CONNECTING NATURE IMPACT SUMMIT

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Niki Frantzeskaki

Utrecht University
Chair professor

April 28-29 2022 Thor Park Genk

Living with Nature

Keynote - Friday 29th april - 11:15 till 12:00

Niki Frantzeskaki outlines what the potential of Nature-based solutions is from research in Europe and Australia, with the focus on how they challenge but also transformed urban planning and governance and provide a forward looking idea for their development and deployment as urban interventions.

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Sharing science, *shaping tomorrow*

Nature-based solutions: A planning challenge and transformative opportunity for our cities

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29.04.2022

My messages today

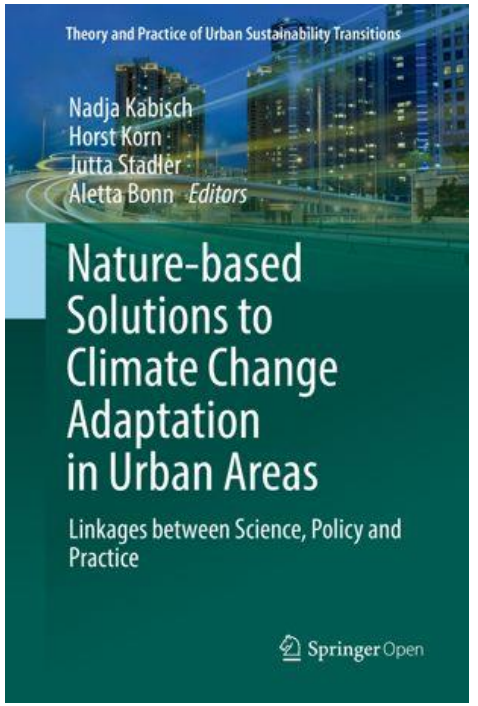
What we know:

- Efficacy of nature-based solutions
- City leadership is critical
- System's thinking is foundational

What now?

- Connecting Innovations
- Inclusive governance : in-progress
- Broadening and deepening the knowledge of nature-based solutions

Message 1: There is significant evidence for the efficacy of nature-based solutions to address a multitude of urban challenges and their ability to contribute to achieving SDGs at local scales


Theory and Practice of Urban Sustainability Transitions
Nadja Kabisch
Horst Korn
Jutta Stadler
Aletta Bonn Editors
Nature-based Solutions to Climate Change Adaptation in Urban Areas
Linkages between Science, Policy and Practice
Springer Open


EKLIPSE
An impact evaluation framework to support planning and evaluation of nature-based solutions projects

Lemon-scented gum trees were planted in 2016 along Flinders Street, on the edge of Melbourne's central business district. The native trees replaced mature London plane trees. Credit: Alana Holmberg for The New York Times

Source: https://www.nytimes.com/2022/03/28/special-series/befriending-trees-to-lower-a-citys-temperature.html

An arborist performed “reduction pruning” on a mature Eucalyptus Botryoides tree in Queen Victoria Gardens in Melbourne, to help improve its health and extend its life. Credit:Alana Holmberg for The New York Times

Source: https://www.nytimes.com/2022/03/28/special-series/befriending-trees-to-lower-a-citys-temperature.html

Message 2: Cities pioneer in employing nature-based solutions in their planning portfolios and for doing this, commitment to climate change and biodiversity are critical as well as updating collaborative planning approaches through new methods and techniques.

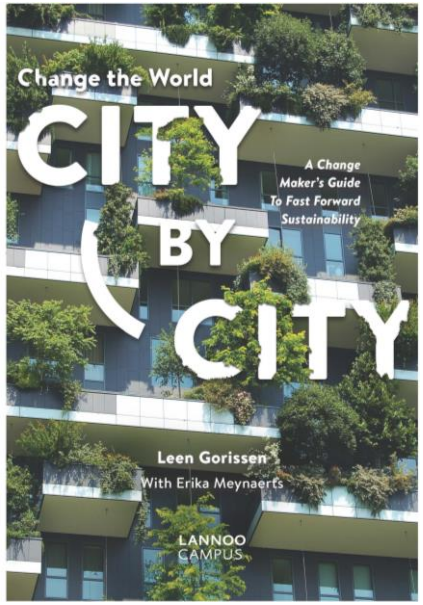
Policy needs for implementing nature-based solutions

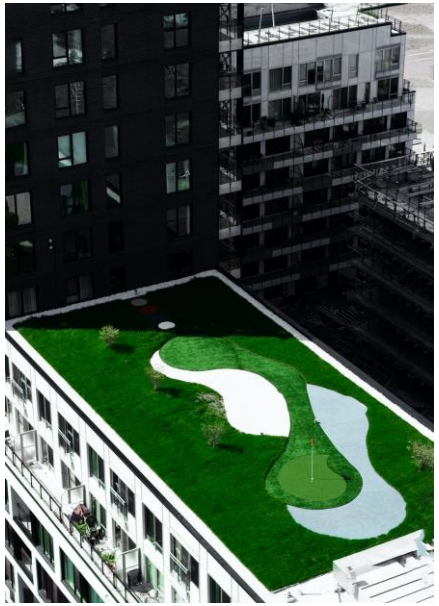
Knowledge needs	Skills	Partnerships	
- systems' thinking - understand social innovation - monitoring and evaluating frameworks	- collaboration - advocacy	- within municipality - with social innovation initiatives	Genk, Belgium
- monitoring and evaluation - methods and frameworks - green space management - social innovation	- entrepreneurship - analytical skills for selecting type of NBS - technical skills - collaboration	- communities in flood prone areas - within municipality	Glasgow, Scotland/UK
- impact and fitness of NBS - procurement - multifunctionality of NBS - types of NBS	- collaboration - engagement with grassroots - advocacy	- citizens and grassroots	Poznan Polland

