

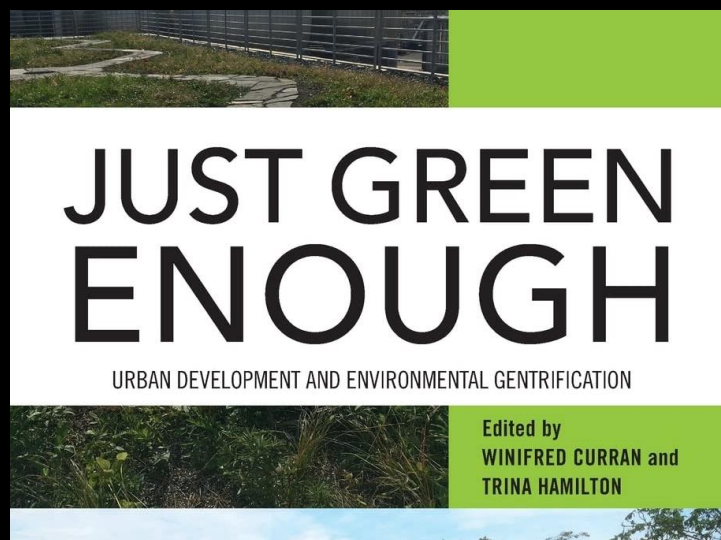
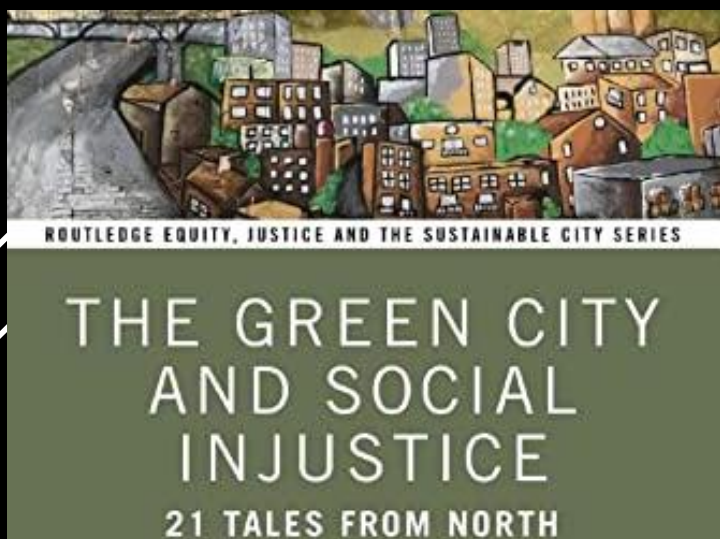
Estratégias para resiliência urbana: ações paisagísticas para justiça ambiental



UNICENTRO
PARANÁ



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Laboratório de Silvicultura Urbana
Departamento de Engenharia Florestal



- Uma cidade verde é uma cidade resiliente?
- Uma cidade resiliente é uma cidade justa?
- Uma cidade verde é uma cidade justa?
- Ações paisagísticas tornam cidades resilientes e justas?

O que é a Resiliência Urbana?

A resiliência representa a capacidade de um sistema de “recuperar-se” ou retornar a uma condição estável anterior, após distúrbios.

A resiliência é a capacidade de uma cidade ou comunidade de ajustar, adaptar e, mais importante, mudar em resposta a vários riscos internos e externos.

Zeng, X.; Yu, Y.; Yang, S.; Lv, Y.; Sarker, M.N.I. Urban Resilience for Urban Sustainability: Concepts, Dimensions, and Perspectives. *Sustainability* **2022**, *14*, 2481.

Smart, Sustainable and Resilient cities:

the Power of Nature-based Solutions



Resilient City

Danny MacKinnon, Newcastle University, Newcastle Upon Tyne, UK

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A resiliência está se tornando “um idioma difundido” da governança urbana, exigindo estratégias para mitigação de desastres e proteção de infraestruturas críticas, bem como o desenvolvimento de procedimentos para antecipar as principais ameaças.

estabilidade e integridade ecológica e social

O termo também é invocado por movimentos sociais e ambientais progressistas que visam cultivar relações sociais alternativas baseadas na sustentabilidade ambiental e no bem-estar social, em vez do crescimento econômico.



<https://www.un.org/en/academic-impact/urban-resilience-changing-climate>



<https://www.waternewseurope.com/peers-sought-to-build-urban-resilience-platform/>

FIGURE 3: The resilience framework

proposed by Béné et al. (2012).

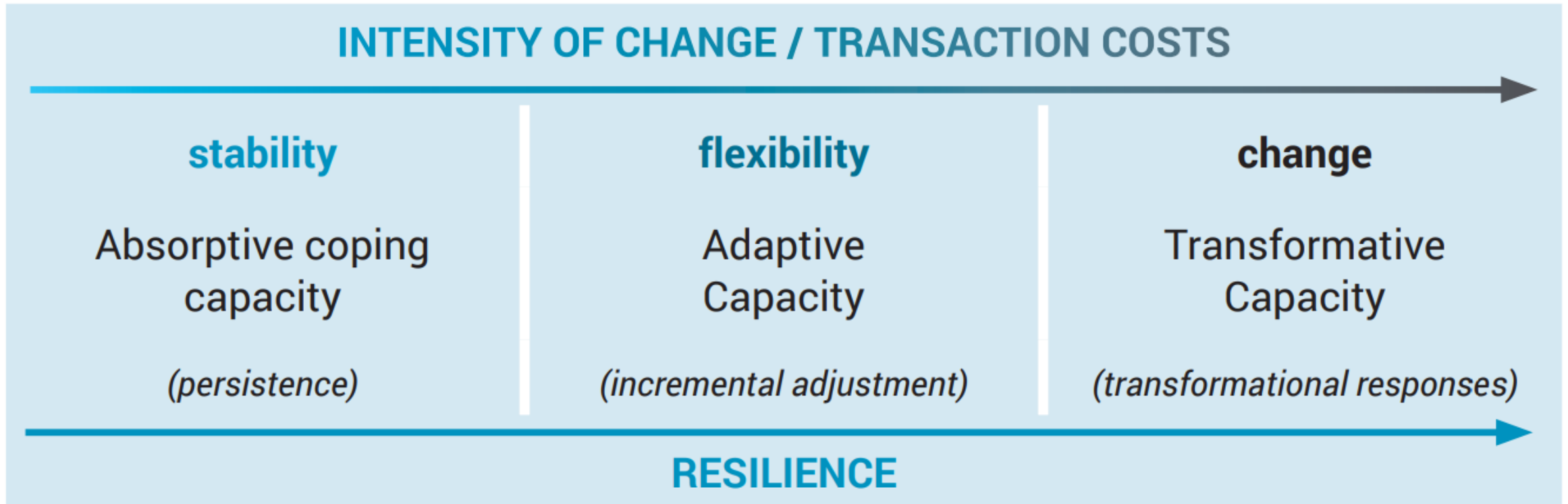
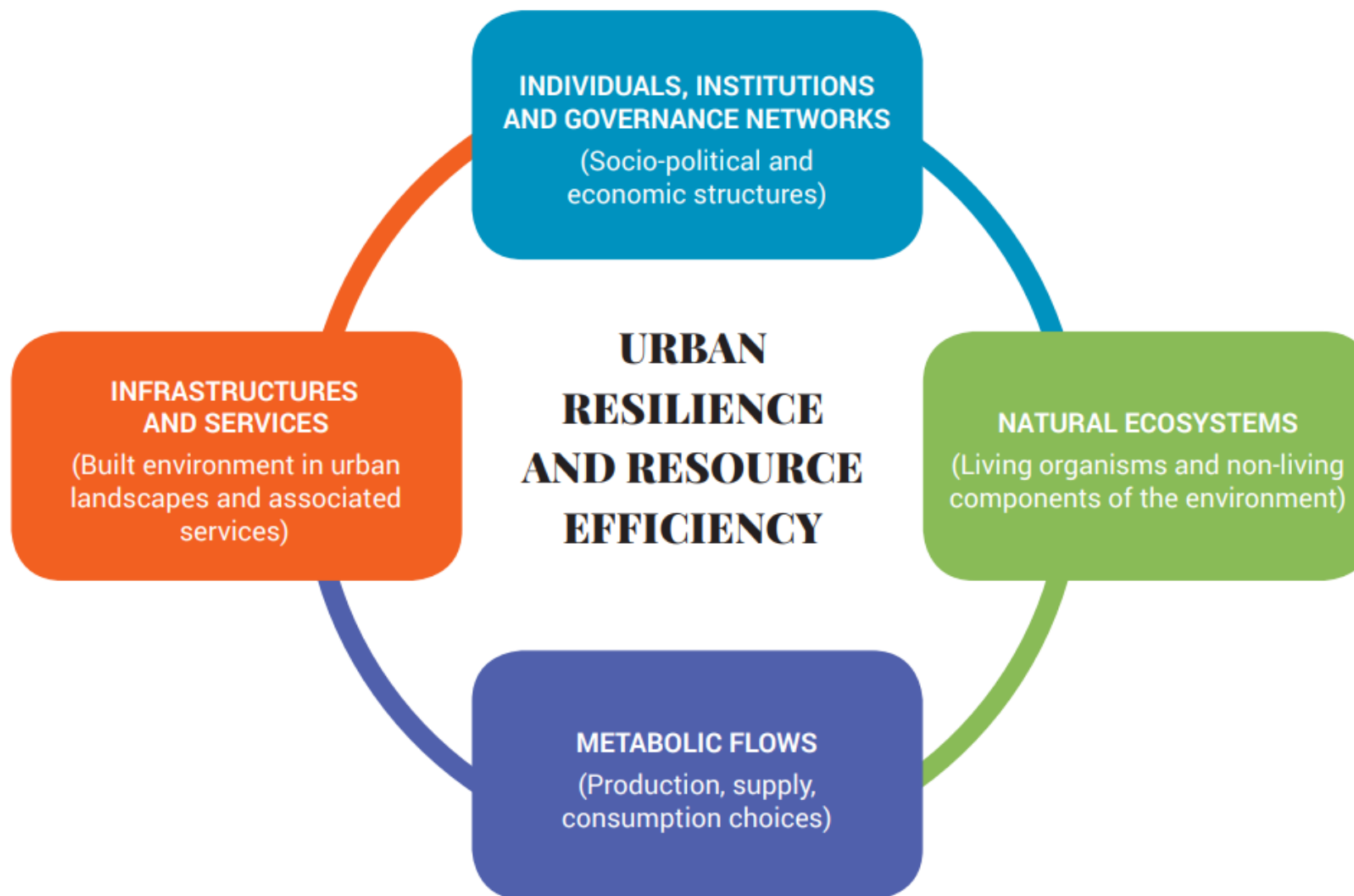
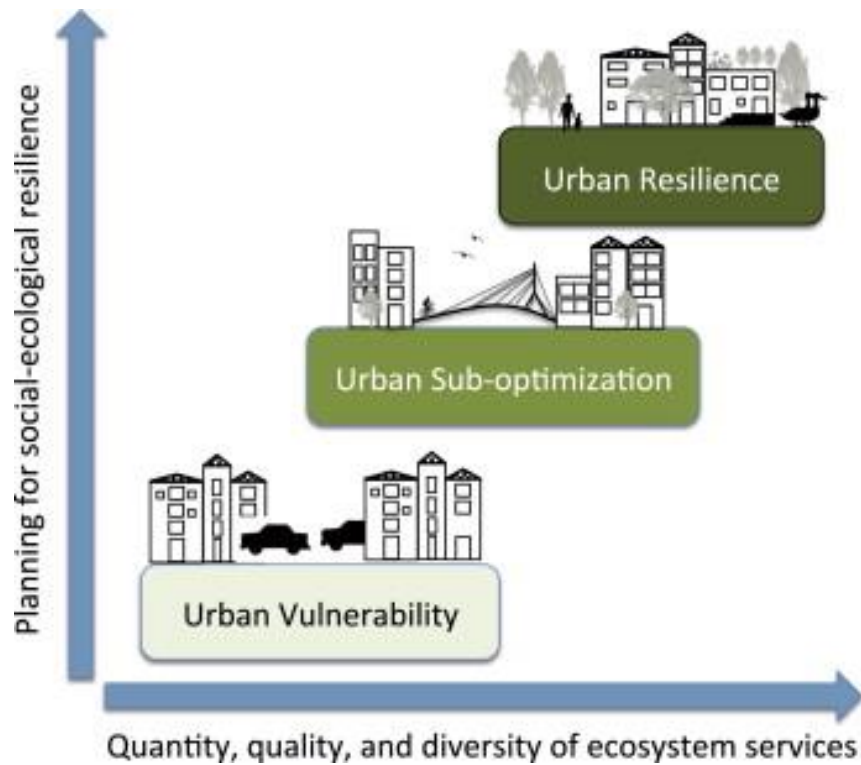


FIGURE 20: Areas of action to build resilience and resource efficiency

Source: authors.





