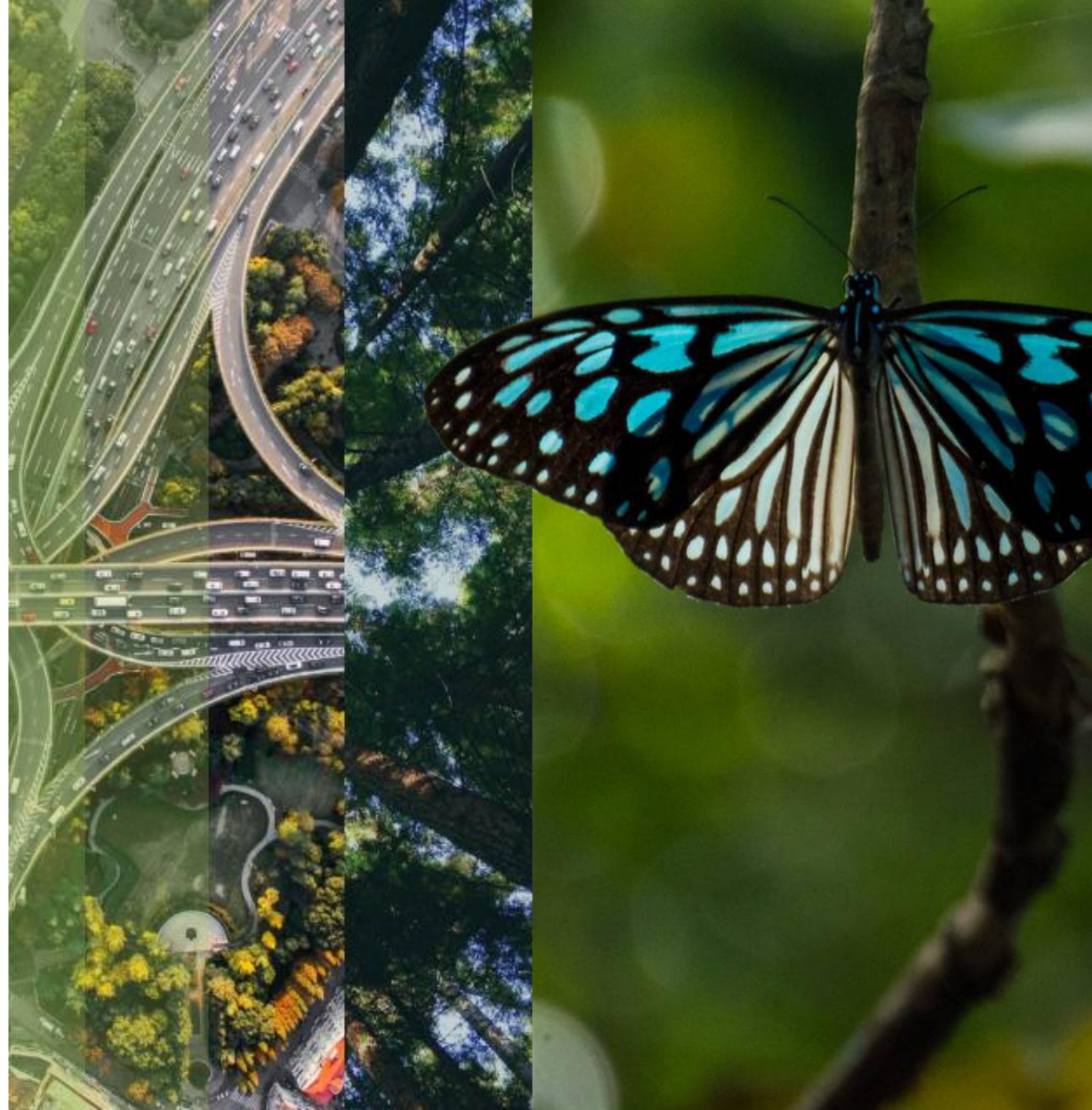


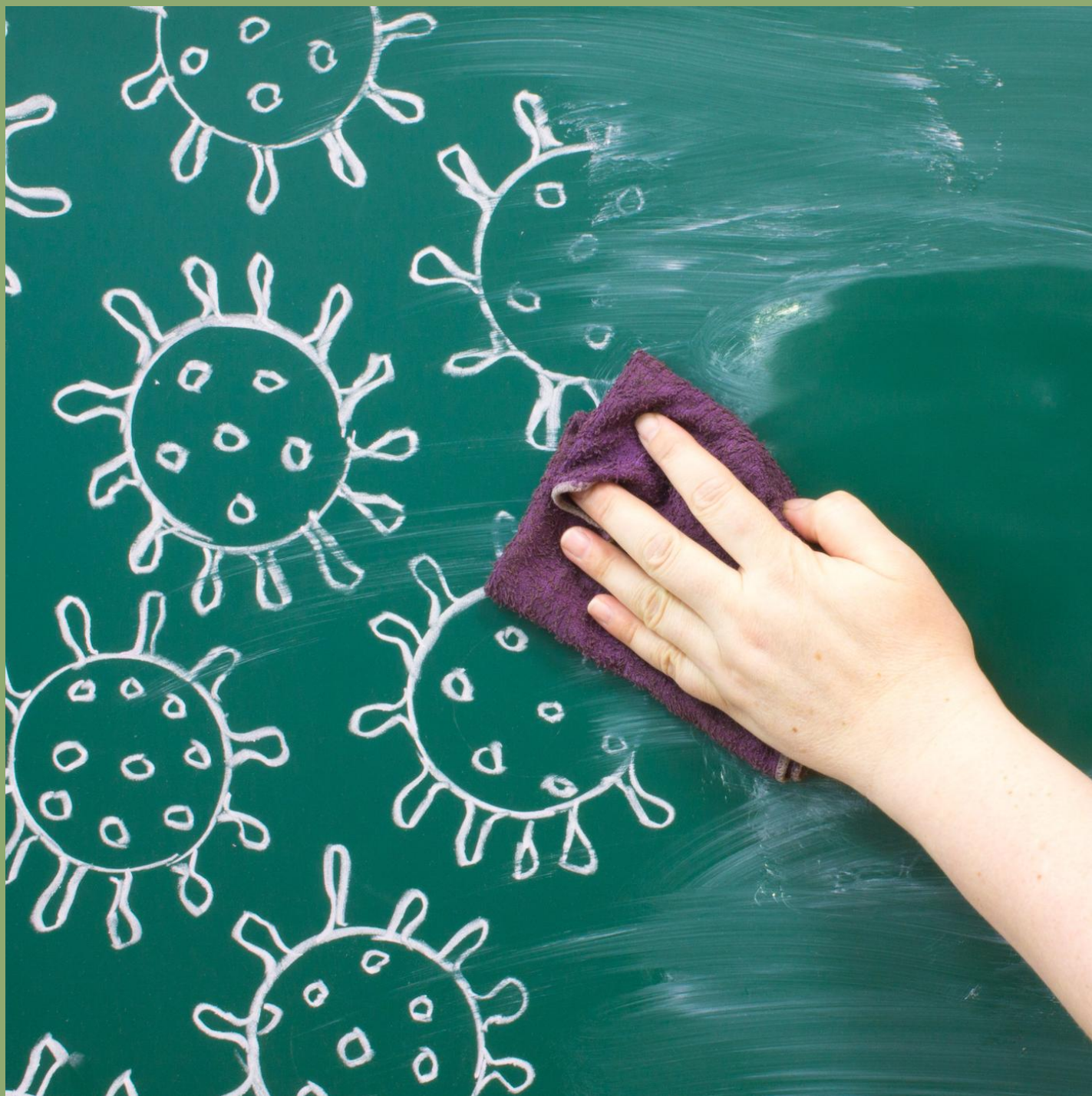
PANDEMIC- PROOF CITIES

A multidisciplinary
approach for systemic
impacts and One Health

Dr. Emilia Rönkkö

*Senior Researcher & Project Manager,
University of Eastern Finland, Faculty of
Health Sciences*





Background

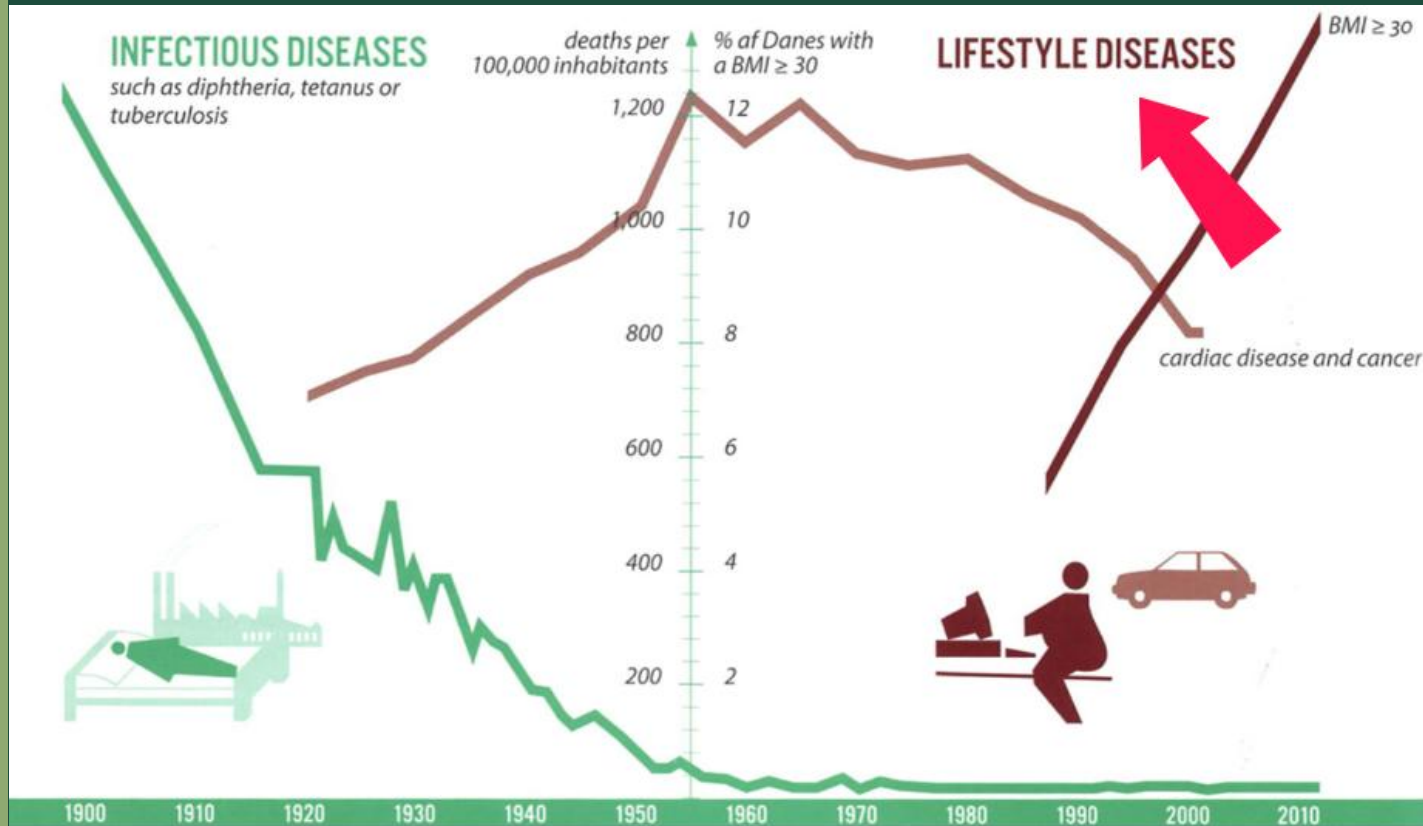
"Resistant Cities: Urban Planning as Means for Pandemic Prevention" research project (2021-2024), University of Oulu

Challenge: Infectious diseases are not adequately taken into account in urban planning, even though global urbanization continues and many past and recent pandemics have originated and spread in cities.