Frantzeskaki, N., Vandergert, P., Connop, S., Schipper, K., Zwierzchowska, I., Collier, M., and Lodder, M., (2020), Examining the policy needs for implementing nature-based solutions: Findings for city-wide transdisciplinary experiences in Glasgow, Genk and Poznan, Land Use Policy , 96, 104688, https://doi.org/10.1016/j.landusepol.2020.104688

Cities are major actors in facilitating sustainability transitions

- System's approaches in urban planning
- Novel ecosystems (nature-based solutions) as climate innovations in cities
- Mainstream resilience principles in the design and management of NBS
- Adopt experimentation and transdisciplinary research to strengthen and extend expertise
- Co-produce knowledge with indigenous people for bringing nature in the city





Oke, C., Bekessy, S., Frantzeskaki, N., Bush, J., Harrison, L., Grenfell, M., Hartigan, M., Gawler, S., Callow, D., Elmqvist, T., Garrard, G., Fitzsimons, J., Cotter, B., (2021), Cities should respond to the extinction crisis, **Urban Sustainability 1,** 11 (2021). https://doi.org/10.1038/s42949-020-00010-w

Sustainable Urban Drainage Systems

Inclusive governance

Urban forestry strategy development

Street trees

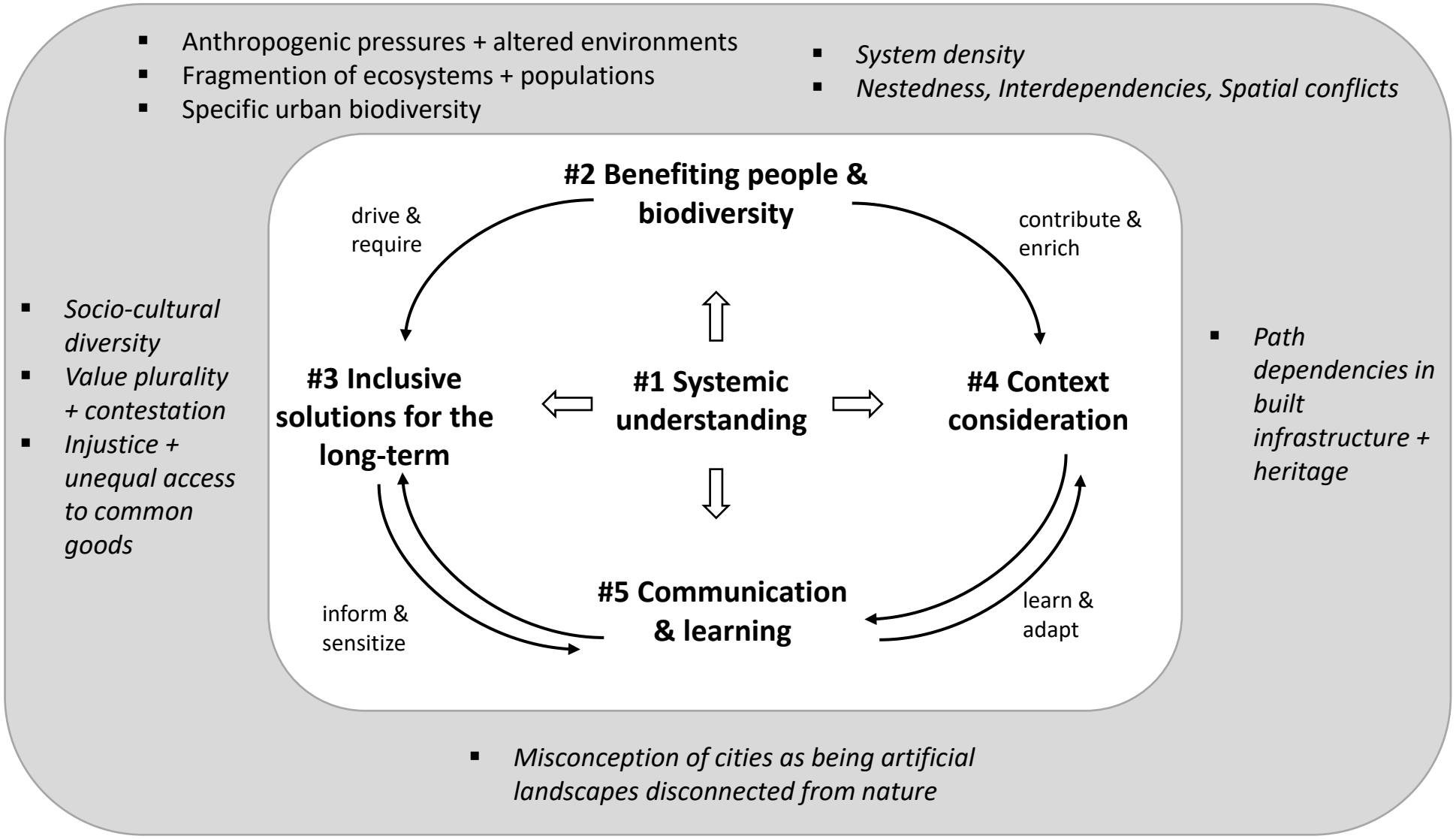
Urban Agriculture

Water Sensitive Urban Design

Frantzeskaki, N., Ossola, A., and Bush, J., (2022), *Nature-based solutions for changing urban landscapes: Lessons from Australia, Urban Forestry and Urban Greening, Forthcoming*

Message 3: For better design, siting, planning, management and governance of nature-based solutions in our cities,

system’s thinking is foundational.



- *... are the underlying challenges in the urban context*

Kabisch, N., **Frantzeskaki, N.,** and Hansen, R. (2022), Principles for Urban Nature-Based Solutions, AMBIO, https://doi.org/10.1007/s13280-021-01685-w

Why?

"interconnectedness of ecological, social and technical dimensions results in high systems complexity in which different kinds of knowledge is needed to the planning, design and management of NBS" (Kabisch et al 2022)

How?