Timon McPhearson, Erik Andersson, Thomas Elmqvist, Niki Frantzeskaki. Resilience of and through urban ecosystem services, *Ecosystem Services*, 12, 2015, pp.152-156

A resiliência urbana pode ser fomentada pela incorporação de SE urbanos no planejamento, projeto e gestão de sistemas socioecológicos urbanos.

Uma abordagem socioecológica para as cidades é fundamental para salvaguardar um fornecimento resiliente de SE a longo prazo, para garantir o bem-estar humano nas cidades.

No entanto, salvaguardar os SE urbanos requer reconhecer e incorporar seus múltiplos valores no planejamento e na governança.

À medida que o planejamento urbano e a governança para a resiliência socioecológica aumentam, junto com a conservação e gestão para aumentar a qualidade, quantidade e diversidade dos SE urbanos, a resiliência em múltiplas escalas pode ser melhorada.

Planting more trees in cities could cut deaths from summer heat, says study

European research finds that increasing urban tree coverage to 30% can lower temperatures by 0.4C



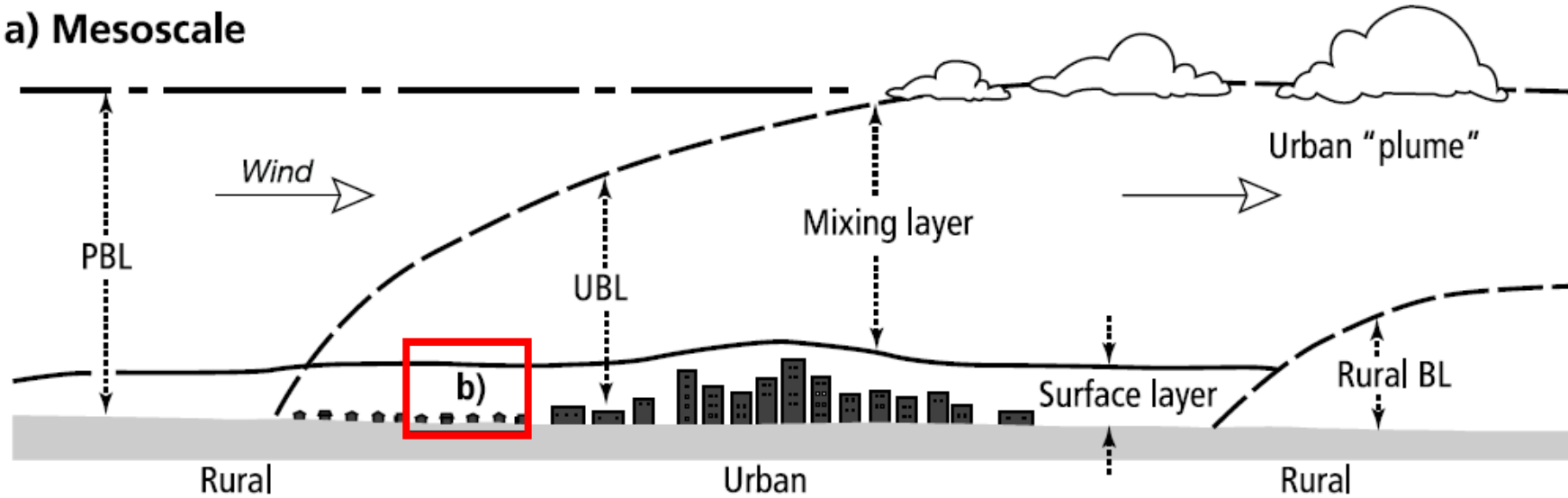
📷 The study was modelled on 93 European cities. Photograph: Nick Harrison/Alamy

Planting more trees could mean fewer people die from increasingly high summer temperatures in cities, a study suggests.

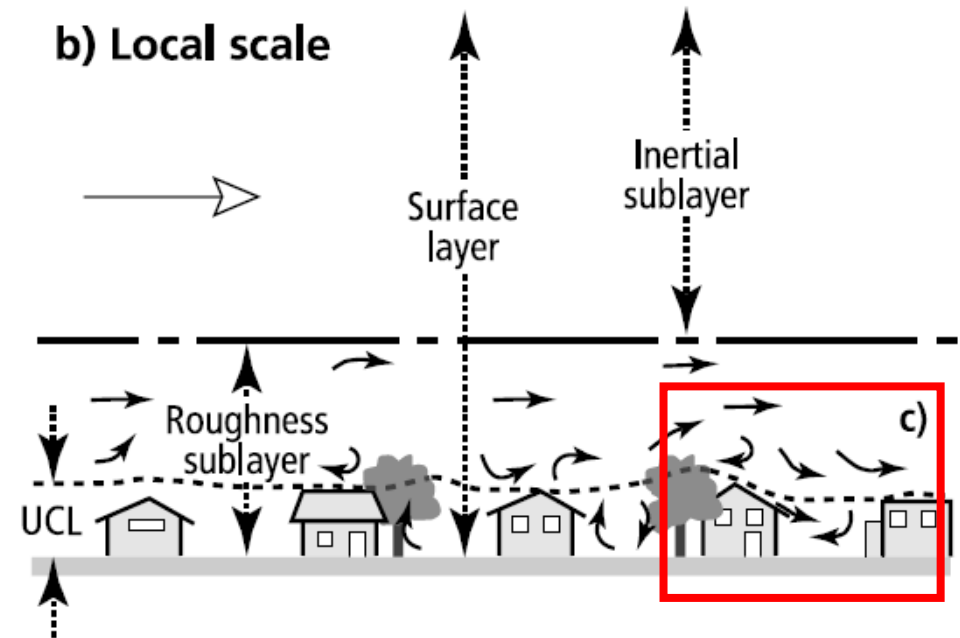
Increasing the level of tree cover from the European average of 14.9% to 30% can lower the temperature in cities by 0.4C, which could reduce heat-related deaths by 39.5%, according to first-of-its-kind modelling of 93 European cities by an international team of researchers.

O que essa notícia tem a ver com a expressão “resiliência urbana”