How will the next health crisis be managed so that damages to different sectors of society are as small as possible?

Background

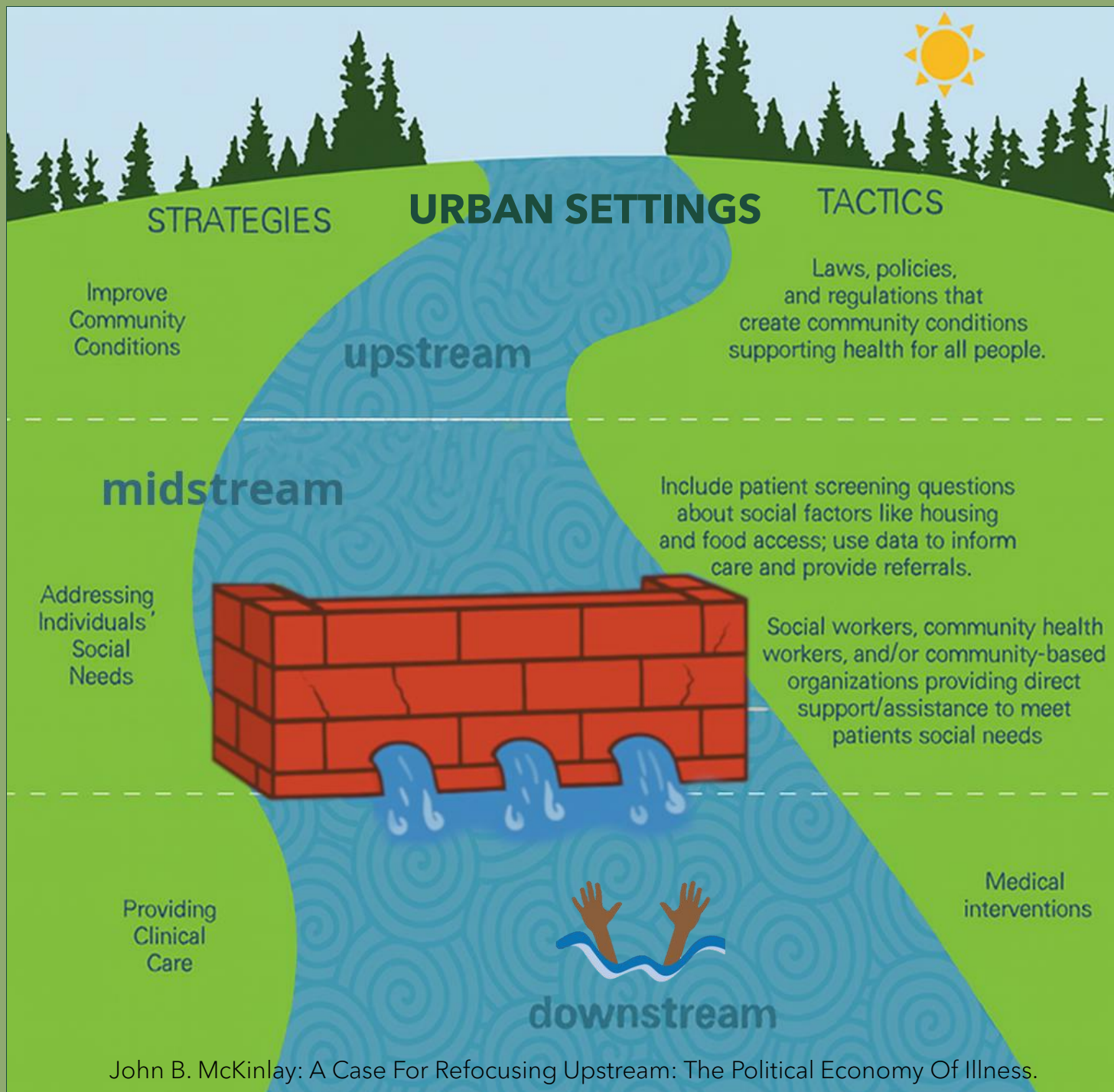
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Gehl, J. & Svarre, B. (2013). How to Study Public Life. Springer



John B. McKinlay: A Case For Refocusing Upstream: The Political Economy Of Illness.

1. "Upstream" STRATEGIC PLANNING
(preparedness)

Urban planning is a powerful tool for upstream health interventions - a "spatial medicine"

2. "Midstream" TACTICAL PLANNING
(resistance)

Welfare system as barrier or safety net in the flow of health/sickness

3. "Downstream" OPERATIVE PLANNING
(responses)

SYNOPTIC LENS FOR ONE HEALTH

("4D"-multidisciplinary approach)

LAND USE PATTERNS

("Urban backbone")



EXPOSURE PATTERNS

("Urban (sur)face")



("Urban heartbeat")

ACTIVITY PATTERNS



("Urban soul")