"A systems approach can connect tactical with strategic urban planning; meaning that master planning guides implementation on the ground but remains open and flexible to adaptations coming from tacit (individual) knowledge, experience and learning during their implementation and environmental management" (Kabisch et al 2022)

So what?

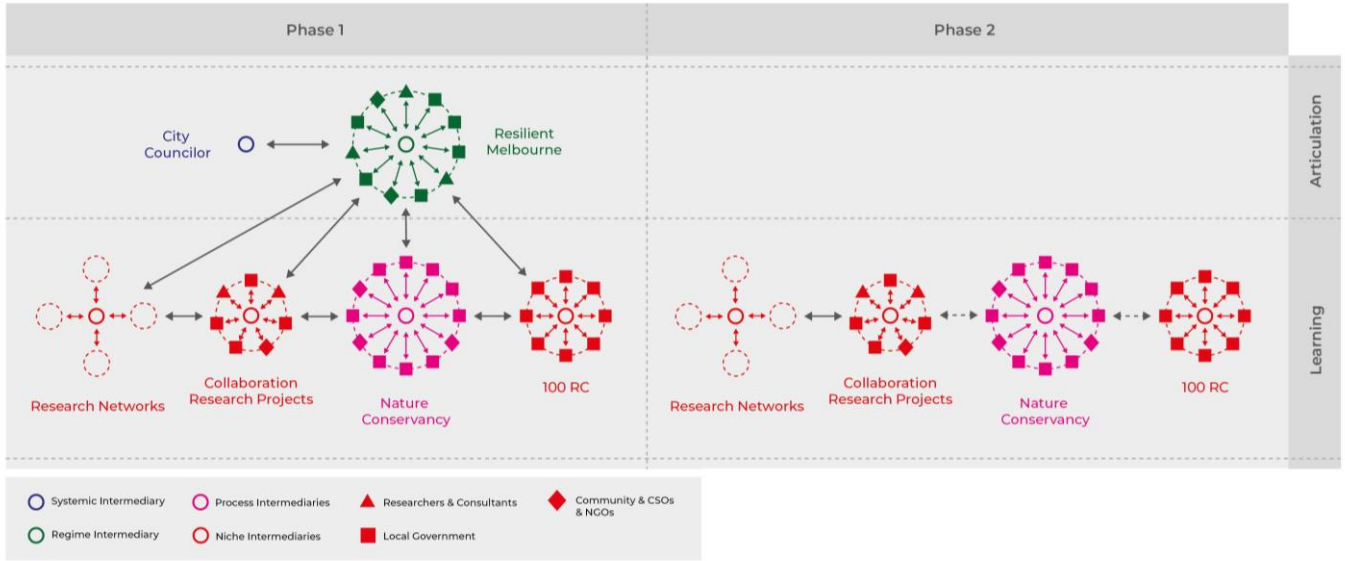
"NBS could act as a lens through which planners look holistically and collaboratively on the socio-ecological and technological dimensions of a city instead of planning in disconnected silos" (Kabisch et al 2022)

Kabisch, N., **Frantzeskaki, N.,** and Hansen, R. (2022), Principles for Urban Nature-Based Solutions, AMBIO, https://doi.org/10.1007/s13280-021-01685-w

Look closer for governance innovations when planning NBS

which governance approaches contribute to transformative climate actions?

- ***Intermediaries and boundary flexing actors*** that shape and transform from within and across sectors > institutional transitions and the making of flexible institutions
- ***Knowledge entrepreneurs*** that connect, scale out and move beyond performativity of science towards co-production > knowledge transitions and open science
- ***Platforms and new forms of urbanism***: AI, nature-technology hybrids and the opportunities (as well as risks) of data driven transformations in cities > digital transitions



Frantzeskaki, N., and Bush, J., (2021), Governance of nature-based solutions through intermediaries for urban transitions –A case study from Melbourne, Australia, **Urban Forestry and Urban Planning**, 64, 127262, https://doi.org/10.1016/j.ufug.2021.127262

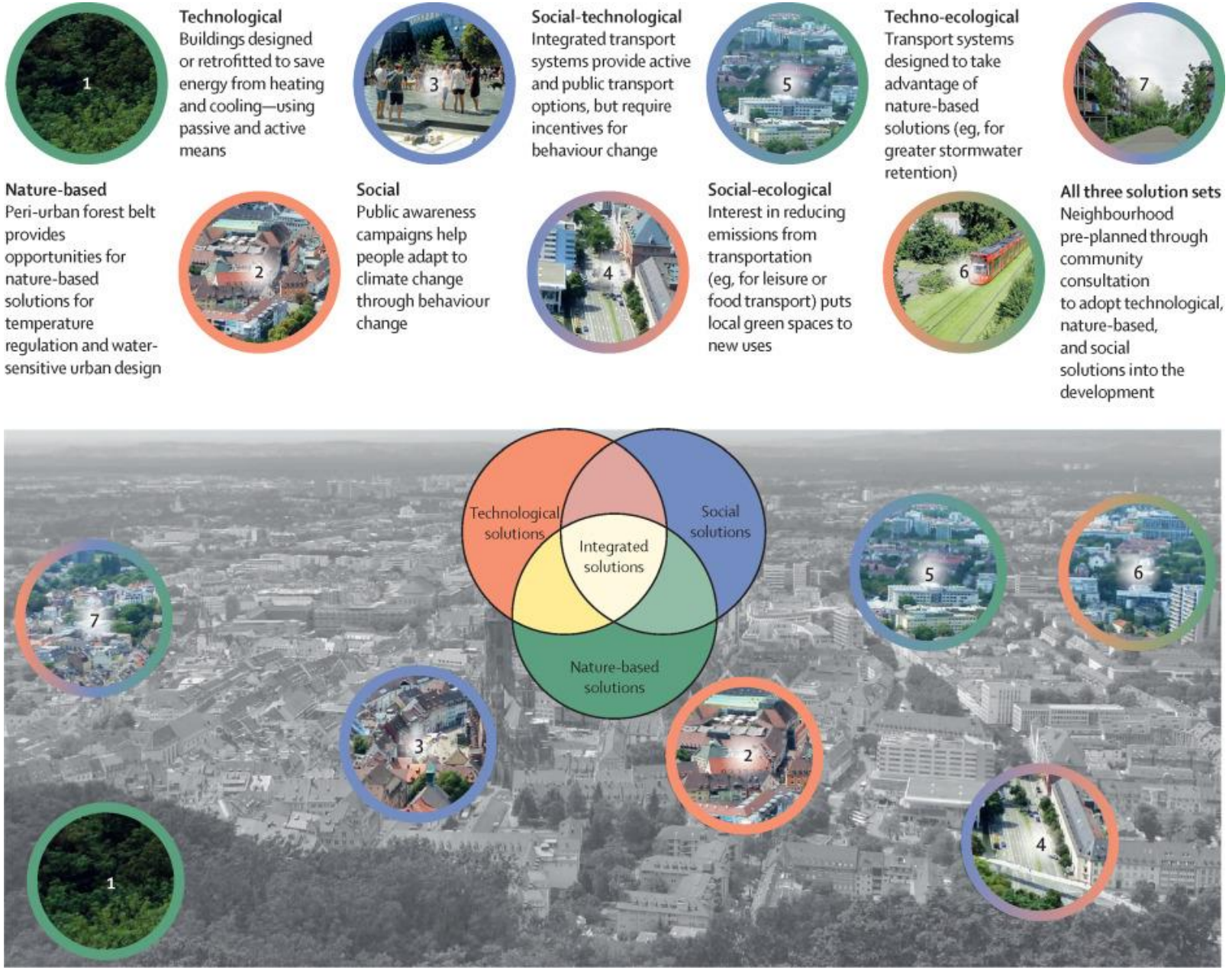
Revolutionize urban planning through NBS