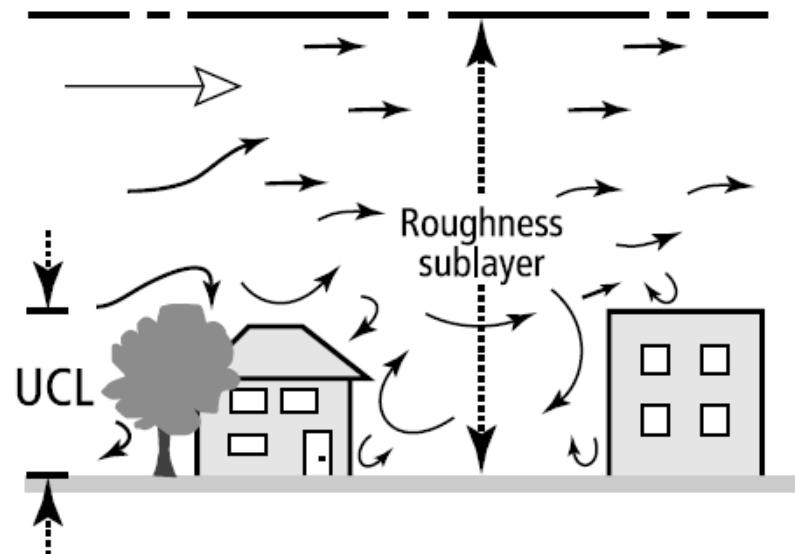
a) Mesoscale



b) Local scale

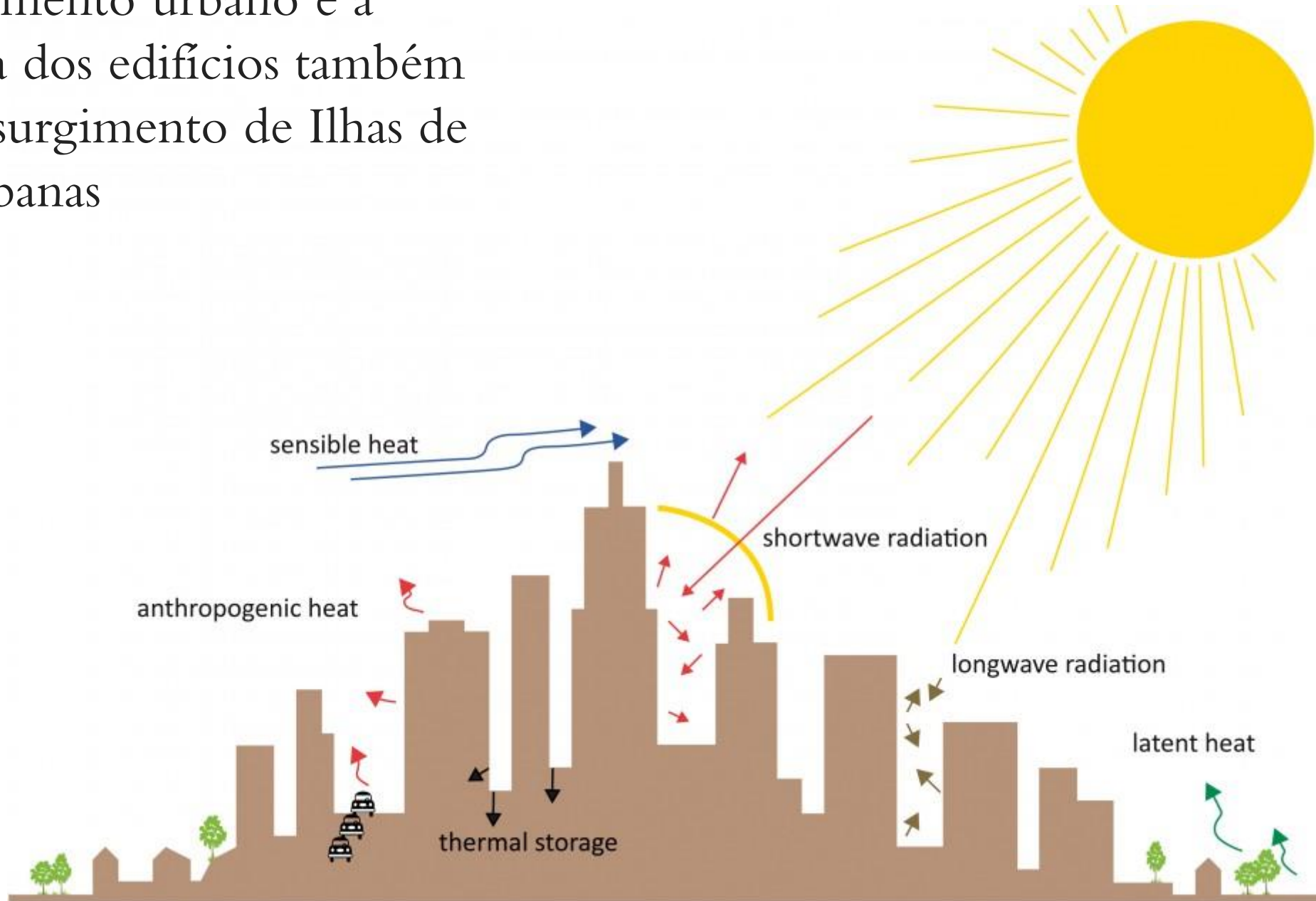


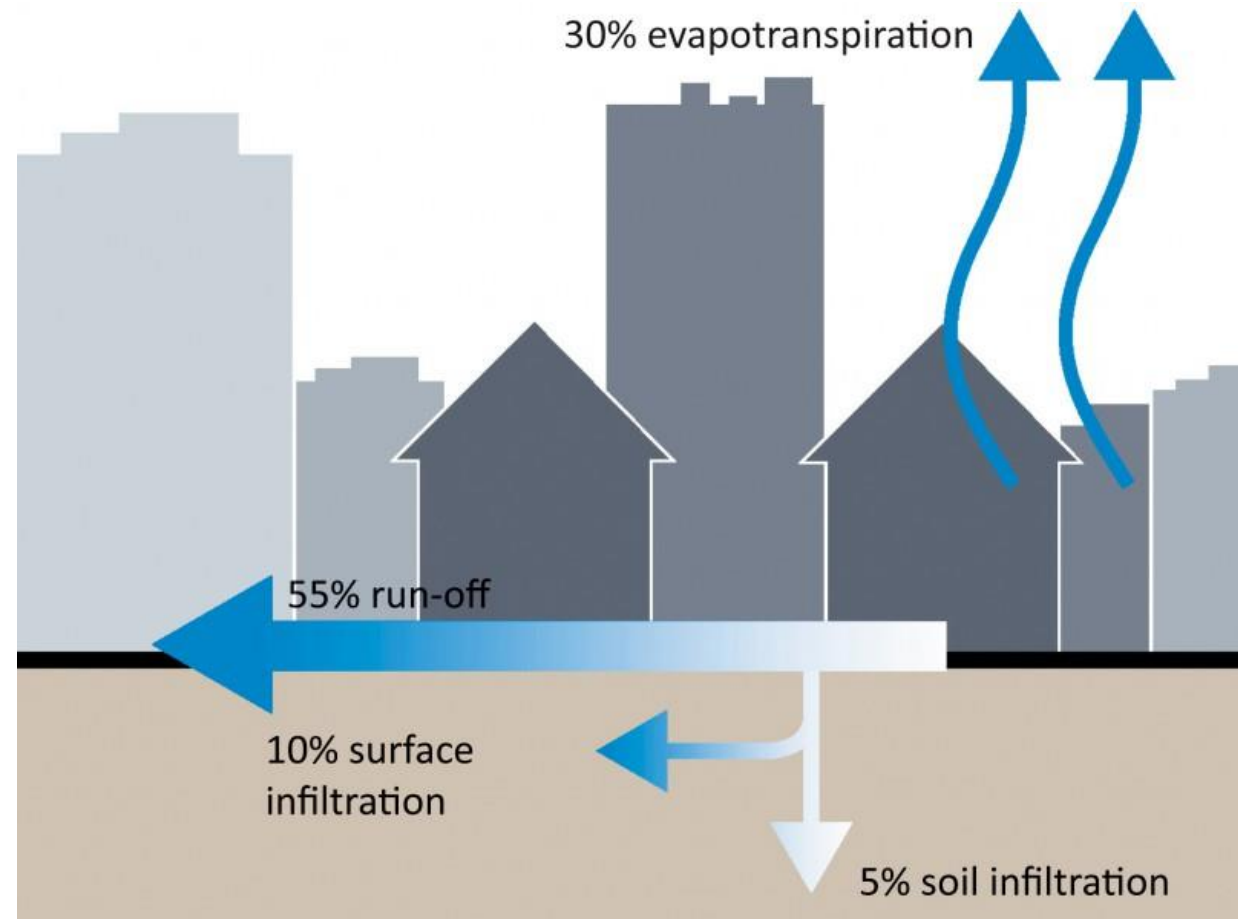
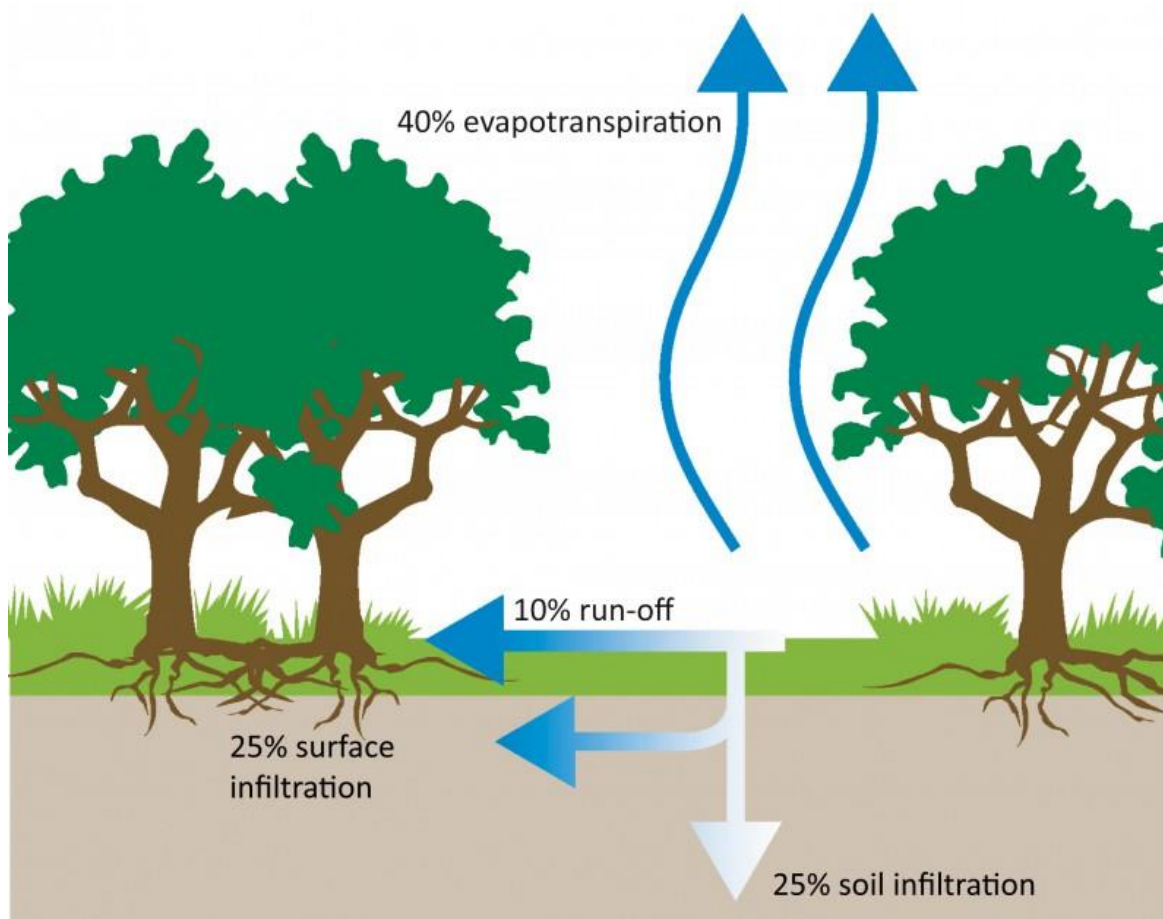
c) Microscale (spacing, density, height)



A
complexidade
térmica em
áreas urbanas

O planejamento urbano e a geometria dos edifícios também afetam o surgimento de Ilhas de Calor Urbanas





In general, increasing the green percentage by 10 percentage points leads to a decrease in air temperature by roughly 0.5°C (Kluck et al., 2020).



URBANET

News and Debates on Municipal and Local Governance,
Sustainable Urban Development and Decentralisation



Seoul © Donovan Storey

Resilient Cities are Green Cities

By Donovan Storey | July 2nd 2020 | Climate Change & Resilience, Urban Health, healthy cities, public space, urban resilience



NPC
collective
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ENVIRONMENTAL JUSTICE IS
OUR CRY OF DEFIANCE AGAINST
THE ONSLAUGHT
OF OPPRESSIVE
TOXINS AND
TOXIC OPPRESSIONS
THAT
THREATEN
TO SUBMERGE
OUR HOMES.



RLM



30% TREE CANOPY COVER IN EVERY NEIGHBOURHOOD



300m FROM THE NEAREST PARK OR GREEN SPACE





Evidence-based guidelines for greener, healthier, more resilient neighbourhoods: Introducing the 3–30–300 rule

Cecil C. Konijnendijk¹

...guidelines such as the 3–30–300 rule are often the start of a wider discussion on the importance of trees, but also the need to manage and reduce disservices...

...another benefit of guidelines like the 3–30–300 rule is that they are measurable and thus can track progress over time, like what has already been done with some of its components...

...assessment of the current state of a city's urban forest according to the 3–30–300 rule, parallel to other possible targets and indicators, can also help with benchmarking with other cities nationally and internationally...

...having trees and other vegetation in sight from one's home, place of work, or school has important mental health and performance benefits. Local tree canopy cover is positively associated with cooling and other aspects of climate moderation. With public green spaces in proximity to one's home stimulates regular use of these areas and results in positive impacts on mental, physical, and social health...



Contents lists available at ScienceDirect

Environmental Research

journal homepage: www.elsevier.com/locate/envres

The evaluation of the 3-30-300 green space rule and mental health

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Greenness

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3-30-300

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Sedatives

Tranquilizer

Medication use

Psychologist visits

Psychiatrist visits

Mental health

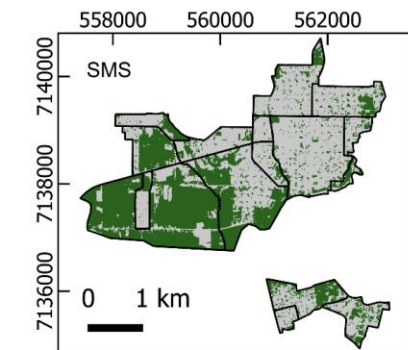
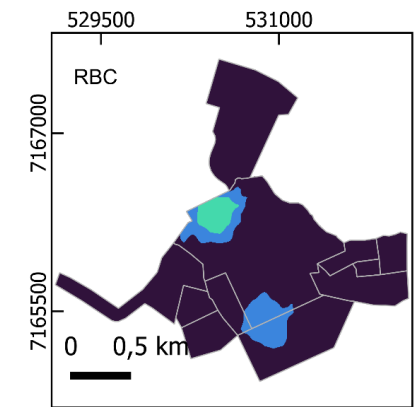
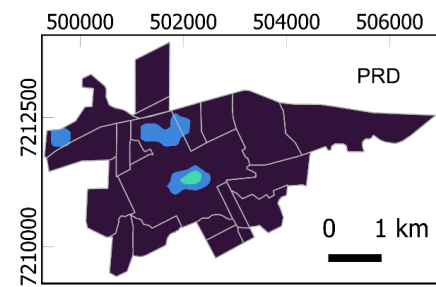
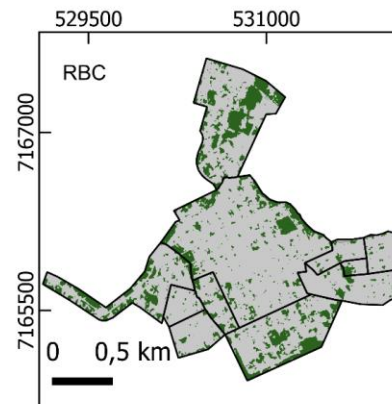
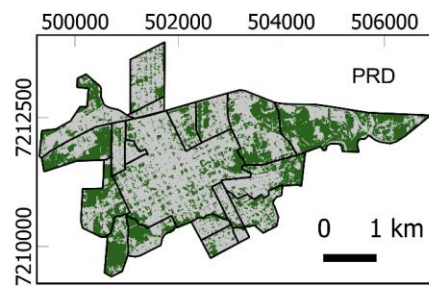
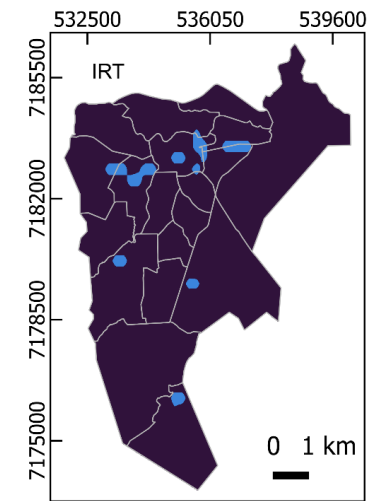
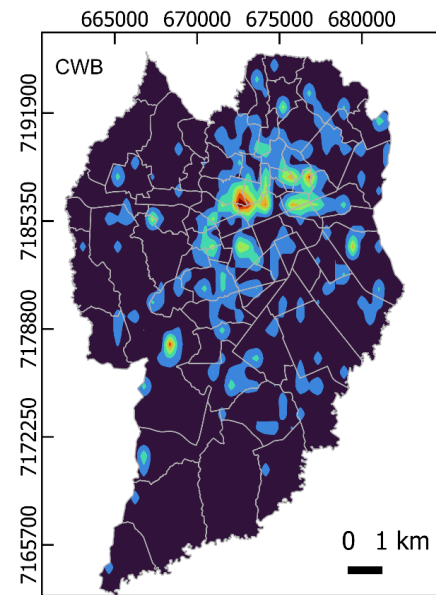
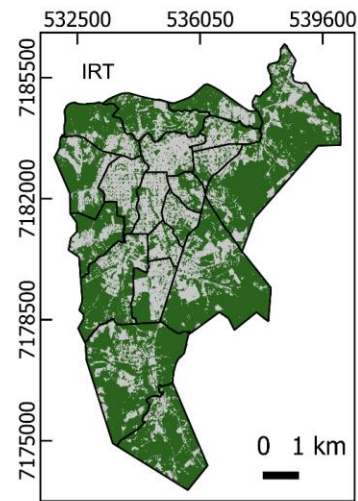
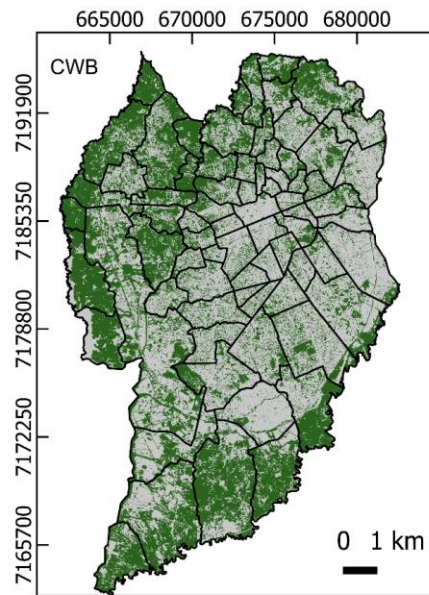
ABSTRACT