SOCIAL PATTERNS

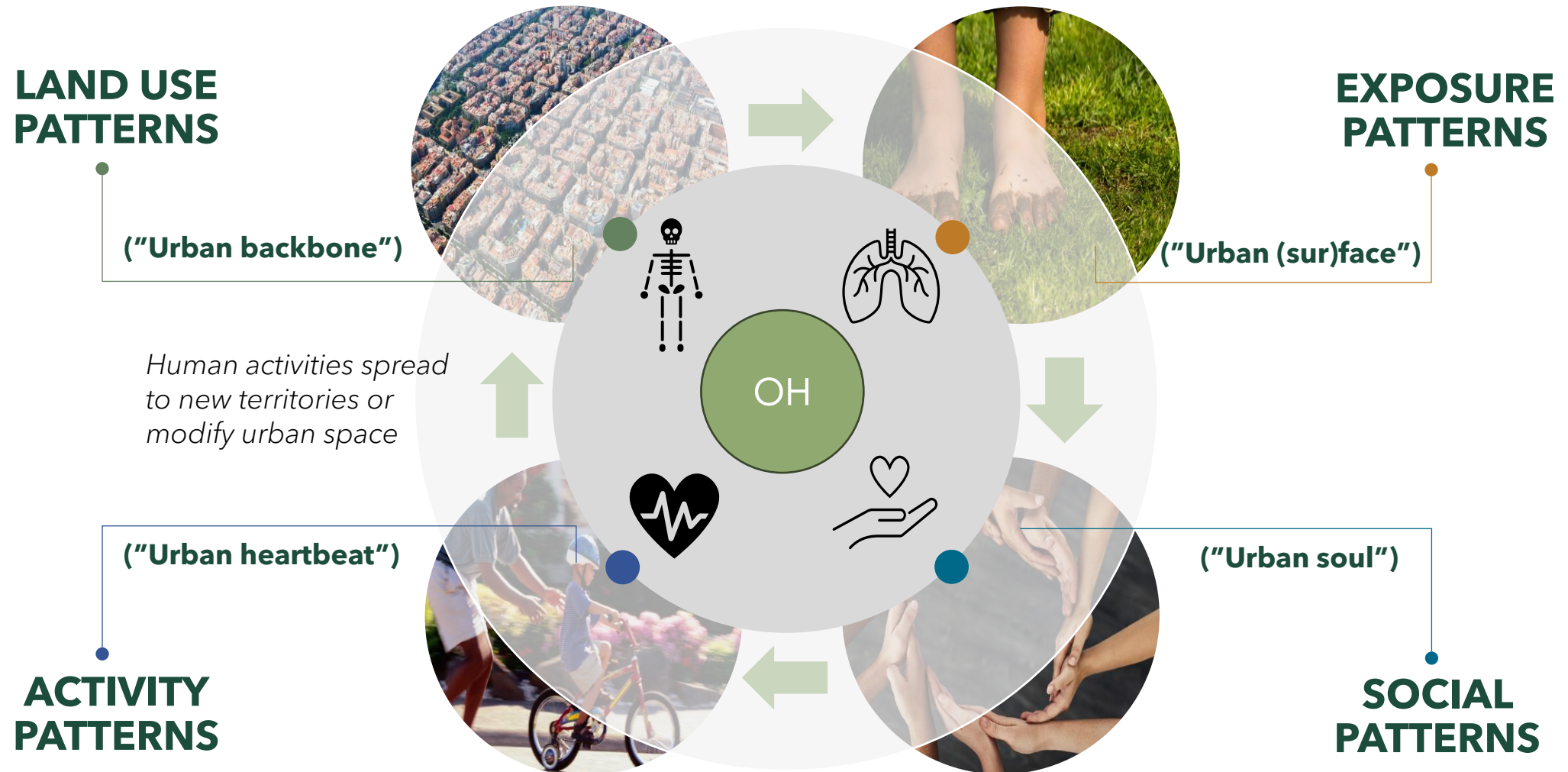


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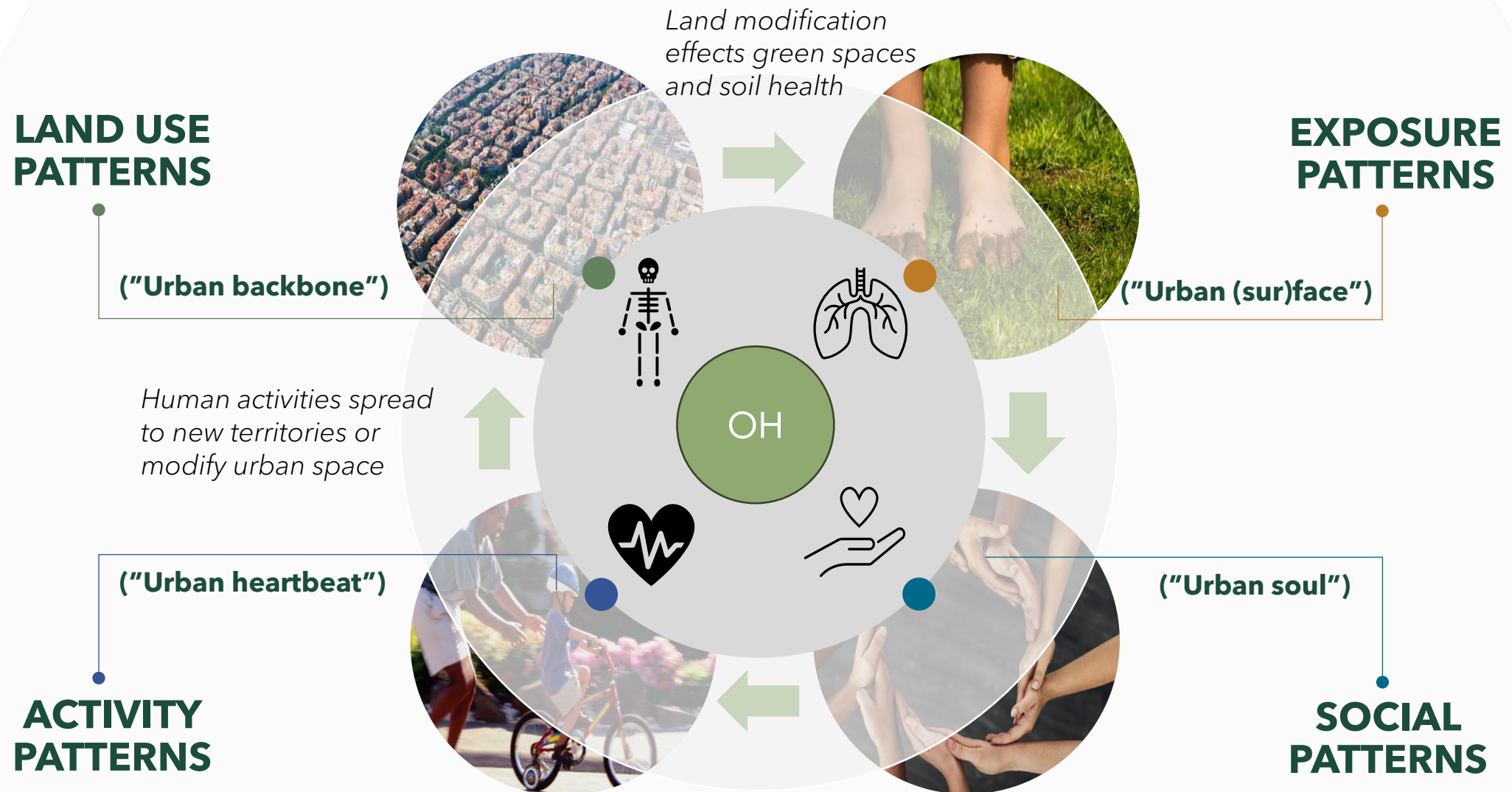
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("4D"-multidisciplinary approach)



