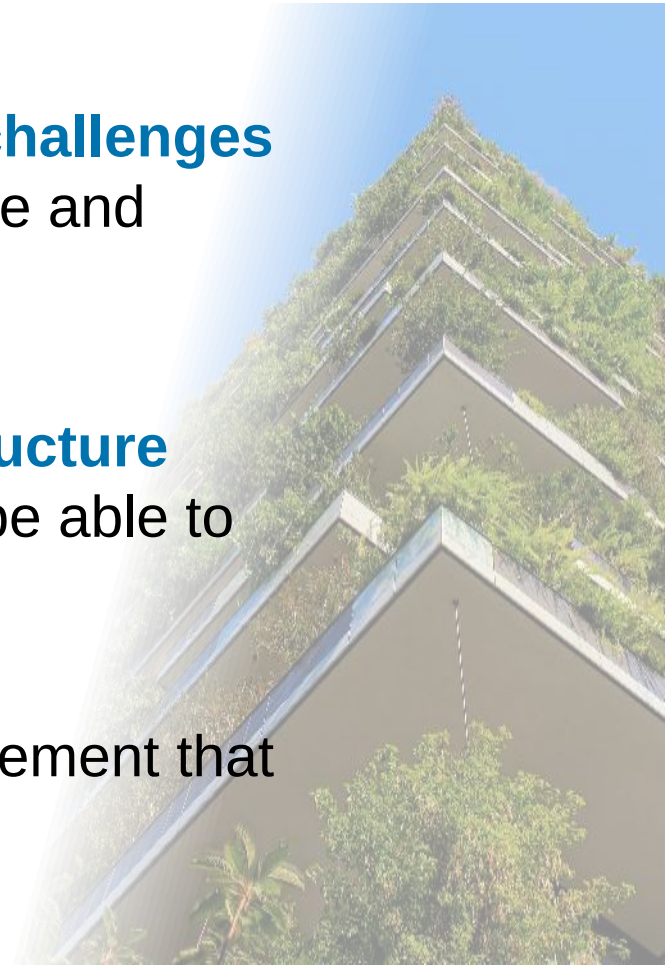
stand-up innovation #3: Circular Cities
28 October 2019
Impact Hub, Lindengasse 56, 1070 Vienna

Challenges

Cities worldwide are **facing a number of challenges** including resource depletion, climate change and degradation of ecosystems.

If cities do not **adapt their current infrastructure and resource management**, they will not be able to cope with these challenges.

Nature-Based Solutions (NBS) are one element that can help to achieve this transition.



What is a COST Action?

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- COST is the longest-running (since 1971) European framework supporting trans-national cooperation among researchers, engineers and scholars across Europe.
- COST fund pan-European, **bottom-up** networks across all science and technology fields.
- COST **does not fund research** itself.
- COST provides support for networking activities such as **meetings, workshops, conferences, training schools, short-term scientific missions** (STSMs) and dissemination activities.

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Duration

22 Oct 2018 – 21 Oct 2022

The main aim and objective

is to build an **interdisciplinary platform** for connecting city planners, architects, system designers, economists, engineers and researchers from social and natural sciences

- that **develop nature based solutions in the urban landscape** that
- facilitate **circular economies** based on the 3Rs (Reduce, Reuse and Recover) and
- allow cities to **cope with future challenges**.