- *Urban planning needs to be understood and "operate" with learning as a guiding principle.*
  - City teams need to work across sectors/departments to capitalize on expertise and diffuse internally the learning-by-doing required for planning NBS
  - Cities need to open up to collaborations with scientists that can respond to their policy needs and can challenge their ways of planning and engaging with new knowledge

- *Scaling pathways for nature-based solutions need to be designed based on the co-benefits, the connectivity to other infrastructures and their contribution to just inclusive resilient cities of the future.*

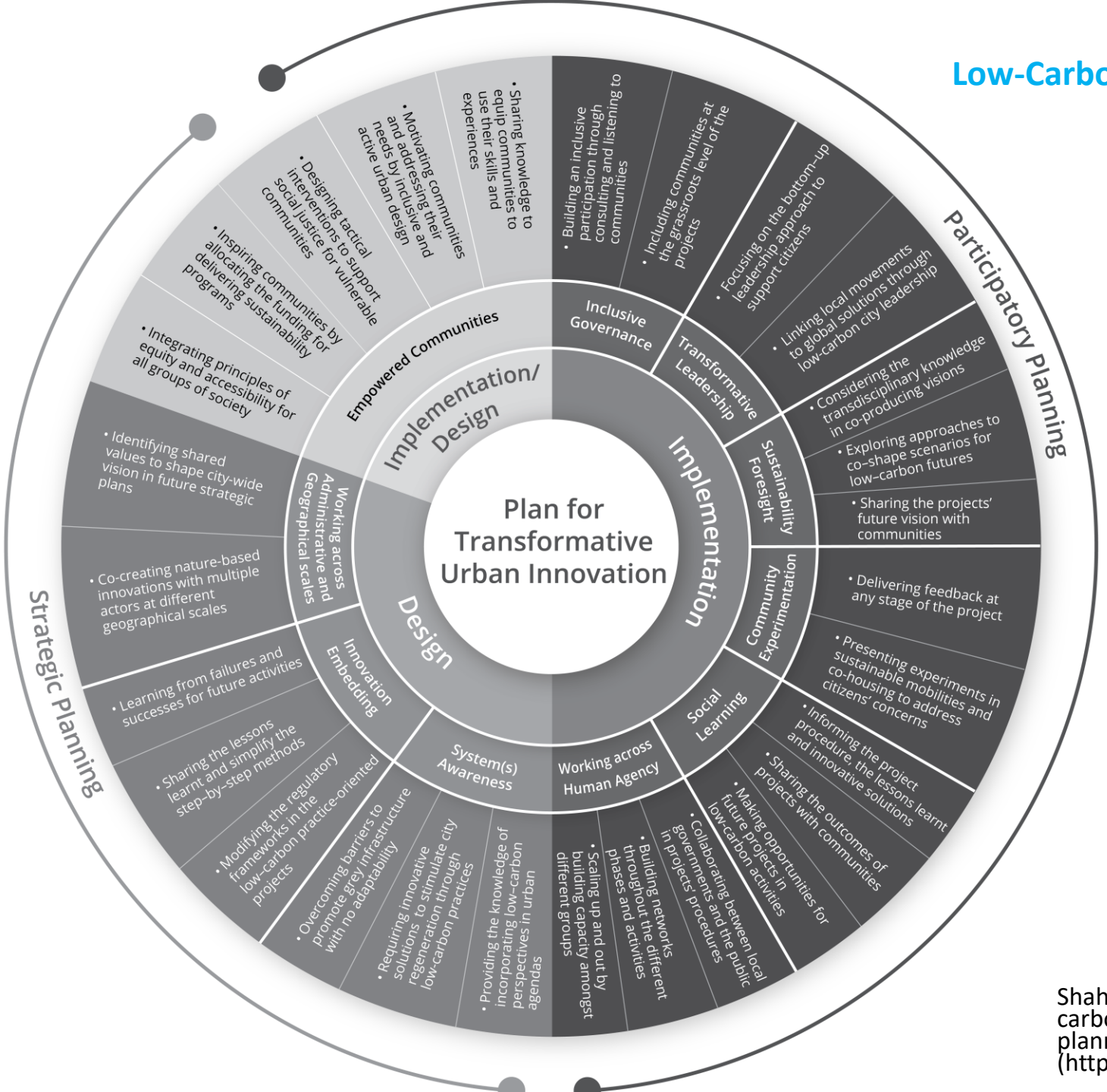
- *Urban planning has a role to play as the institutional platform in which mainstreaming pathways for nature-based solutions can be enabled, evaluated, managed, and realized.*