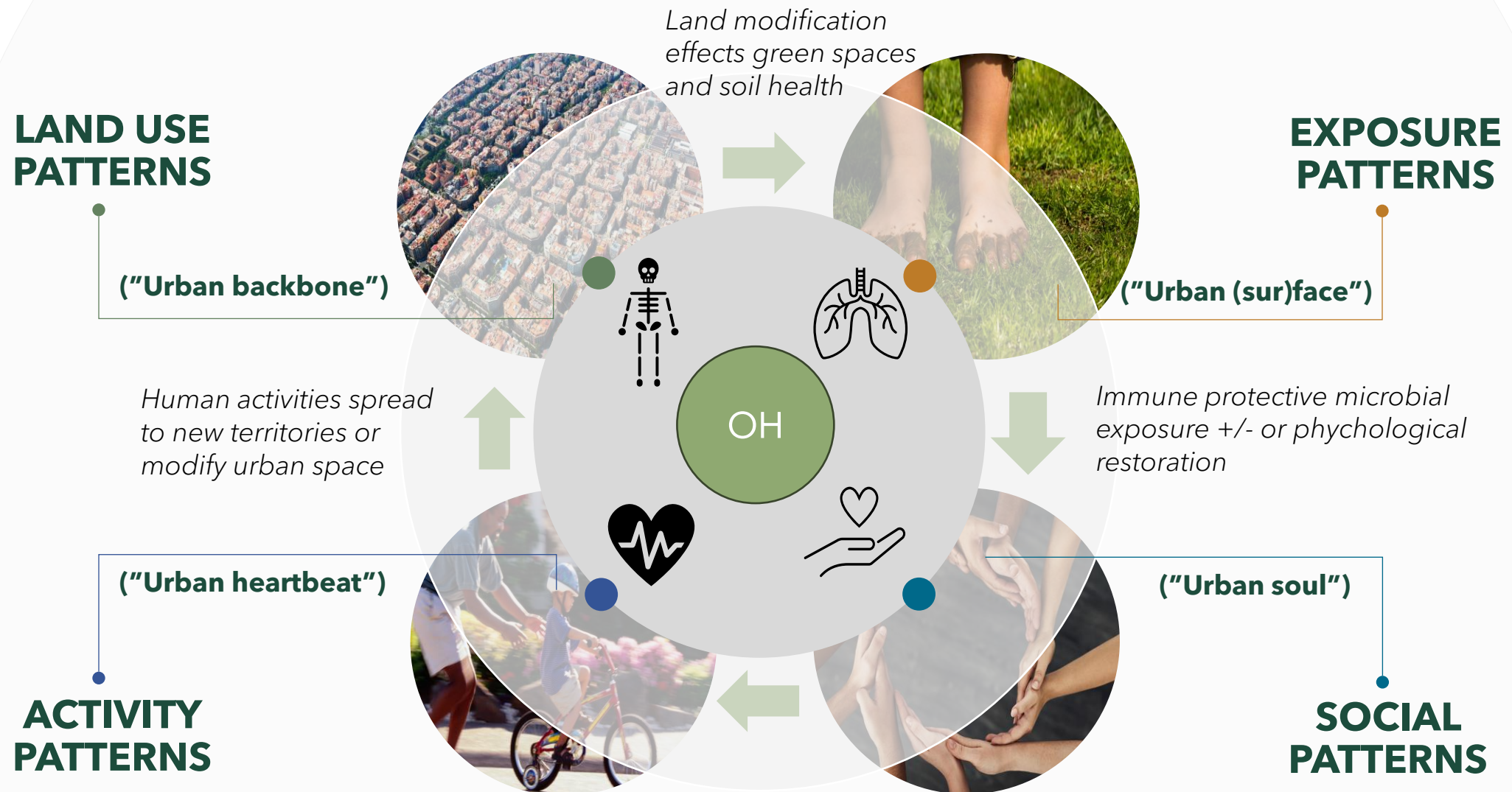
SYNOPTIC LENS FOR ONE HEALTH

("4D"-multidisciplinary approach)



SYNOPTIC LENS FOR ONE HEALTH

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SYNOPTIC LENS FOR ONE HEALTH

("4D"-multidisciplinary approach)

LAND USE PATTERNS

("Urban backbone")

Human activities spread to new territories or modify urban space

("Urban heartbeat")