Background and aims: Urban green space has many health benefits, but it is still unclear how much actually is needed for better health. Recently a new 3-30-300 rule of thumb for urban forestry and urban greening has been proposed, but this rule has not been evaluated for benefits on health. The rule requires that every citizen should be able to see at least three trees from their home, have 30 percent tree canopy cover in their neighbourhood and not live more than 300 m away from the nearest park or green space. The aim of this study was to evaluate the relationship between the 3-30-300 green space rule and its components in relation to mental health.

Methods: We conducted a cross-sectional study based on a population-based sample of 3145 individuals aged 15–97 years from in Barcelona, Spain who participated in the Barcelona Health Survey (2016–2017). We created 3-30-300 green space indicators using questionnaire data, GIS, remote sensing and land cover maps. Mental health status was assessed with the 12-item General Health Questionnaire (GHQ-12) and also the use of tranquilizer/sedatives or antidepressants and psychiatrist or psychologist visits. Analyses were conducted using mixed effects logistic regression models with districts as the random effect, adjusted for relevant covariates.

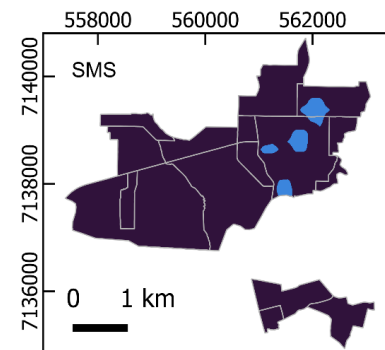
Results: We found that people in Barcelona had relatively little exposure to green space, whether through window view, living in an area with sufficient greenness, or access to a major green space, and only 4.7% met a surrogate 3-30-300 green space rule. Residential surrounding greenness, but not tree window view or access to major green space, was significantly associated with better mental health, less medication use, and fewer psychologist or psychiatrist visits. Meeting the full surrogate 3-30-300 green space rule was associated with better mental health, less medication use, and fewer psychologist or psychiatrist visits, but only for the latter combined the association was statistically significant (Odds ratio = 0.31, 95% CI: 0.11, 0.91).

Conclusion: Few people achieved the 3-30-300 green space in Barcelona and we used a surrogate measure. We observed health benefits when the full surrogate rule was met.



Legenda

- Sem Vegetação
- Floresta Urbana
- Divisas de bairros



Legenda

Áreas verdes públicas (AVP) dentro de 300 metros de caminhada

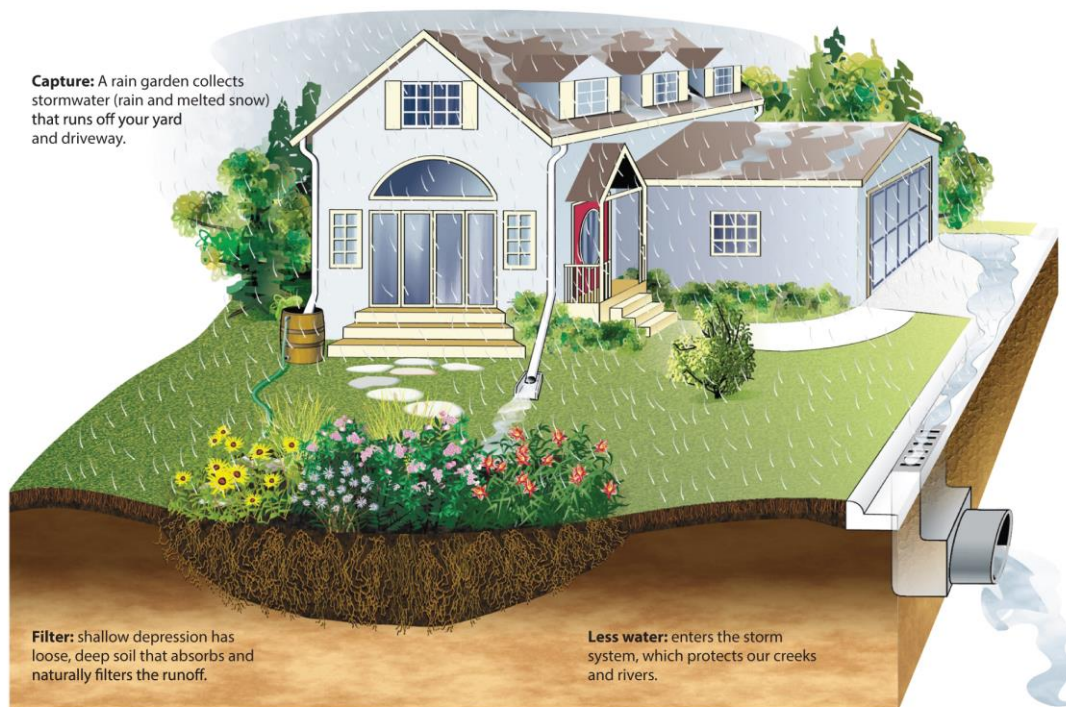
Acessibilidade

6
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Divisas de bairros

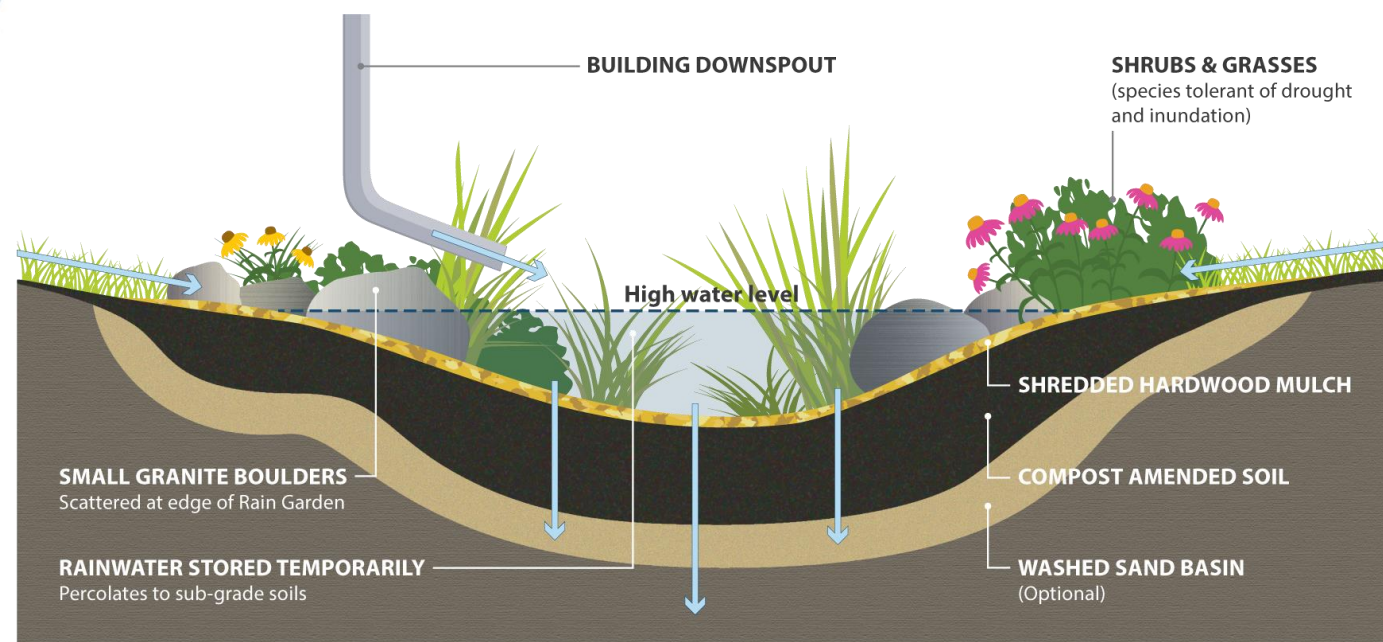


Com quais ações paisagísticas as cidades poderiam trabalhar para se tornarem resilientes e justas?



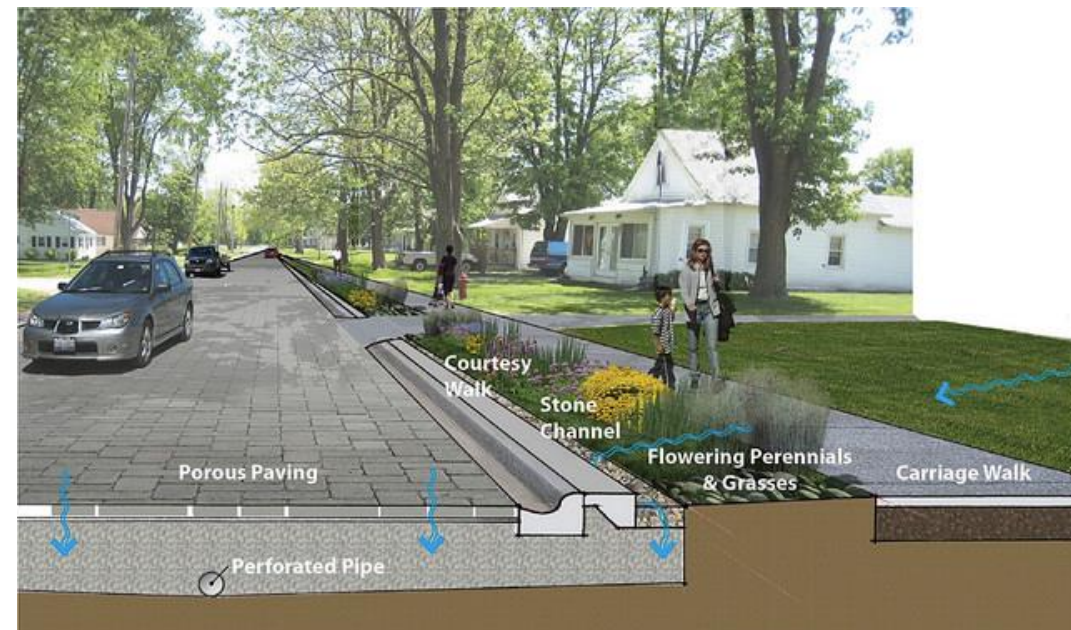
Jardins de Chuva

Recurso paisagístico que substitui uma área de gramado para coletar a água pluvial que escorre da grama, telhado e garagem. Essa depressão rasa tem solo solto e profundo que absorve e filtra naturalmente o escoamento, impedindo-o de entrar no sistema de drenagem pluvial e, eventualmente, em nos cursos de água



Ruas Verdes

Incorporam infraestrutura verde (árvores, jardins de chuva e pavimento permeável) para gerenciar e tratar as águas pluviais que fluem da rua. O objetivo das ruas verdes é coletar a água perto de onde ela cai, tratá-la com uma combinação de solo, material vegetal e outras práticas que reproduzam a hidrologia natural, deixando-a infiltrar ou evapotranspirar.