Frantzeskaki, N., Mahmoud, I.H., and Morello, E., (2022), Nature-based solutions for resilient and thriving cities: opportunities and challenges for planning future cities, in Morello, E., and Mahmoud, I.H., (Eds), Greening Cities, Shaping Cities: Nature-based solutions for Sustainable Urban Planning, Springer, ISBN 978-3-030-89524-2



Lin, B.B., Ossola, A., Ripple, W.J., Alberti, M., Andersson, E., Bai, X., Dobbs, C., Elmqvist, T., Evans, K.L., **Frantzeskaki, N.**, Fuller, R.A., Gaston, K.J., Haase, D., Jim, CY, Konijnendijk, C., Nagendra, H., Niemela, J., McPHearson, T., Moomaw, W.R., Parnell, S., Pataki, D.E., and Tan, P.Y., (2021), Integrating solutions to transform cities for climate change, **The Lancet Planetary Health,** 5, e479-486. https://doi.org/10.1016/S2542-5196(21)00135-2

Message 4: For mainstreaming nature-based solutions, connecting different forms of innovations (settings and processes) is a critical first step.



Low-Carbon Urban Innovations with transformative capacities

Strategic Planning

- Require innovative solutions to stimulate city regeneration through low-carbon practices
- Identify shared values to shape city-wide visions
- Learning from failures and successes for future activities

Participatory Planning

- Include communities at the grassroots level (inclusive governance)
- Build networks throughout the different phases and activities of urban experiments
- Scaling up and out by building capacity amongst different groups

Shahani, F., Pineda-Pinto, M., and **Frantzeskaki, N.,** (2021), Transformative low-carbon urban innovations: operationalizing transformative capacity for urban planning, **AMBIO**, 10.1007/s13280-021-01653-4 (https://doi.org/10.1007/s13280-021-01653-4)

Moglia, M., **Frantzeskaki, N.,** Newton, P., Pineda Pinto, M., Witheridge, J., Cook, S., and Glackin, S., (2021), Accelerating a green recovery of cities: Lessons from a scoping review and a proposal for mission-oriented recovery towards post-pandemic urban resilience, **Developments in the Built Environment**, 7, 100052, https://doi.org/10.1016/j.dibe.2021.100052

CONNECTING MULTIPLE INNOVATIONS

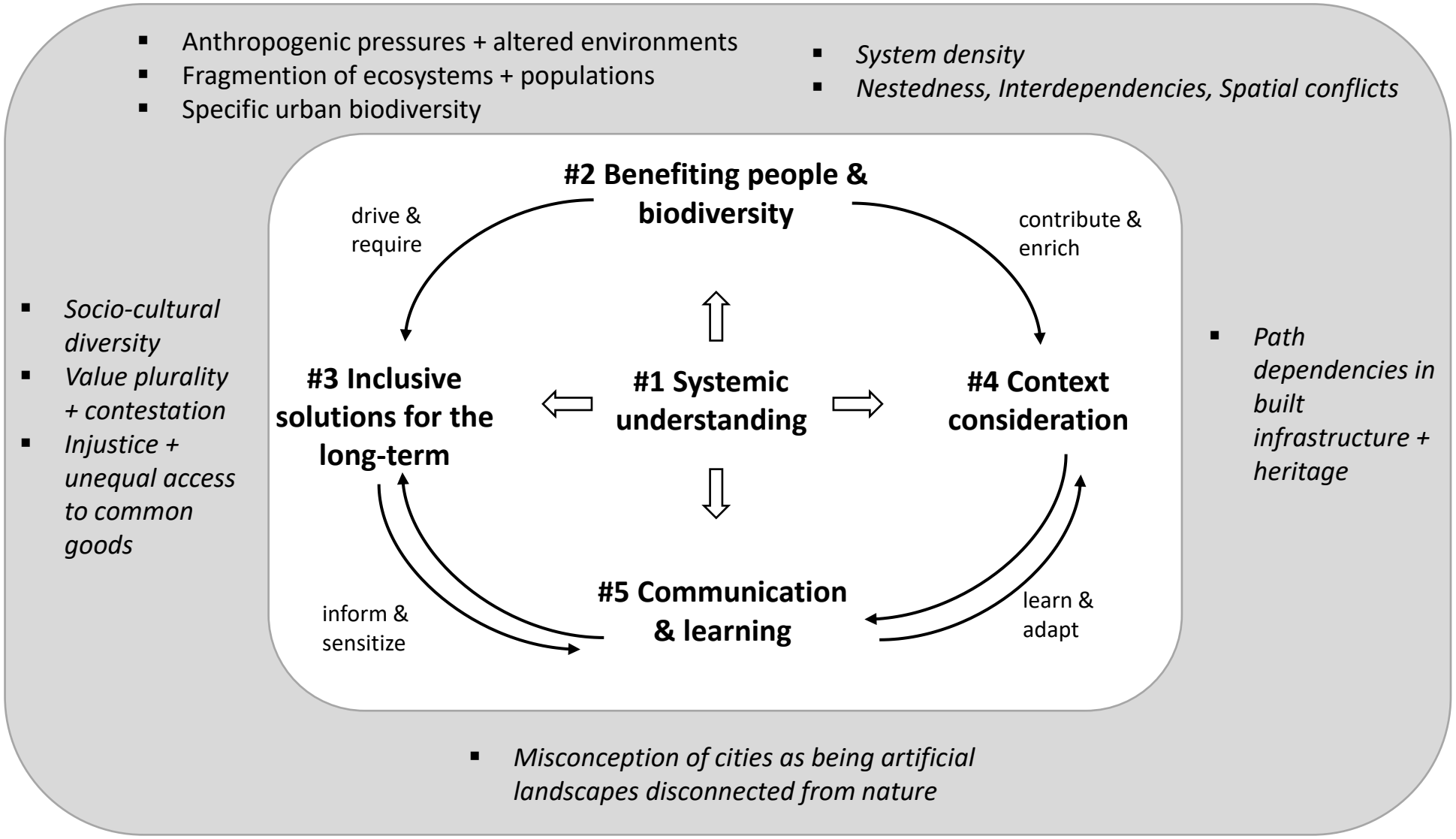
Bringing cities to life, **Bringing life into cities.**