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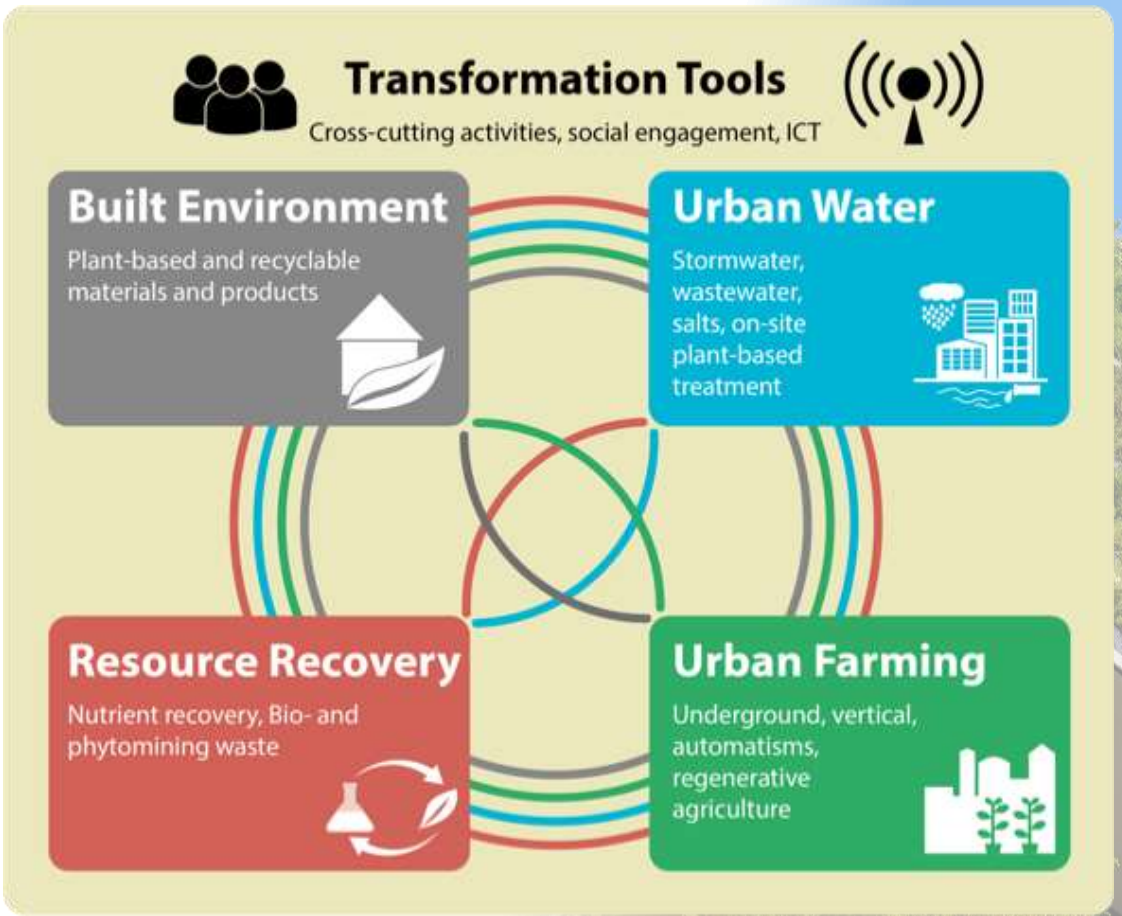
Working Groups

- WG1: Built environment
- WG2: Sustainable urban water utilisation
- WG3: Resource recovery
- WG4: Urban Farming
- WG5: Transformation tools



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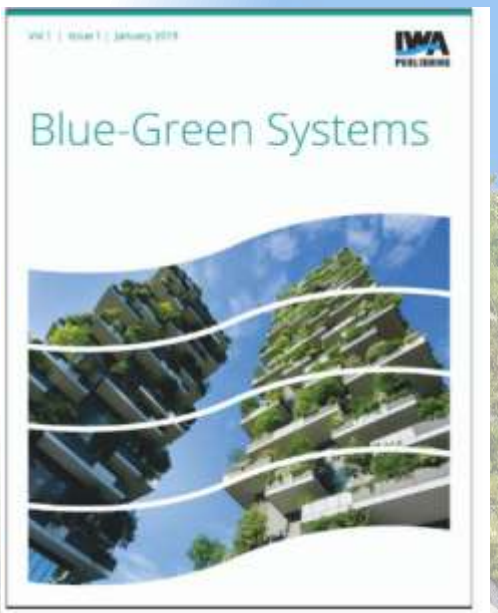
Main deliverables

- Report on the state of the art and existing case studies → **review papers on the state-of-the-art** → Special issue in the IWAP Open-Access online journal **Blue-Green Systems**
- Catalogue of potential solutions for providing/recovering resources with NBS.
- **Guideline on combined NBS and CE possibilities within the urban environment**



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The network

All 39 COST countries participating!

- **EU 28**
- **EU Candidates and Potential Candidates**
  - Albania, Bosnia and Herzegovina, Moldova, Montenegro, North Macedonia, Serbia, Turkey
- **Other countries**
  - Iceland, Norway, Switzerland
- **COST Cooperating Member**
  - Israel

+ MC Observers from

  - Armenia, Colombia, Georgia, Taiwan, Russia, Tunisia

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The network

39 COST countries

→ 78 MC Members

+ 94 MC Substitutes

+ 6 MC Observers

+ ca. 240 interested persons

➔ **> 400 persons**

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Action Workshops

- ✓ 13-15 Feb 2019, Vienna (ca. 150 persons)
- ✓ 28+29 Ma 2019, Ljubljana (ca. 60 persons)
- ✓ 16-18 Sep 2019, Finland (ca. 60 persons)

Training schools

- ✓ 1st training school "Sustainable tourist resorts", 18-28 Jun 2019, Piran, Slovenia
- ✓ 2nd training school, 30 Sep – 4 Oct 2019, Malta (with H2020 ReNature project)

Workshops @ conferences

- ✓ Workshop “Towards Circular Cities”, 8 Sep 2019, Venice, Italy @ IWA RR conference