ACTIVITY PATTERNS

Land modification effects green spaces and soil health

EXPOSURE PATTERNS

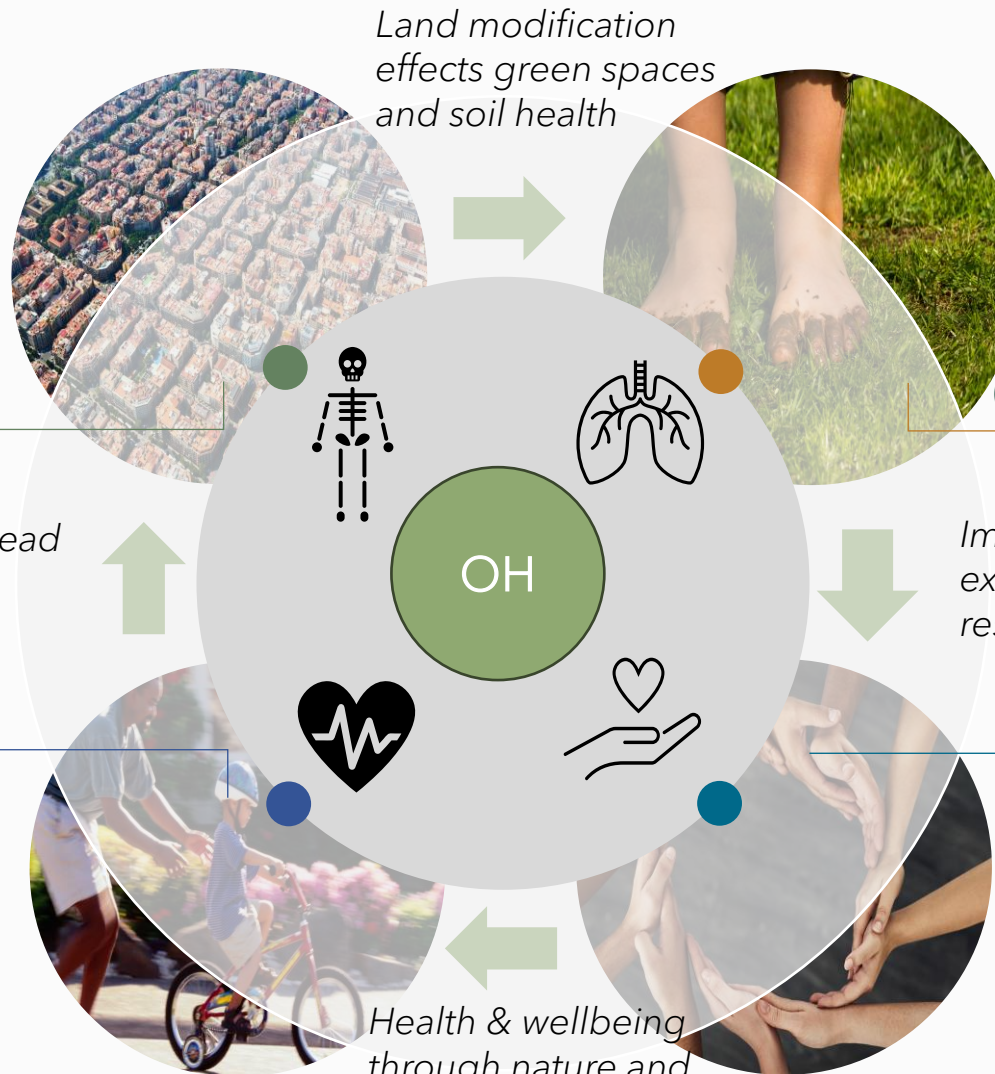
("Urban (sur)face")

Immune protective microbial exposure +/- or psychological restoration

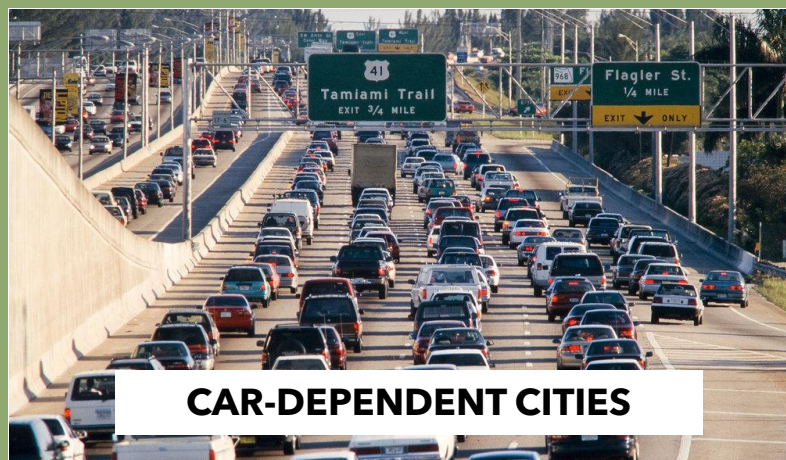
("Urban soul")

SOCIAL PATTERNS

Health & wellbeing through nature and social contacts



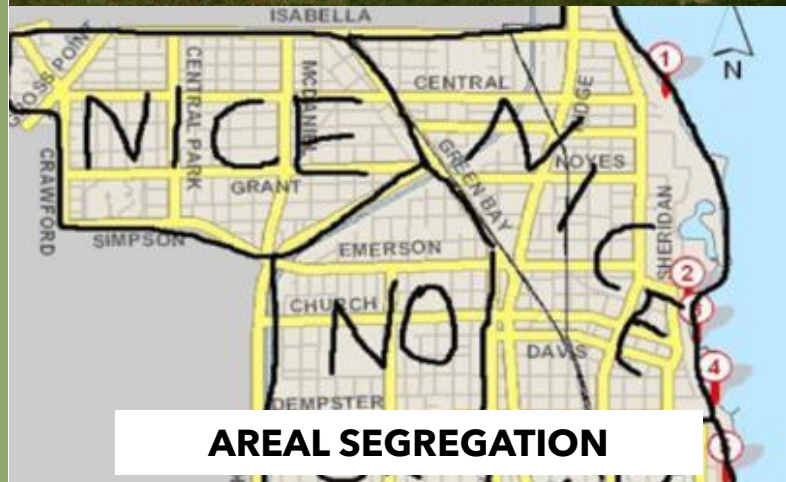
PLANNED VULNERABILITIES IN THE ERA OF POLYCRISES?