<https://www.rivernetwork.org/case-study/green-streets-restoring-rivers-revitalizing-neighborhoods-making-streets-safer/>

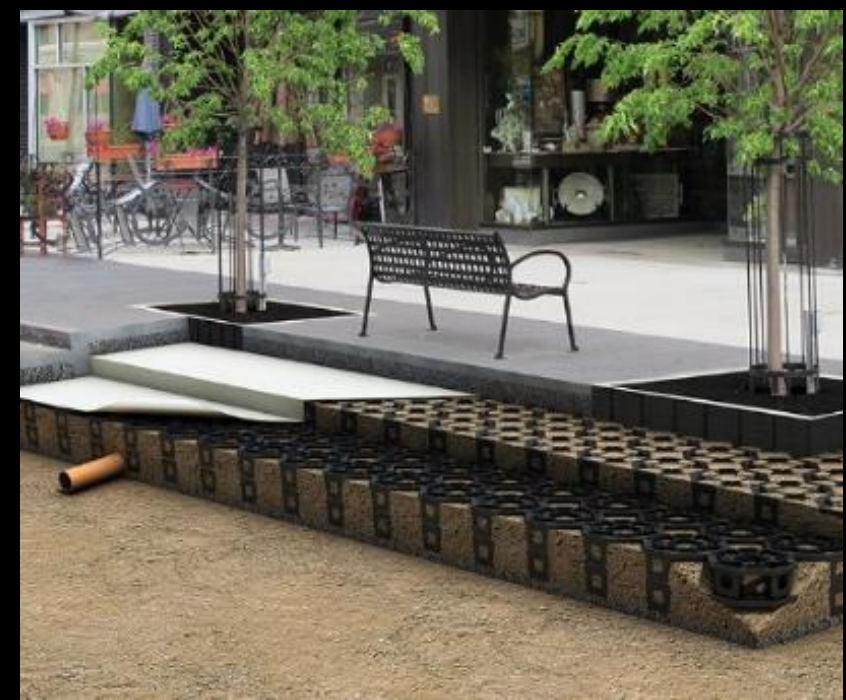
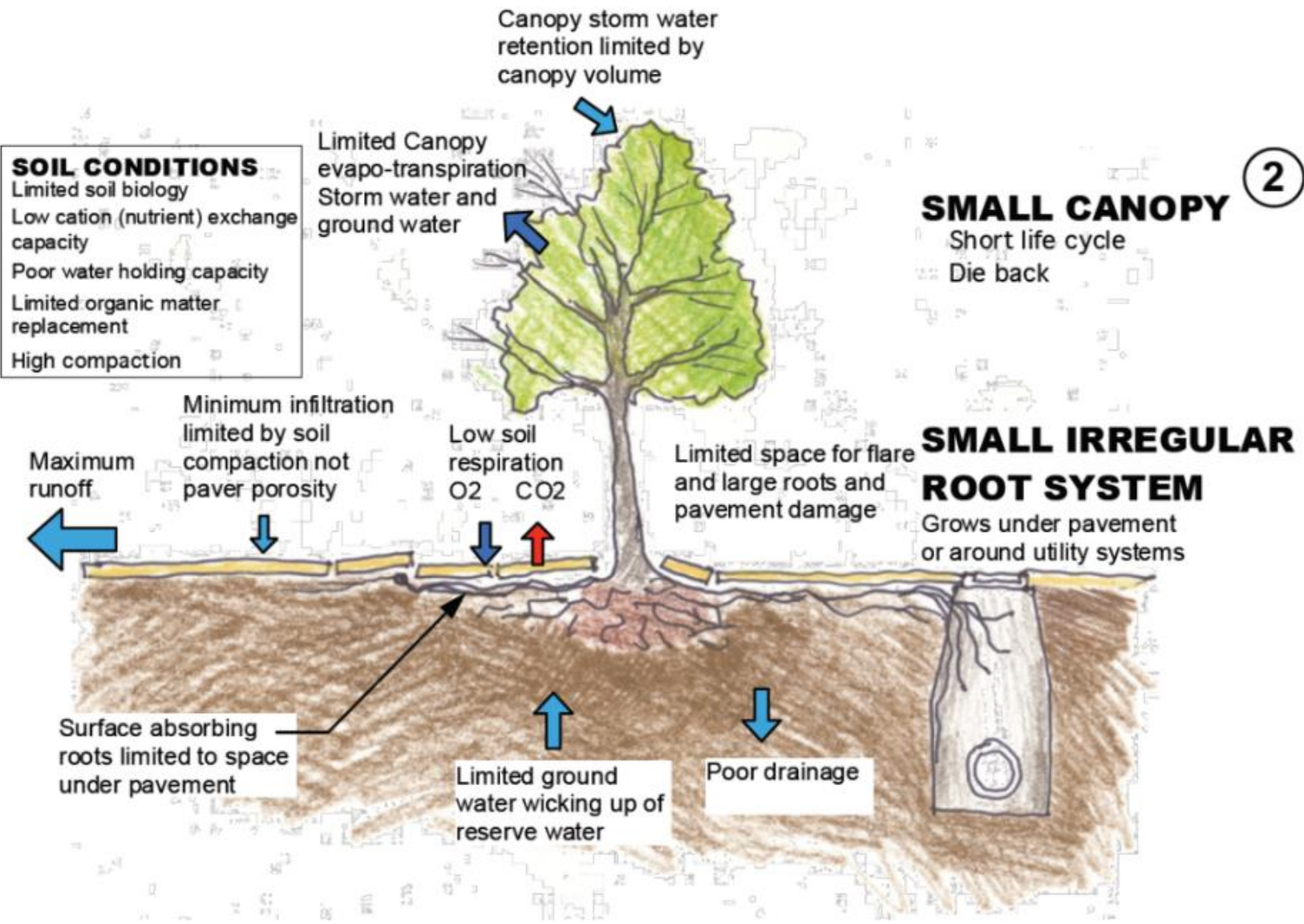


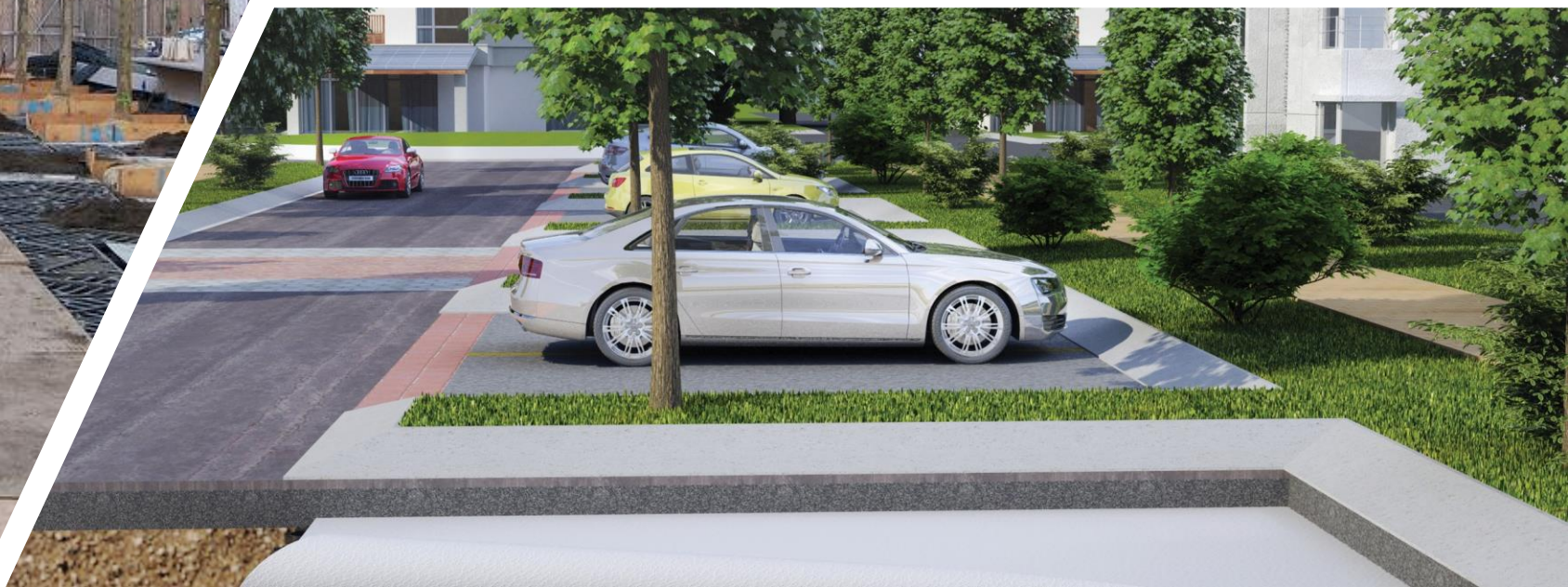
Torres Unidas Building, Bogotá



A recycled rainwater garden over the main square creates a native urban wetland that blends harmoniously with the surrounding Andean hills backdrop and preserves the native vegetation in its natural habitat.

Solo estruturado

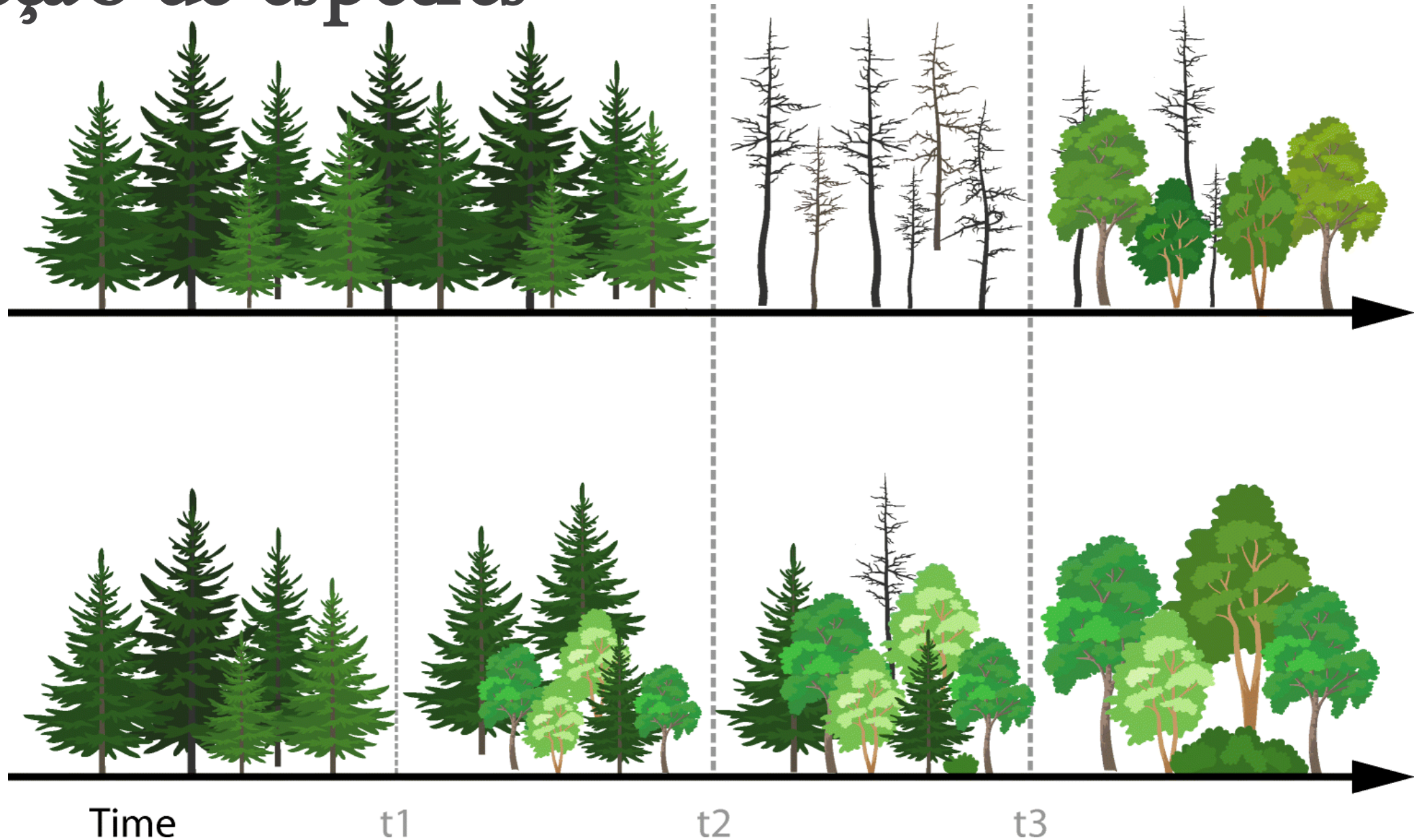




...Os estressores físicos primários na paisagem urbana são a ilha de calor urbano, dióxido de carbono elevado (CO₂) e poluição atmosférica, os quais agem sinergicamente. Da mesma forma, seus efeitos podem variar na paisagem urbana devido à heterogeneidade espacial dentro dessa paisagem.