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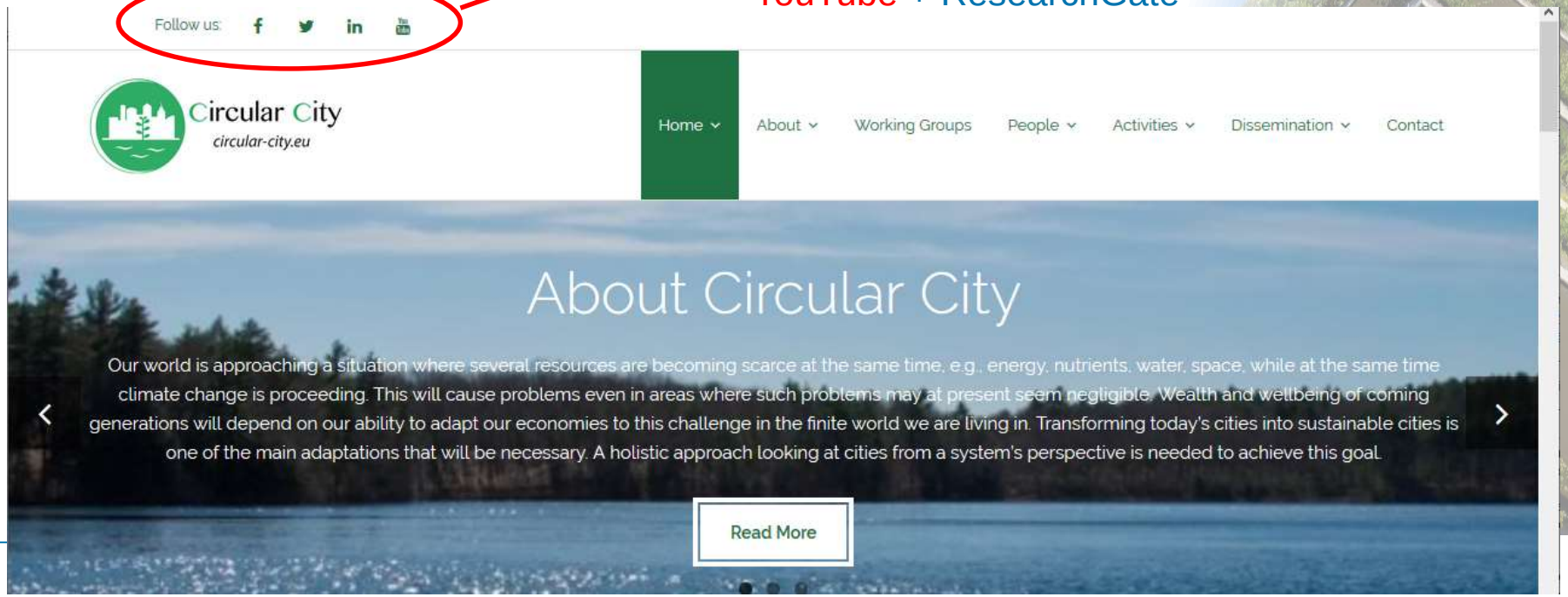
Website & Social Media

- www.circular-city.eu

follow us on

- Facebook
- Instagram
- Twitter
- LinkedIn
- YouTube + ResearchGate



Built Environment

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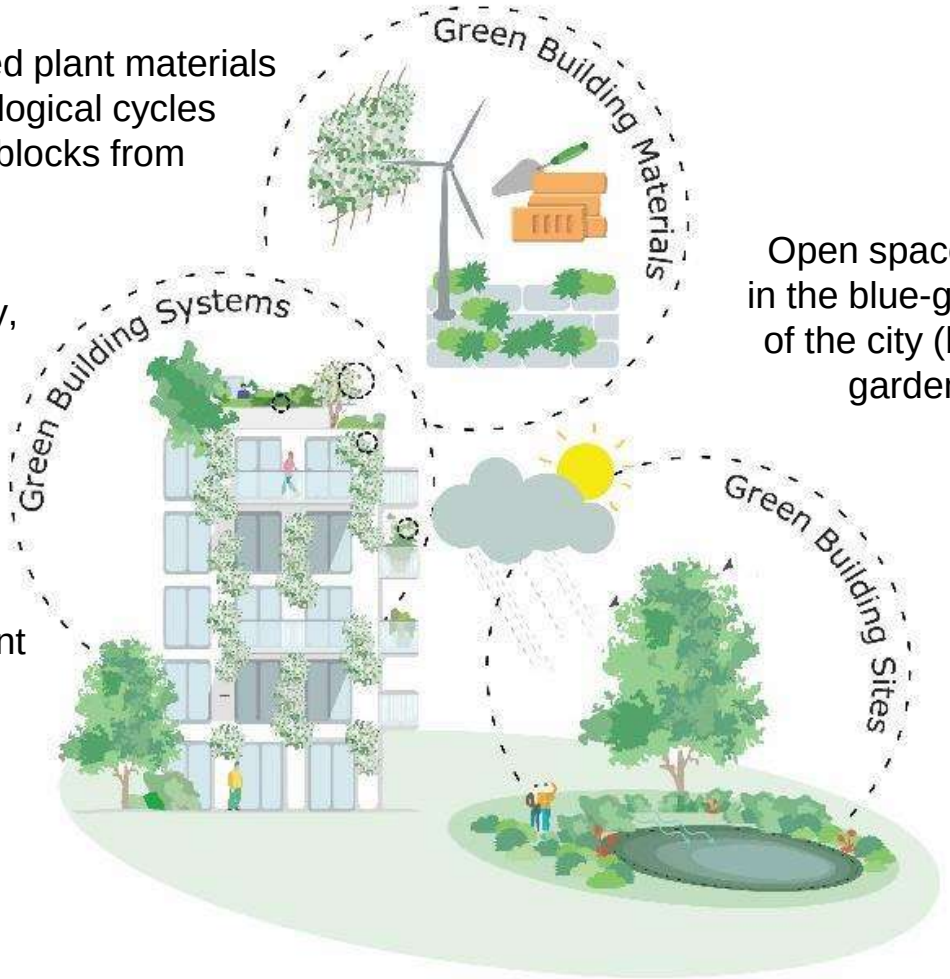
Living and harvested plant materials compatible with biological cycles (e.g. biocomposite blocks from agricultural waste)