PAPER IN PROGRESS

- ✓ Social innovations > the new social, unusual social relations and ways of knowing
- ✓ Technological innovations > multifunctional technology for NBS
- ✓ Business innovations > new value creation models from business
- ✓ Organisational innovations > burst the silos open, cities as innovators
- ✓ Governance innovations > co-creation and multi-actor experimental planning
- ✓ Knowledge innovations > new forms of knowledge, use of knowledge

Co-funded by the Horizon 2020Framework Programme of the European Union

Message 5: For mainstreaming nature-based solutions, inclusive governance needs to consider aspects of representation, intersectionality, epistemology (knowledge systems) and spatiality.



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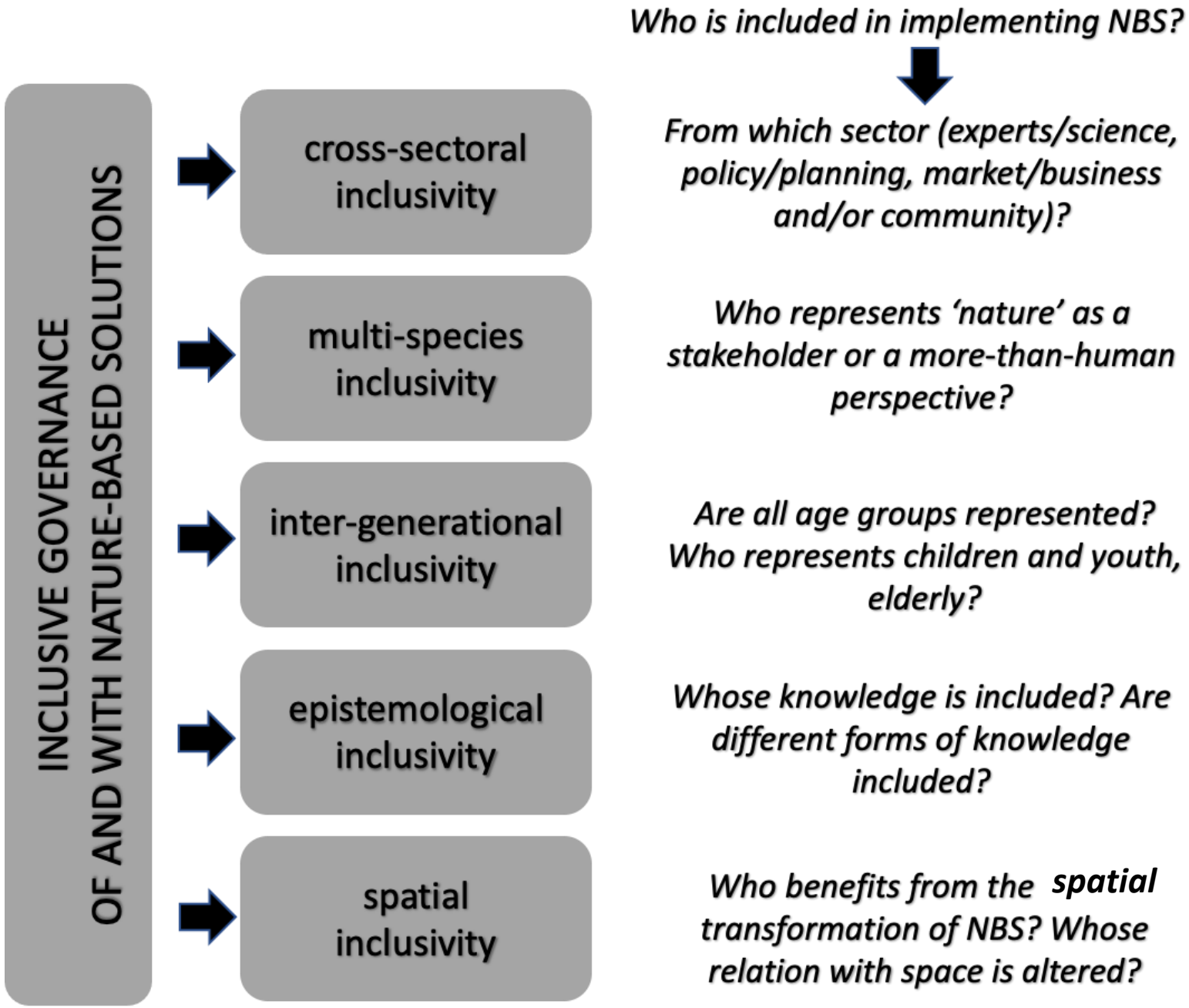
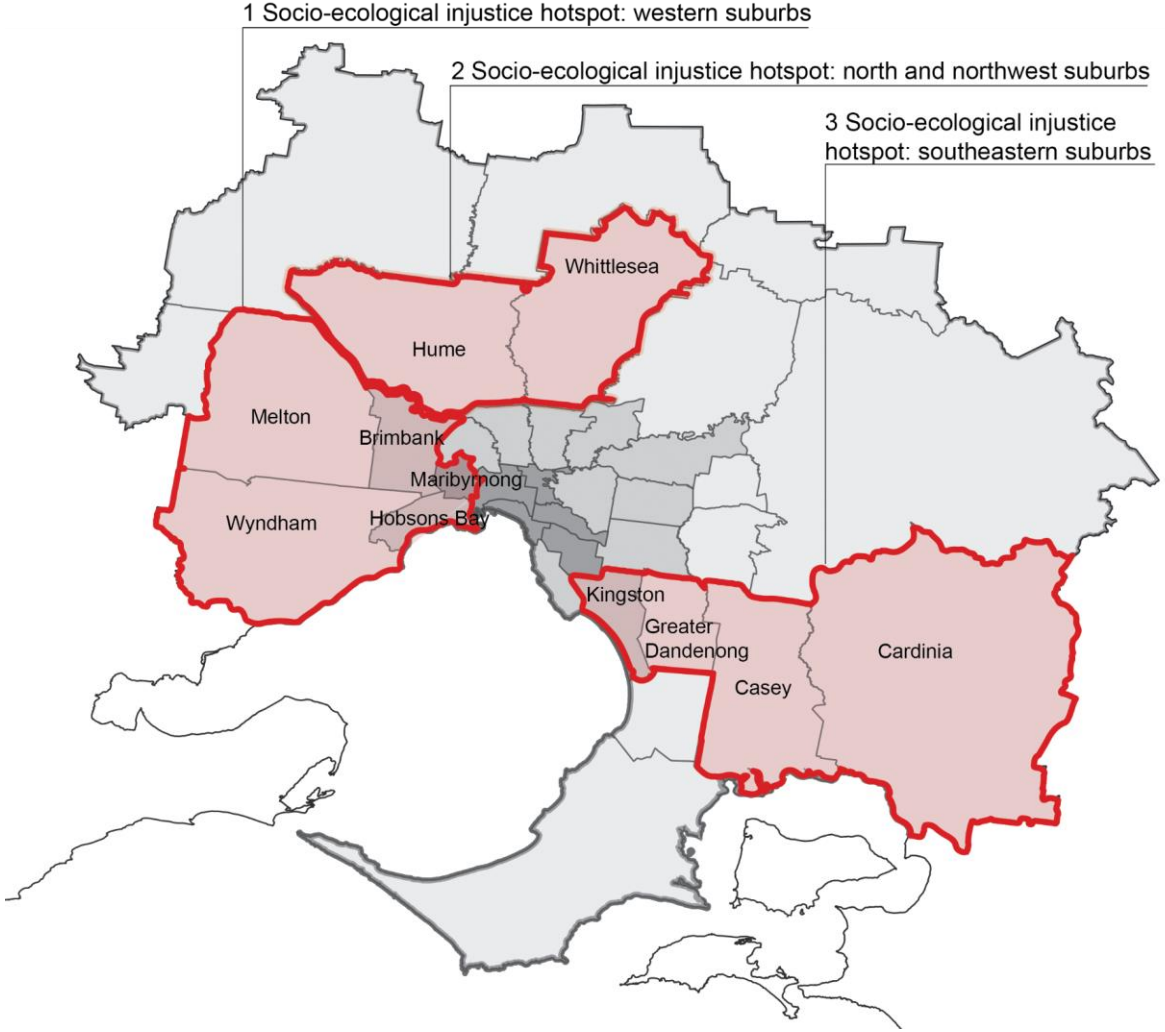