Quando se considera o potencial efeito aditivo dos aumentos projetados nas temperaturas globais médias de 1,7 a 4,9°C devido à mudança climática global, com o efeito de ilha de calor urbano a carga de calor adicional sobre as espécies afetará significativamente a estrutura e a função do ecossistema...

Seleção de espécies



Jandl, R., Spathelf, P., Bolte, A. *et al.* Forest adaptation to climate change —is non-management an option?. *Annals of Forest Science* 76, 48 (2019).



Urban forest resilience through tree selection—Variation in drought tolerance in *Acer*

Henrik Sjöman^{a,*}, Andrew D. Hirons^b, Nina L. Bassuk^c

^a Swedish University of Agricultural Sciences, Faculty of Landscape Planning, Horticulture and Agricultural Science, Department of Landscape Architecture, Planning and Management, PO Box 66, SE-23053 Alnarp, Sweden

^b Myerscough College, Bilsborrow, Preston, Lancashire PR3 0RY, UK

^c Cornell University, College of Agriculture and Life Science, Department of Horticulture, 134A Plant Science Building, Ithaca, NY 14853-5904, USA

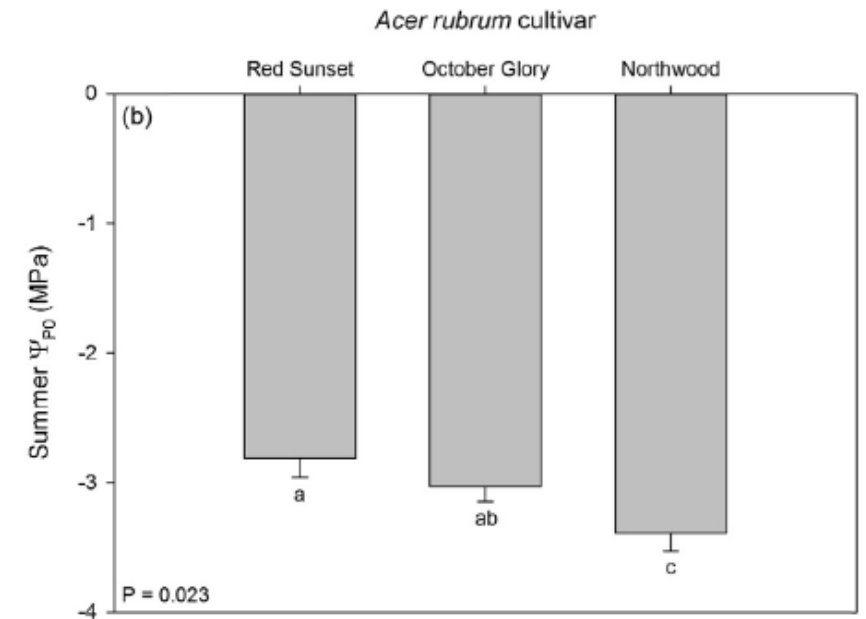
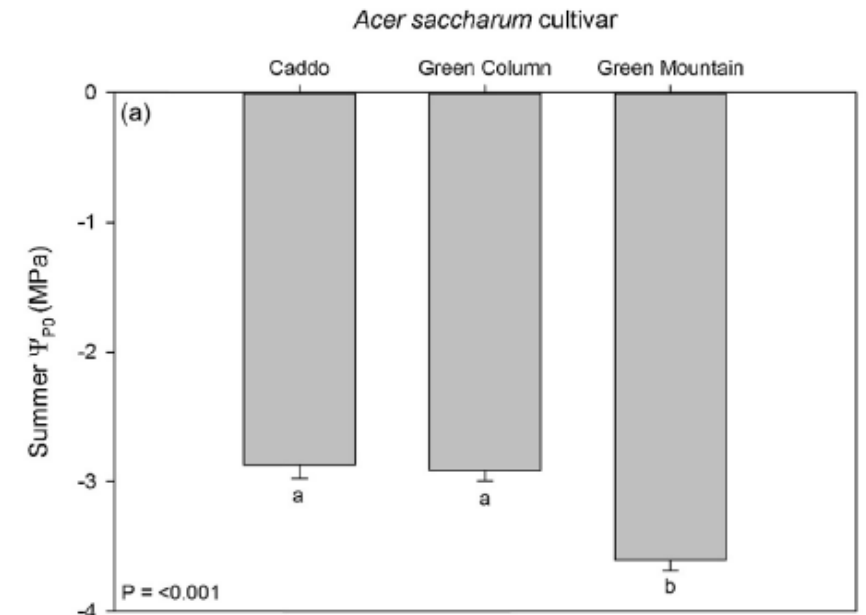
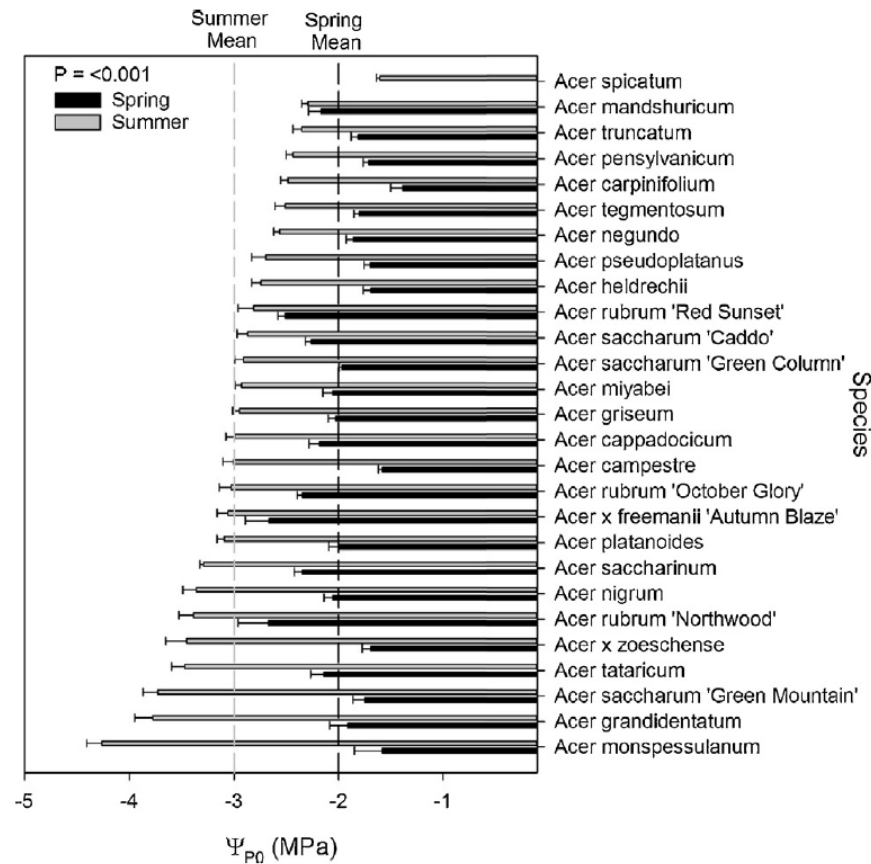
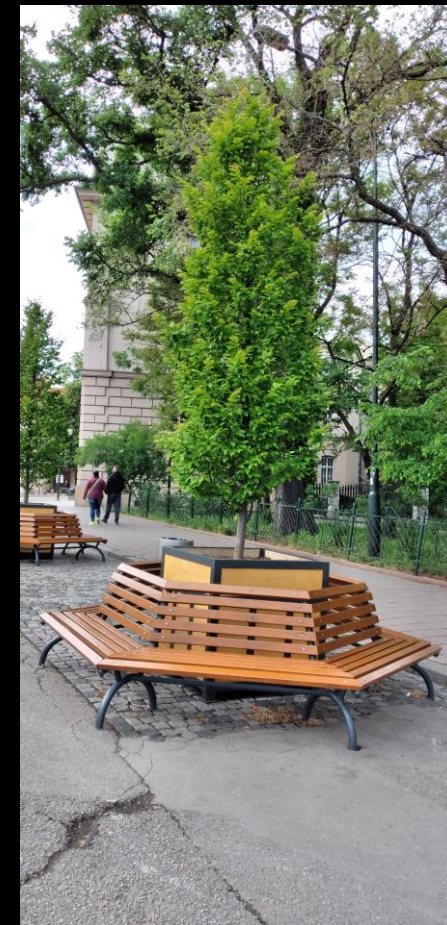
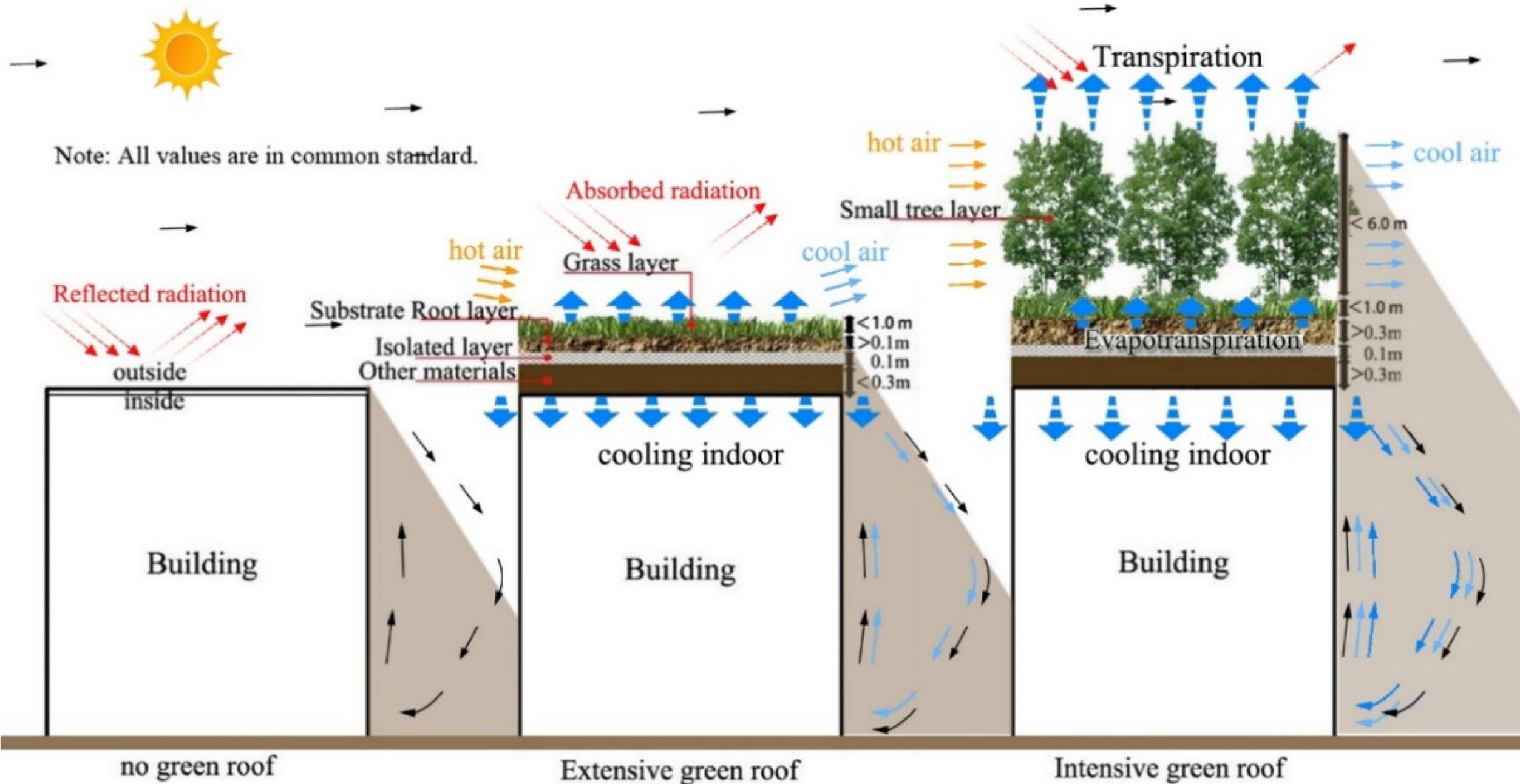


Fig. 3. Predicted turgor loss of leaves in summer of (a) *A. saccharum* and (b) *A. rubrum* cultivars. Bars show SE, letters indicate where significant differences ($P < 0.05$) occur between cultivars as indicated by a one-way ANOVA, n – see Table 1.