Green roofs, facade greenery, (edible) living walls, building-integrated constructed wetlands



Open spaces with a role in the blue-green network of the city (biofilters, rain gardens, river bank stabilisation)

Multifunctional:

- Drainage & water treatment
- Reduce GHG emissions, operational energy use, „urban heat island effect“
- Enhance air quality
- Regenerative effect

Urban Water

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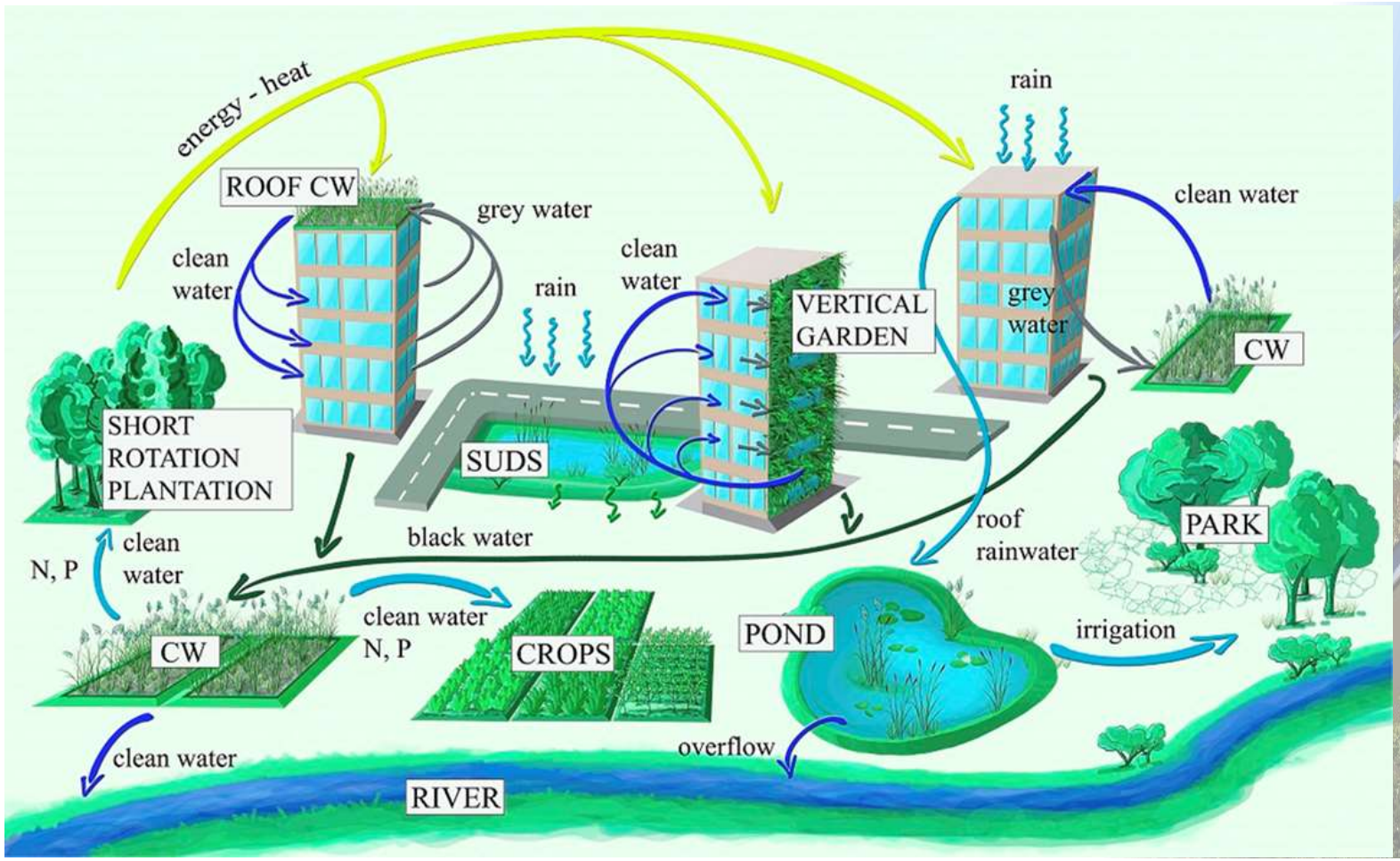