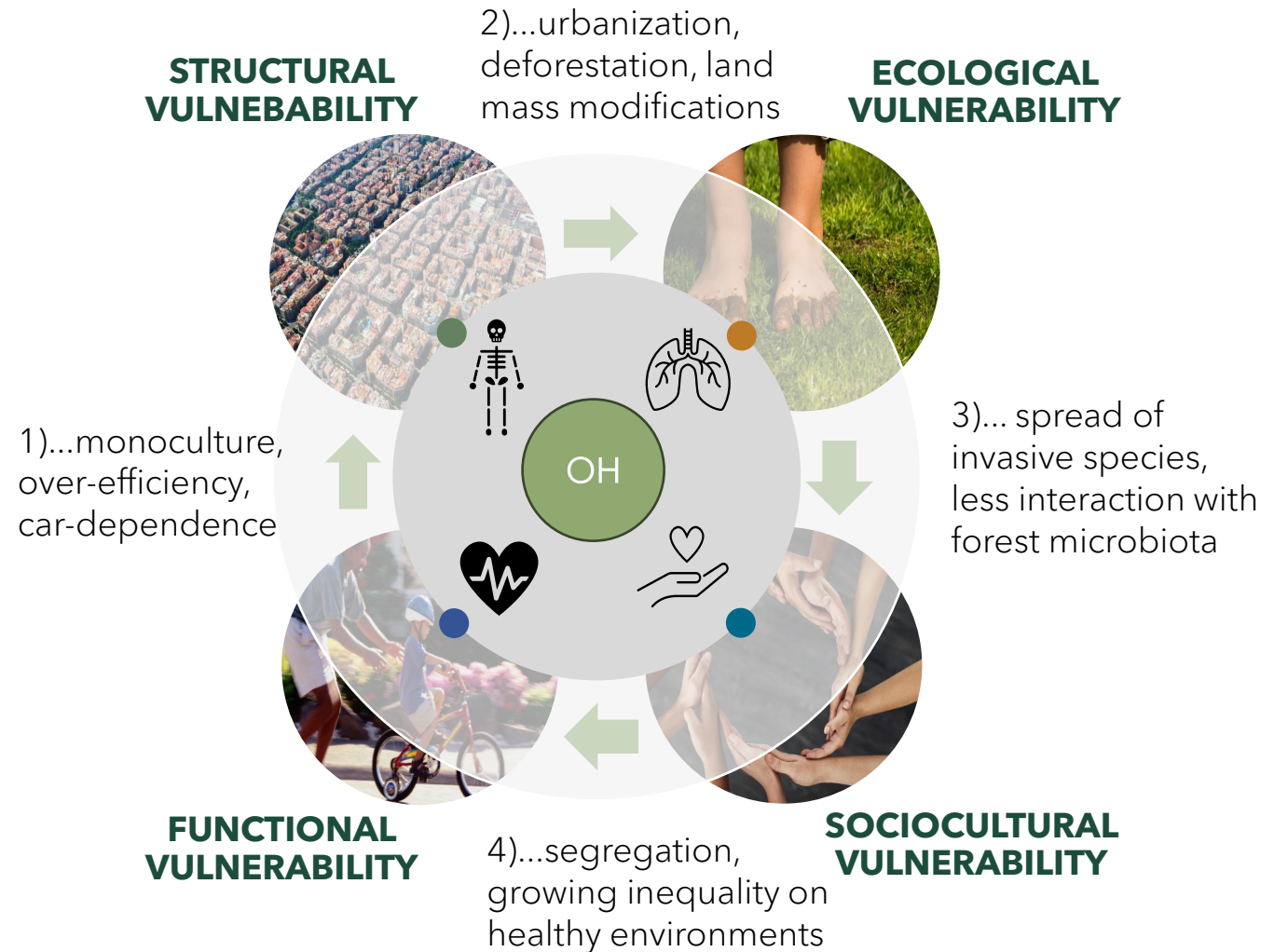
CAR-DEPENDENT CITIES



STORM WATER BASINS



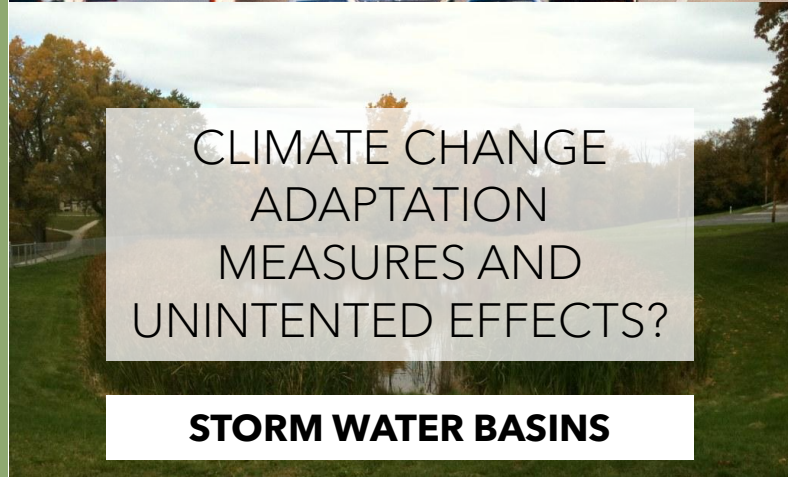
AREAL SEGREGATION



PLANNED VULNERABILITIES IN THE ERA OF POLYCRISES?



CAR-DEPENDENT CITIES



CLIMATE CHANGE
ADAPTATION
MEASURES AND
UNINTENDED EFFECTS?