Infraestruturas Verdes



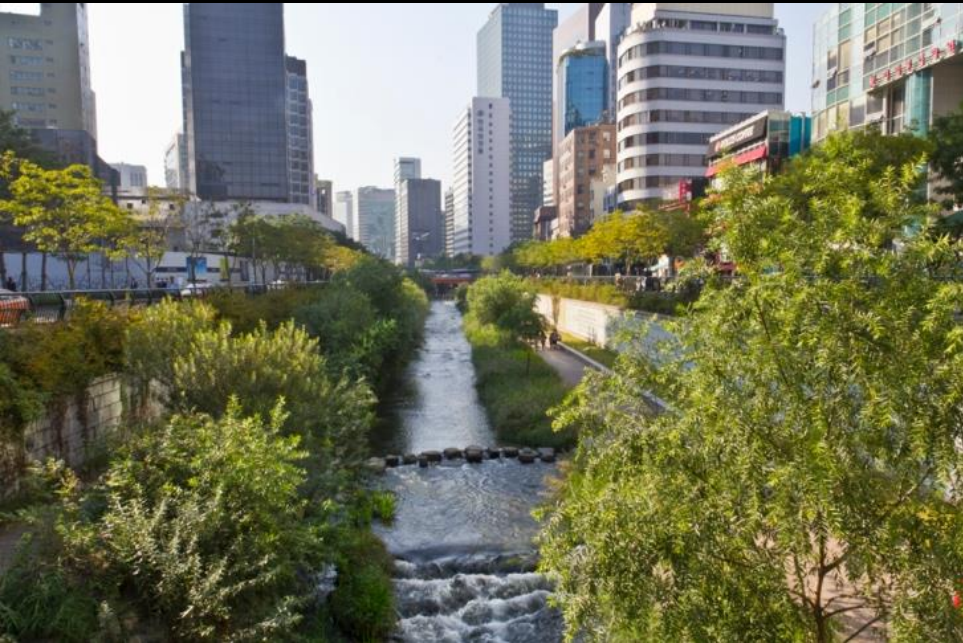


Gardens of the Bay, Singapore

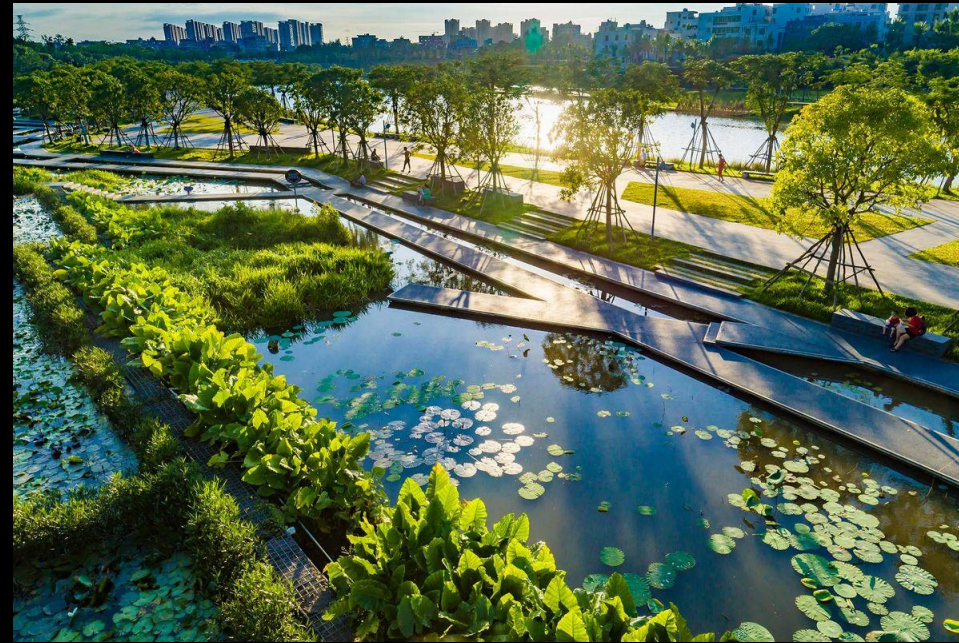


Bosco Verticale Towers, Milan

Renaturalização Urbana



Cheonggyecheon Stream, Seoul



Wetlands in Haikou, China



Bee meadow flowers, Bristol

Renaturalização Urbana

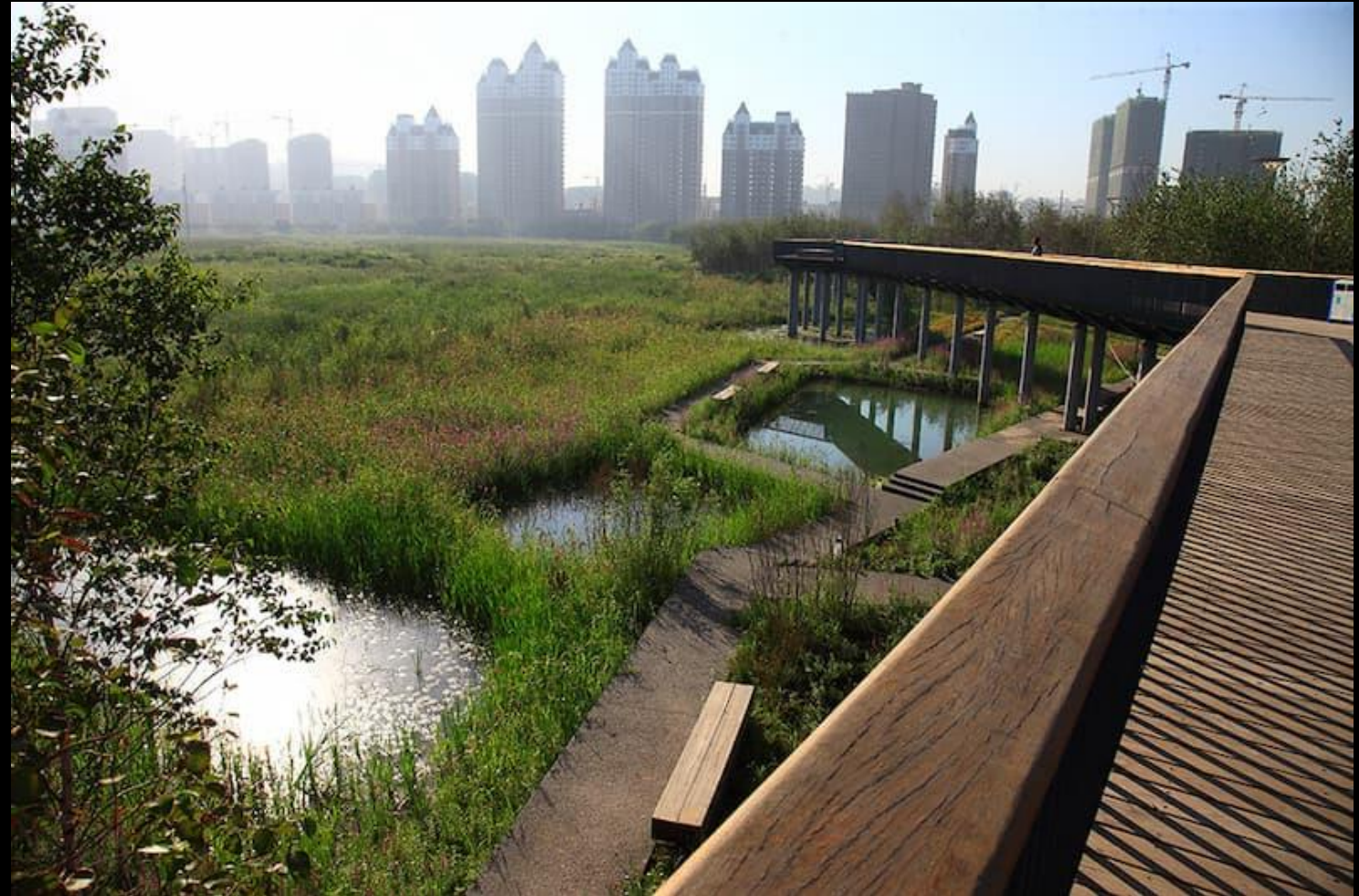
1980



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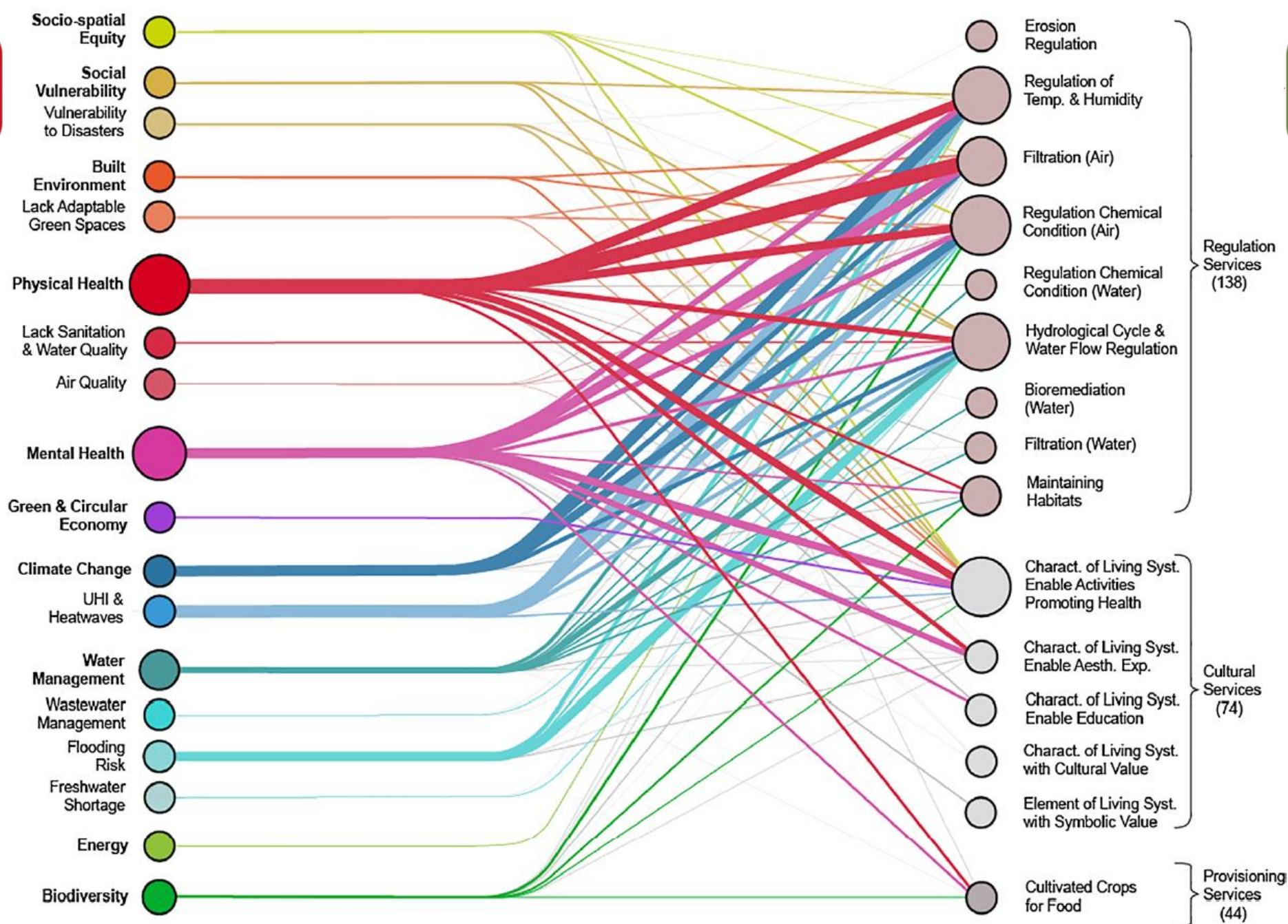