Stormwater management

Location: Kuchelauer Hafenstrasse, Vienna

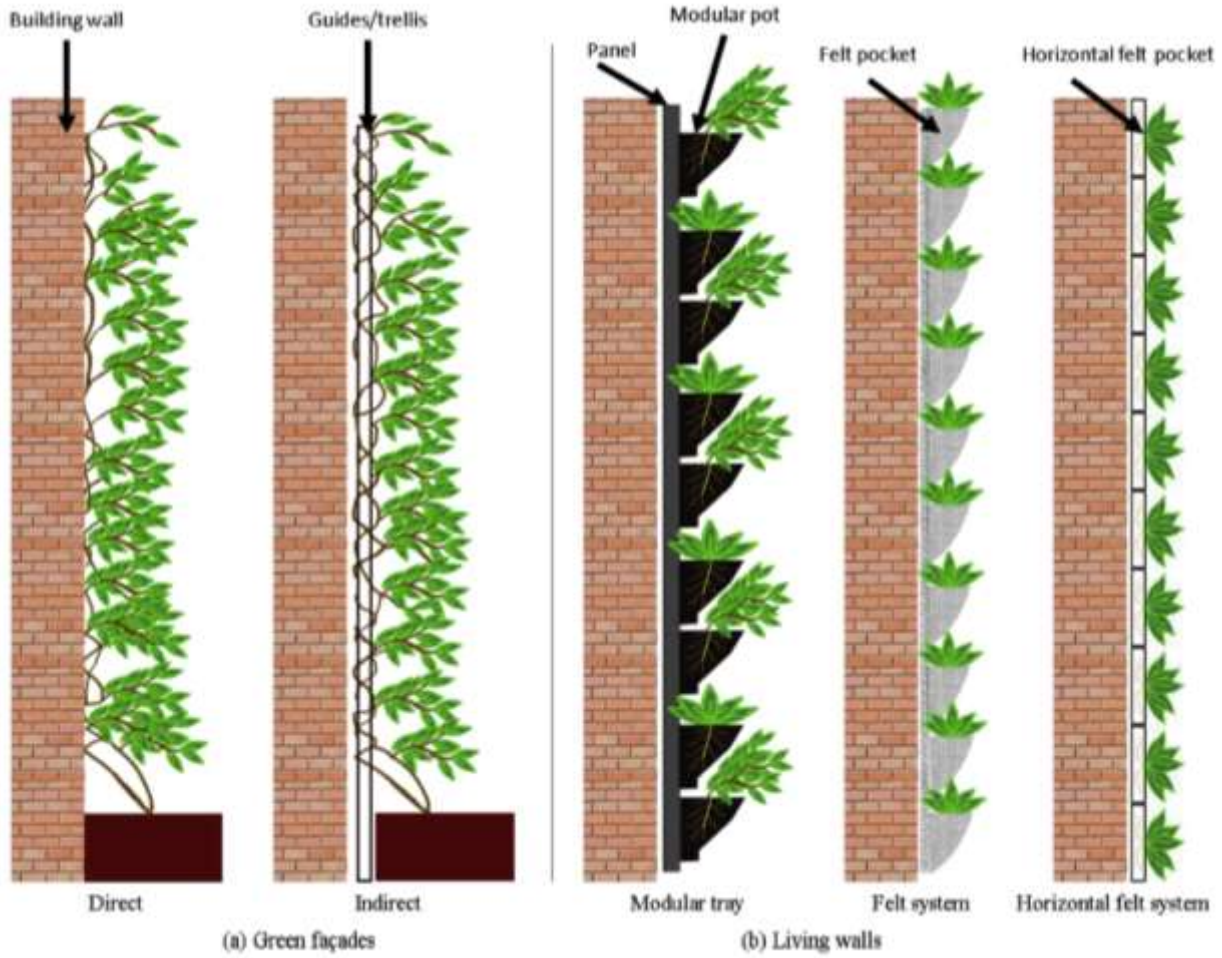
Project SAVE (Straßen Abwasserlösungen für Vegetation und Entwässerungssysteme)