Frantzeskaki., N.. Wijsman, K., Adams, C., Kabisch, N., et al (2022), Governance of and with nature-based solutions in cities, in Handbook of Nature-Based Solutions in Cities, McPHearson, T., Frantzeskaki, N., and Kabisch, N., Edgar Elgar, Forthcoming.



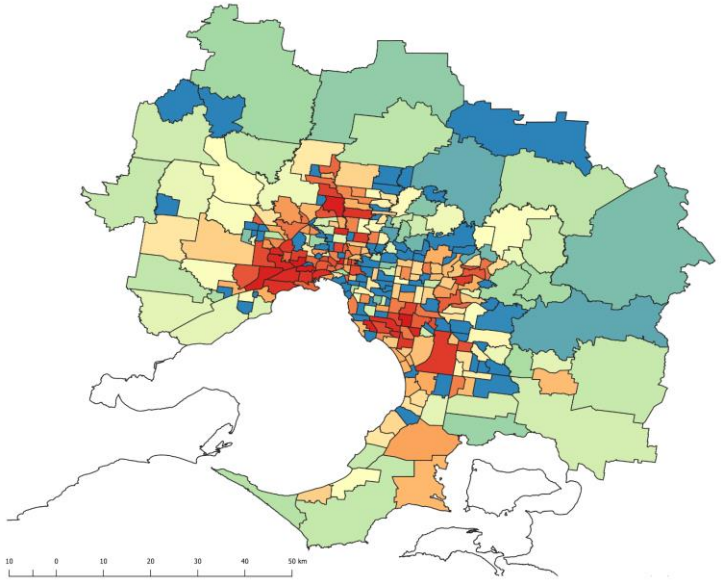
Critical social-ecological injustice hotspots in the great Metropolitan Melbourne area. Hotspots show high distribution of impacts, low valuation of social-ecological systems, and low rates of representation of nature.