Utrecht, Netherlands



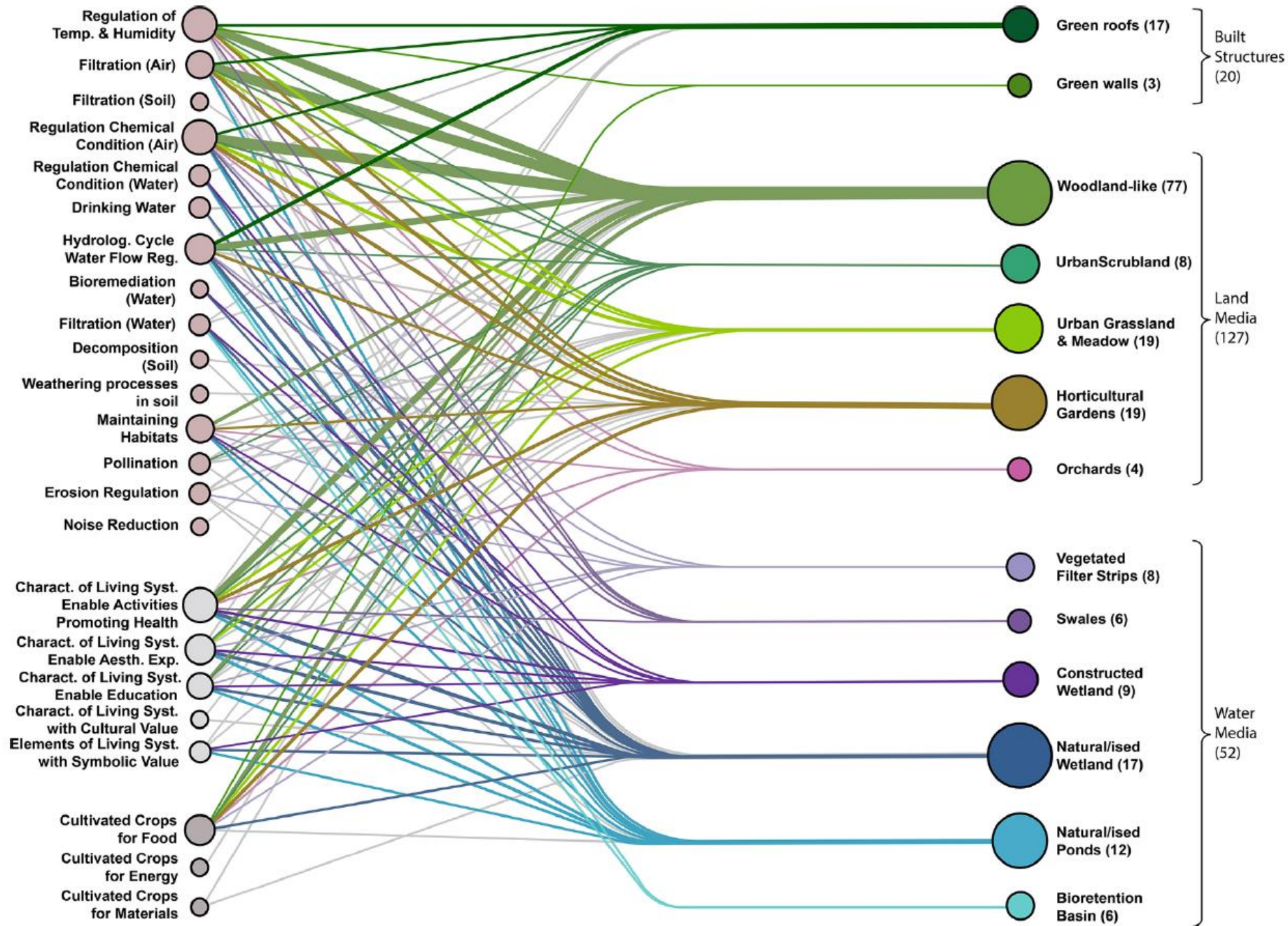
Qunli National Urban Wetland, China

UC

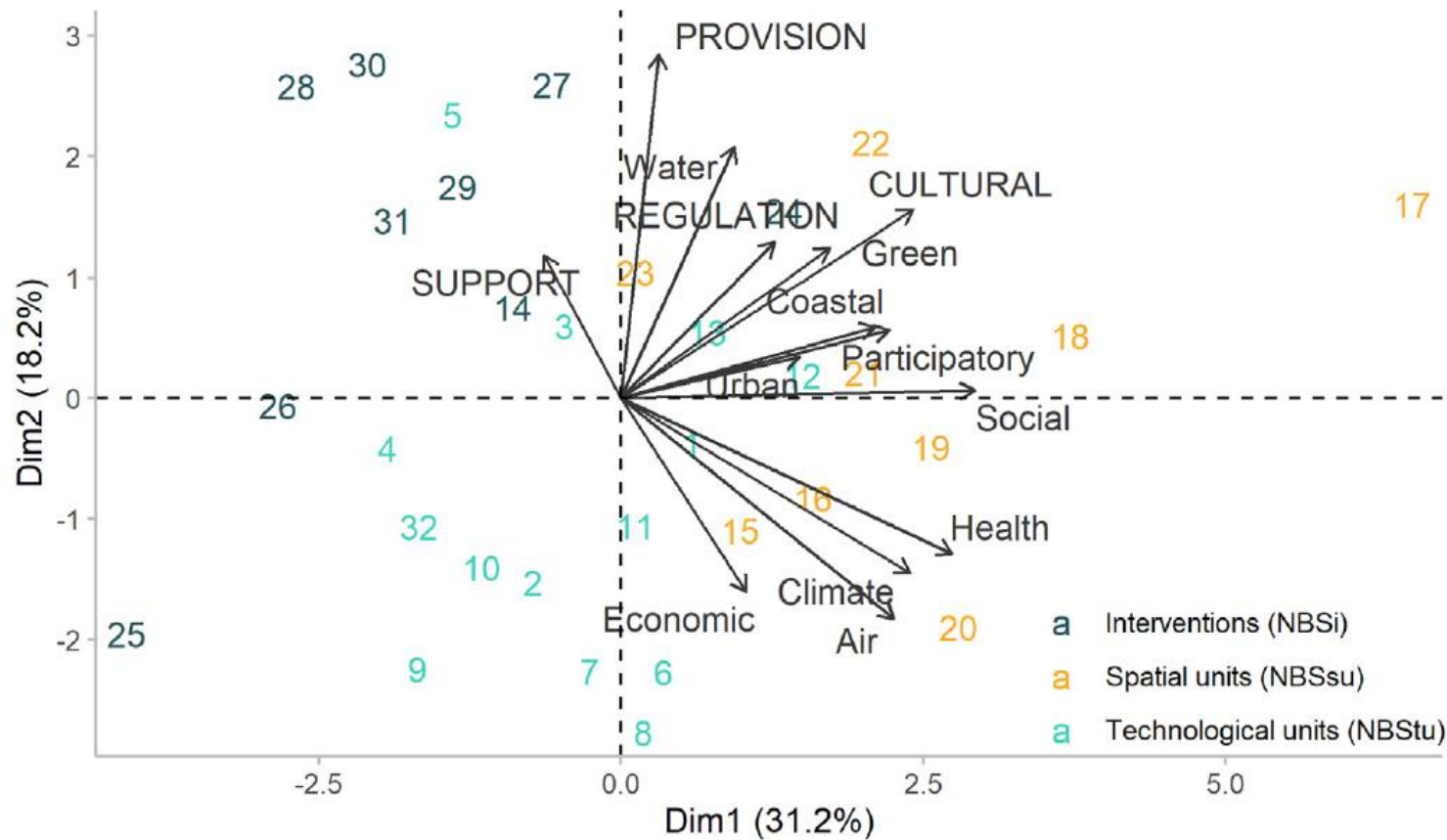
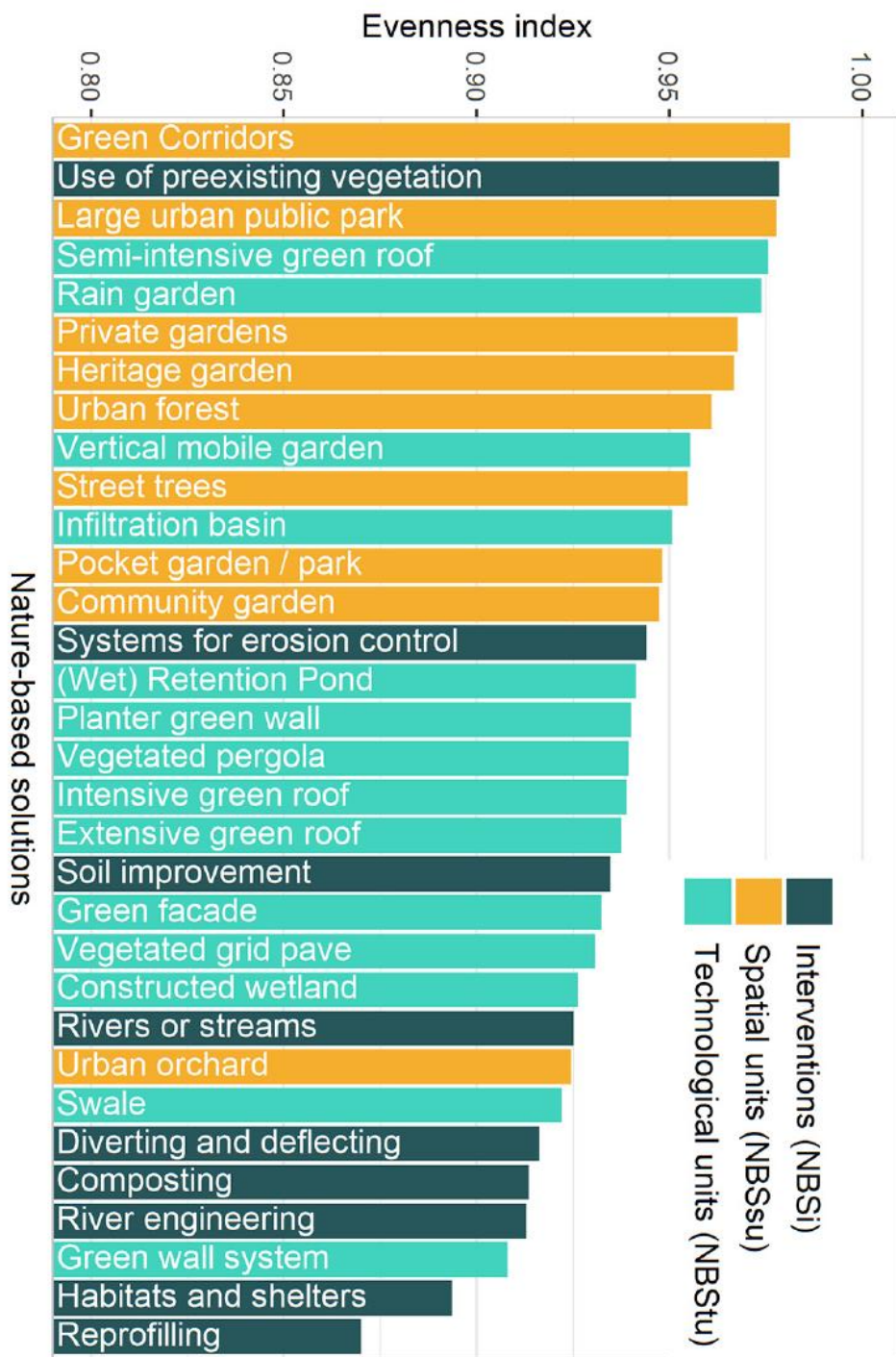


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NBS



J.A.C. Castellar, L.A. Popartan, J. Pueyo-Ros, N. Atanasova, G. Langergraber, I. Säumel, L. Corominas, J. Comas, V. Acuña. Nature-based solutions in the urban context: terminology, classification and scoring for urban challenges and ecosystem services. Science of The Total Environment, v.779, 2021, 146237.

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