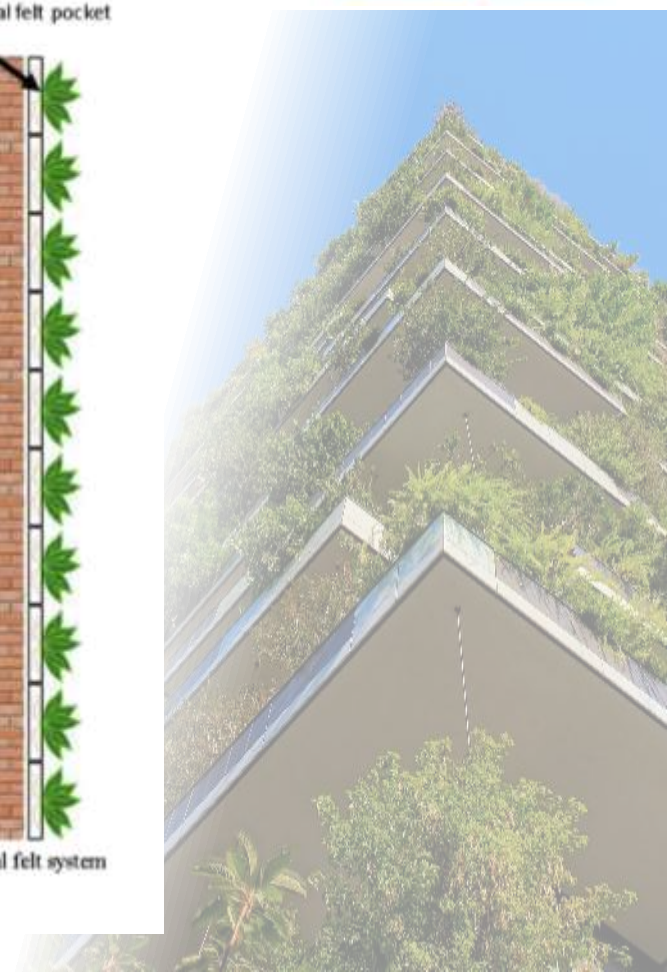
Green roofs

LONDON: WILDFLOWER ROOF

VANCOUVER: NATURAL HABITAT ROOF

Green walls





Bustami et al., 2018, *Building and Environment* 146, 226–237

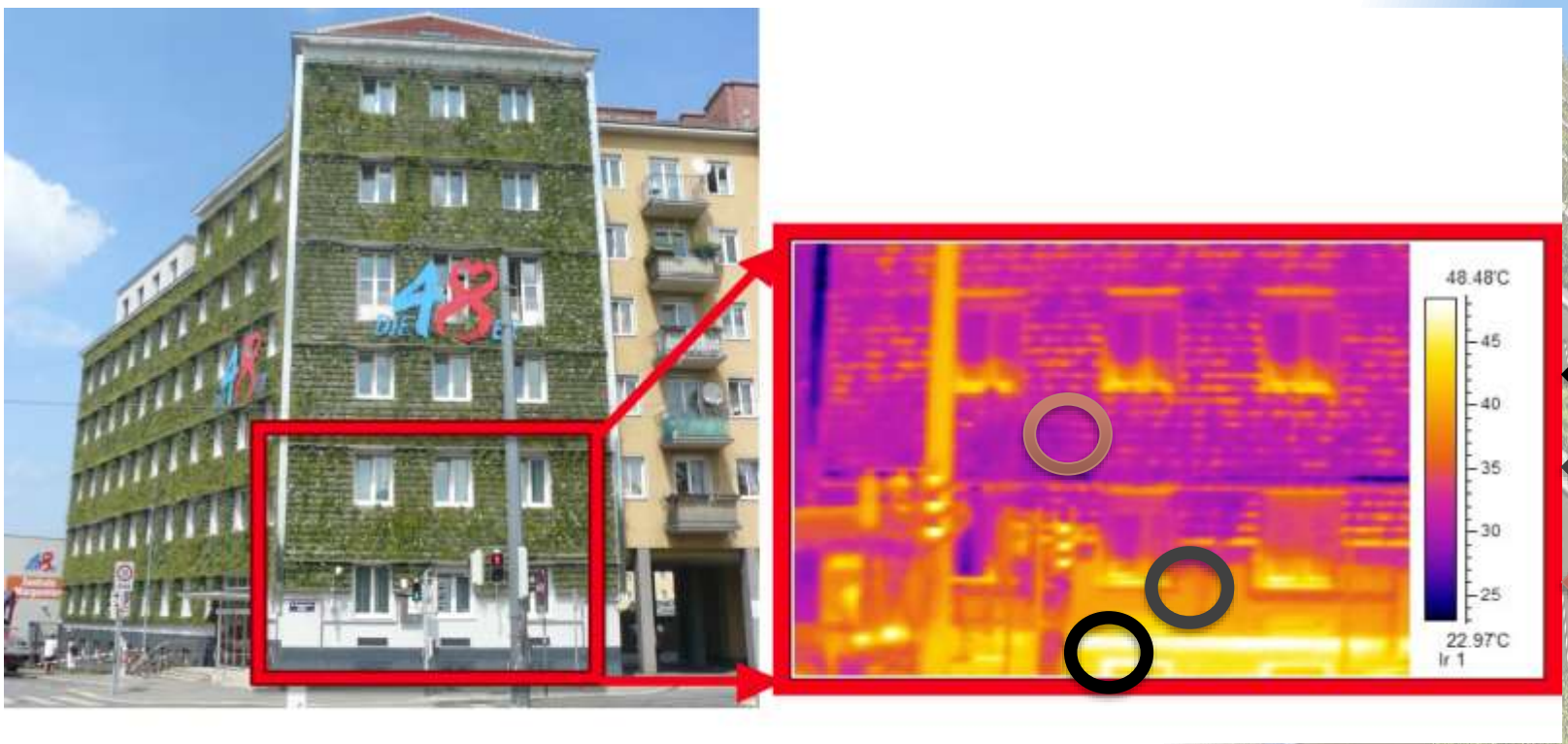
Green walls

Role models
Humboldt-University, Berlin &
MA31 Grabnergasse, Vienna