Future applications:

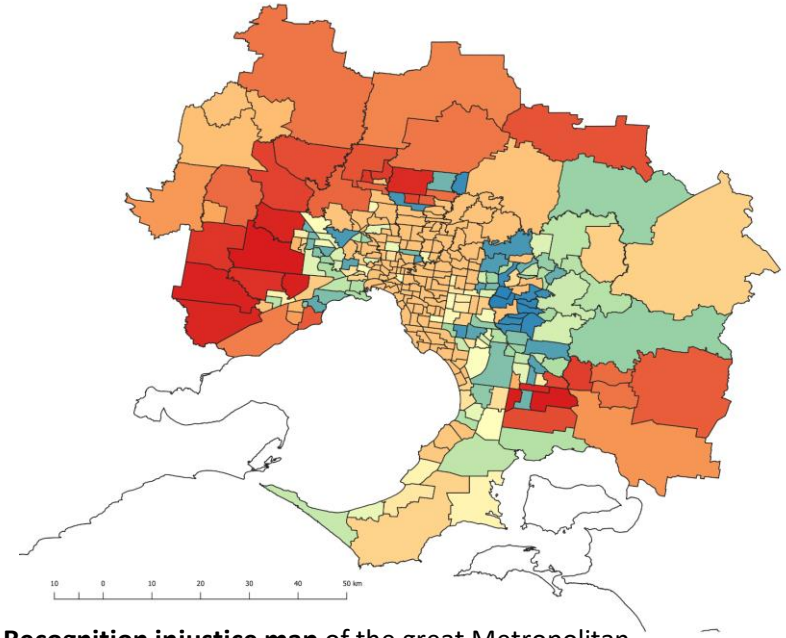
- Identify types of interventions including nature-based solutions and governance approaches tailored to the different hotspots
- Establish a typology of hotspots that can make it applicable as a diagnostic to other metropolitan cities
- Identify salient issues and areas of opportunity through a justice lens for nature-based solutions uptake and mainstreaming

"a way to identify 'injustices-in-waiting' as Schaeffer Caniglia et al (2018:4) conceptualise, by revealing the deep rooted and relational dimensions of injustice in cities" (Pineda-Pinto et al 2021)

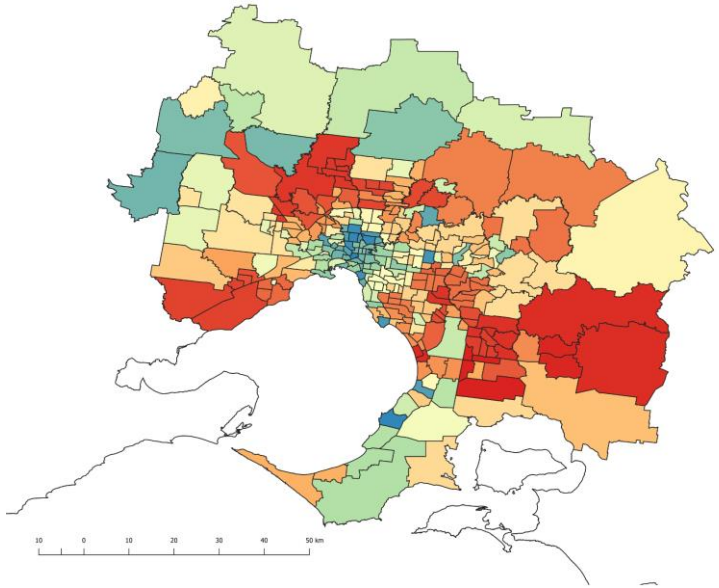
Pineda Pinto, M.P., Nygaard, C.A., Chandrabose, M., Frantzeskaki, N., (2021), Mapping socio-ecological injustice in cities: An innovative systematic methodology for planning just cities, **Land Use Policy**, 104 (2021) 105361, https://doi.org/10.1016/j.landusepol.2021.105361



Distributional injustice map of the great Metropolitan Melbourne area: spatial representation shows in red the areas where maldistribution is very high, meaning that distributional injustice is greater



Recognition injustice map of the great Metropolitan Melbourne area: spatial representation shows in red the areas where social-ecological recognition is very low, meaning that injustice in terms of recognition, is greater.



Participation injustice map of the great Metropolitan Melbourne area: spatial representation shows in red the areas where participation is very low, meaning that due to a lack of representation of nature, injustice is greater.

- **Big picture:** These socio-ecological injustice hotspots are areas with evidence of a high number of environmental impacts, low levels of recognition, and low levels of participation.
- **History matters:** These suburbs tend to have a history of industrial land uses, which have either left a trace of contamination (brownfields), or, are active polluting land-uses.
- **Path dependency:** Additionally, these areas show little to no recognition through a continuing exploitative use of the land, with projected industrial land expansion, urbanisation, and other infrastructure projects that will expectedly fragment and destroy the already sensitive ecosystems.

Pineda Pinto, M.P., Nygaard, C.A., Chandrabose, M., Frantzeskaki, N., (2021), Mapping socio-ecological injustice in cities: An innovative systematic methodology for planning just cities, **Land Use Policy**, 104 (2021) 105361, https://doi.org/10.1016/j.landusepol.2021.105361

Message 6: For mainstreaming nature-based solutions, a deepening and broadening of the evidence base is required at national and transnational/global scales.

Mainstreaming nature-based solutions for urban climate resilience

- Mainstreaming systemic solutions like nature-based solutions need to be about the process not just the outcome or goal > **inclusive, innovative, adaptive transitions required**
- Efforts to be put in **divesting and destabilization of major blocking regimes** and at the same time, strengthening of climate science and policy regimes > bold targets to be followed by bolder implementation on the ground
- Cities and regions to lead the way to achieve Paris target and SDGs > **regulatory and financial equipping of cities to be driving actors of the change we need**

- Lessons and proposals about mainstreaming nature-based solutions for urban climate resilience are also applicable as guides to pave the larger systemic change required:
  - **(a) Strengthen the evidence base** – connect local in-depth knowledge to global overview and synthesis
  - **(b) Bridge disciplinary silos** to improve design, planning, governance, implementation – whole-knowledge-system-approach
  - **(c) Co-produce and share knowledge globally** – democratize NBS knowledge

Frantzeskaki, N., and McPhearson, T., (2021), Mainstreaming nature-based solutions for urban climate resilience, Bioscience, https://doi.org/10.1093/biosci/biab105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