Institutsgebäude für Physik Humboldt-Universität zu Berlin © Senatsverwaltung für Stadtentwicklung Berlin

© MA 31 Rataplan

Green walls



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Master thesis
Flora Prenner (BOKU)

Modular green walls

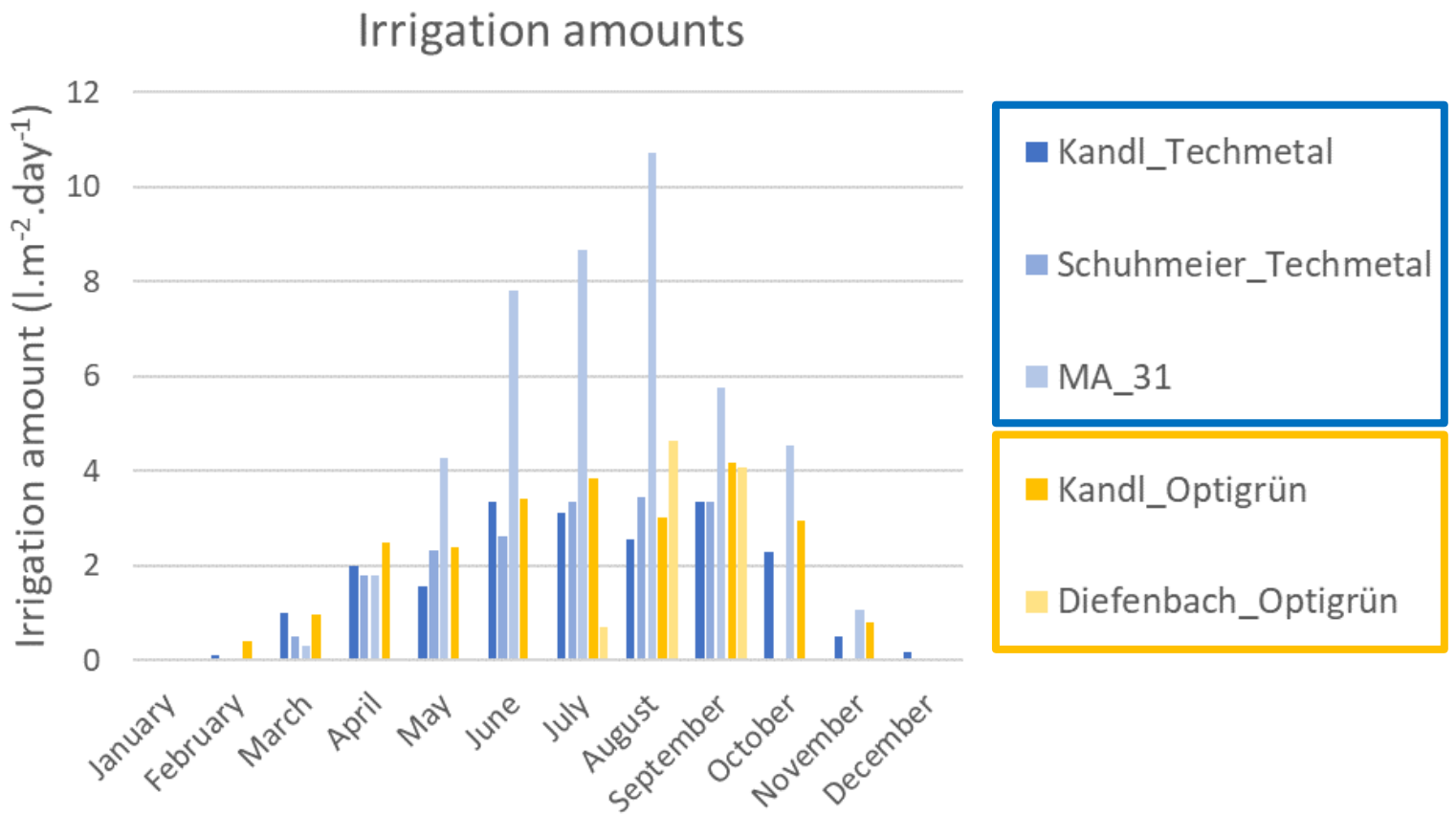
Kandl_Techmetal	
Schuhmeier_ Techmetal	
MA31	

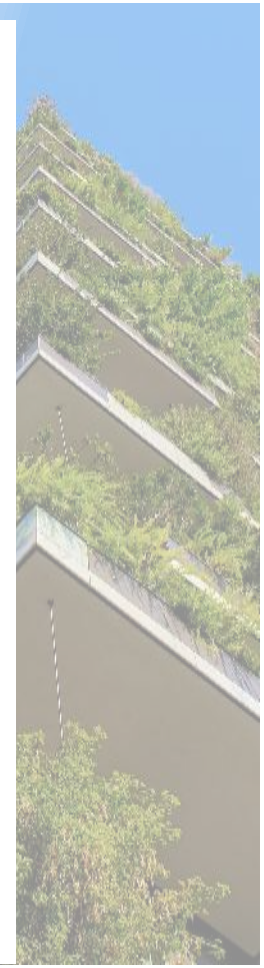
Continuous green walls

Kandl_Optigrün	
Diefenbach_ Optigrün	

Photo sources: GrünPlusSchule (2018), GrüneZukunftSchule (2018), Pelko, C. (2018).

Green walls





Master thesis Flora Prenner (BOKU)

Green walls

- 10 Rows, 2 parallel
- 24 (mostly edible) species,
- Horizontal flow
- Left side tab water, right side greywater
- Installed and planted: june 2019

City quartiers / neighbourhoods

La Pinada, Valencia
https://www.barriolapinada.es/en/

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Summary

Results from “Towards Circular Cities”, 8 Sep 2019, Venice, Italy

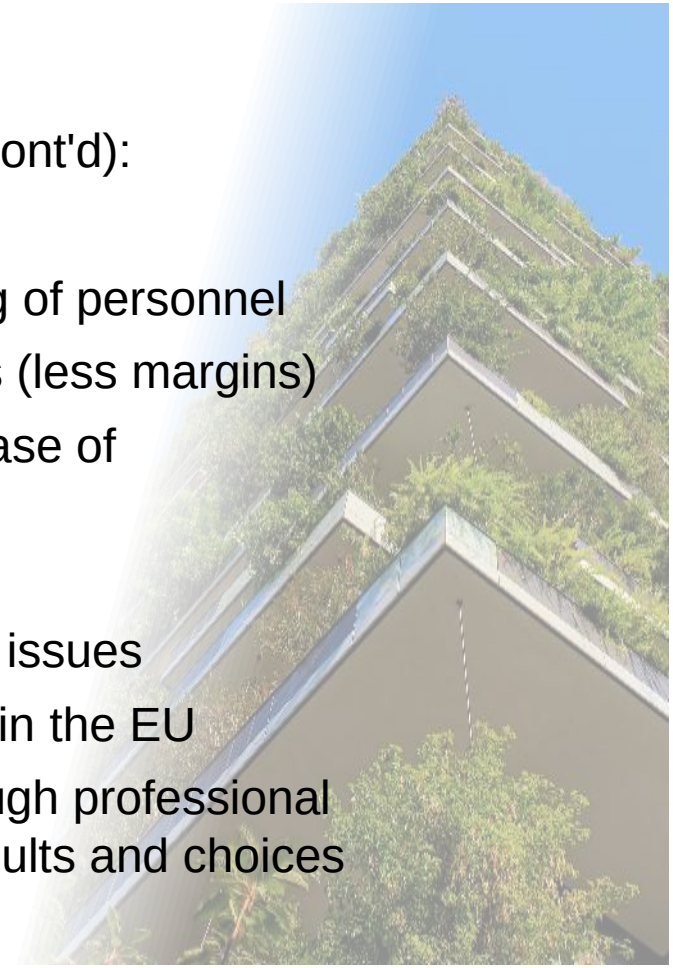
- 15 participants
- Introduction of the COST Action
- Discussion on **beneficial and hindering factors** for implementation of NBS and CE in cities:
  1. General
  2. Planning
  3. Implementation
  4. Standards

Results from “Towards Circular Cities”, 8 Sep 2019, Venice, Italy

- Summary of **beneficial and hindering factors** for implementation of NBS and CE in cities:
  1. General barriers
     - Planning People habits
     - Lack of knowledge/understanding
     - Lack of communication
  2. During planning
     - Short term political thinking vs. long-term planning
     - Other than only economic criteria
     - Impact assessment can not deal with new solutions

Results from “Towards Circular Cities”, 8 Sep 2019, Venice, Italy

- Summary of **beneficial and hindering factors** (cont'd):
  3. During implementation
     - Need of skilled personnel and thus training of personnel
     - New systems → higher risk for contractors (less margins)
     - How to secure monitoring? especially in case of decentralised approaches
  4. Do we need standards?
     - important for engineers to manage liability issues
     - Technology-neutral standards, unified within the EU
     - "Accepted practice" (e.g. established through professional associations) for validation of research results and choices for technologies



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Thanks for your attention

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