STORM WATER BASINS



AREAL SEGREGATION

STRUCTURAL VULNERABILITY

2)...urbanization,
deforestation, land
mass modifications

ECOLOGICAL VULNERABILITY

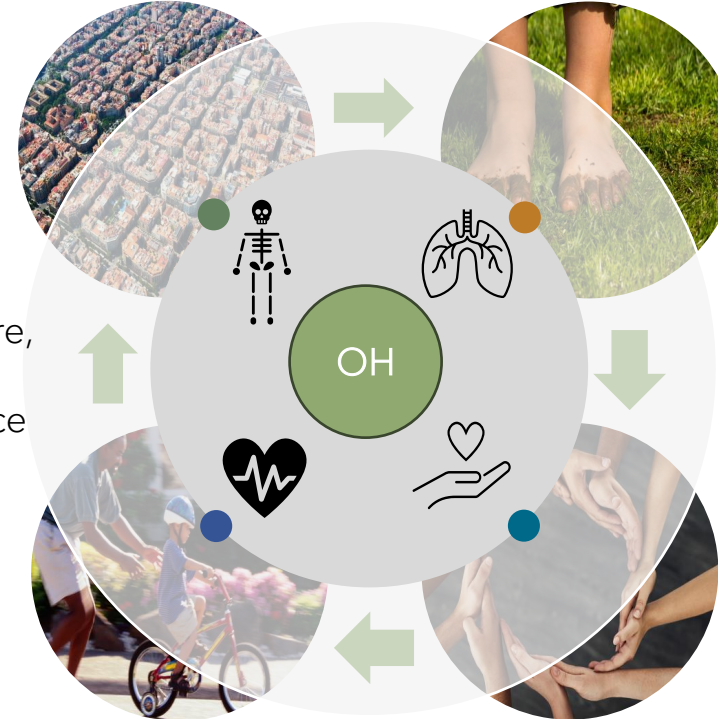
1)...monoculture,
over-efficiency,
car-dependence

3)... spread of
invasive species,
less interaction with
forest microbiota

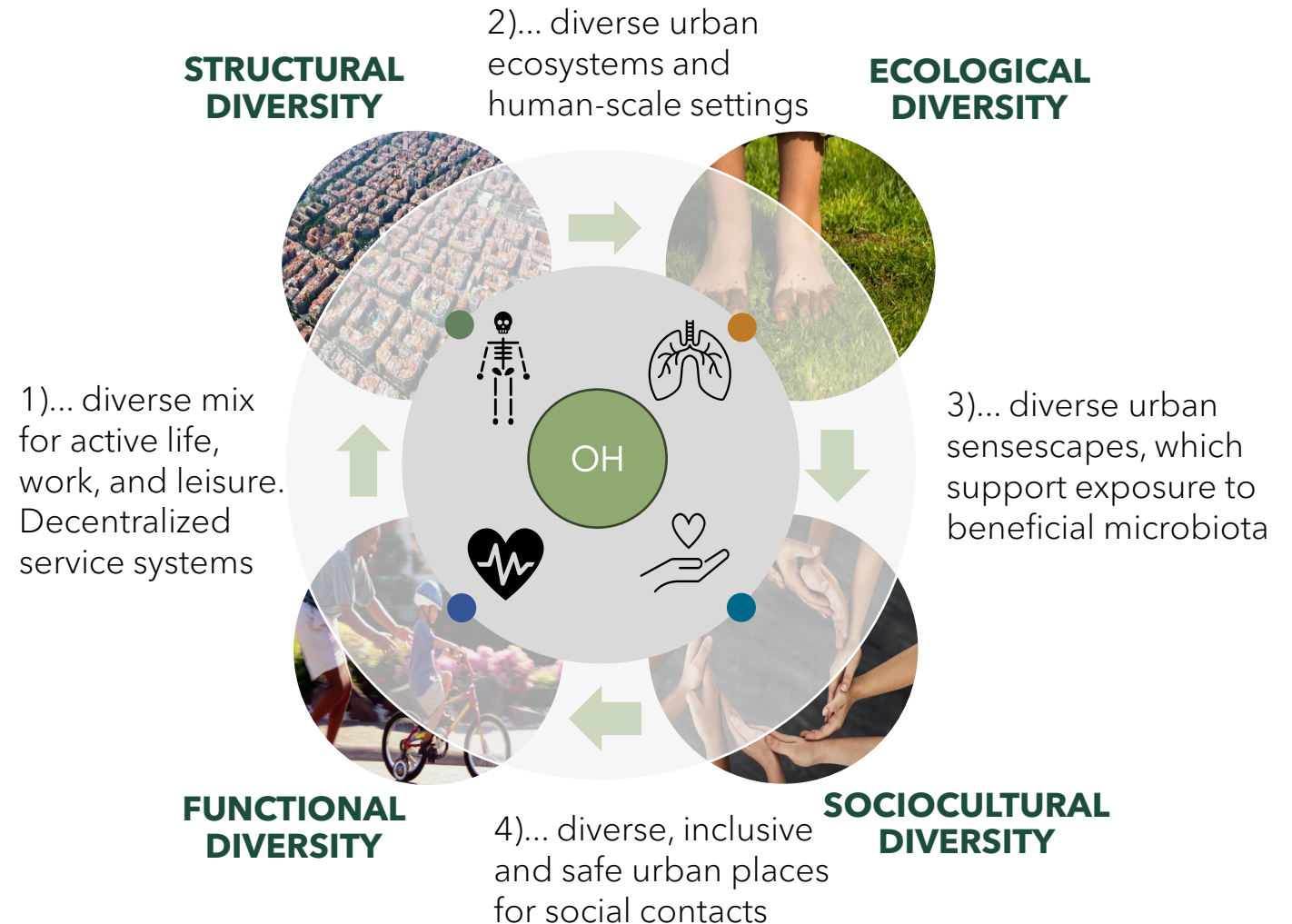
FUNCTIONAL VULNERABILITY

4)...segregation,
growing inequality on
healthy environments

SOCIOCULTURAL VULNERABILITY



RESILIENCE BUILDING - DESIGNING FOR DIVERSITY



EVIDENCING URBAN POLICY

SCIENTIFIC KNOWLEDGE
TO PLANNING PRACTICE



TOOLS AND TACTICS
"PLANNER'S TOOLBOX"



IMPACTFUL SOLUTIONS;
FEEDBACK & LEARNING



EVIDENCE

CO-DESIGN

REAL-LIFE
SOLUTIONS

EVALUATION /
MONITORING TOOLS

EVIDENCING URBAN POLICY

How a radical experiment to bring a forest into a preschool transformed children's health

In Finland, kindergartens are exposing children to more mud, wild plants and moss - and finding changes to their health that show how crucial biodiversity is to wellbeing

Read more: [The nature extinction crisis is mirrored by one in our own bodies. Both have huge implications for health](#)

By [Phoebe Weston](#). Photographs by Liisa Takala



SCIENTIFIC KNOWLEDGE
TO PLANNING PRACTICE



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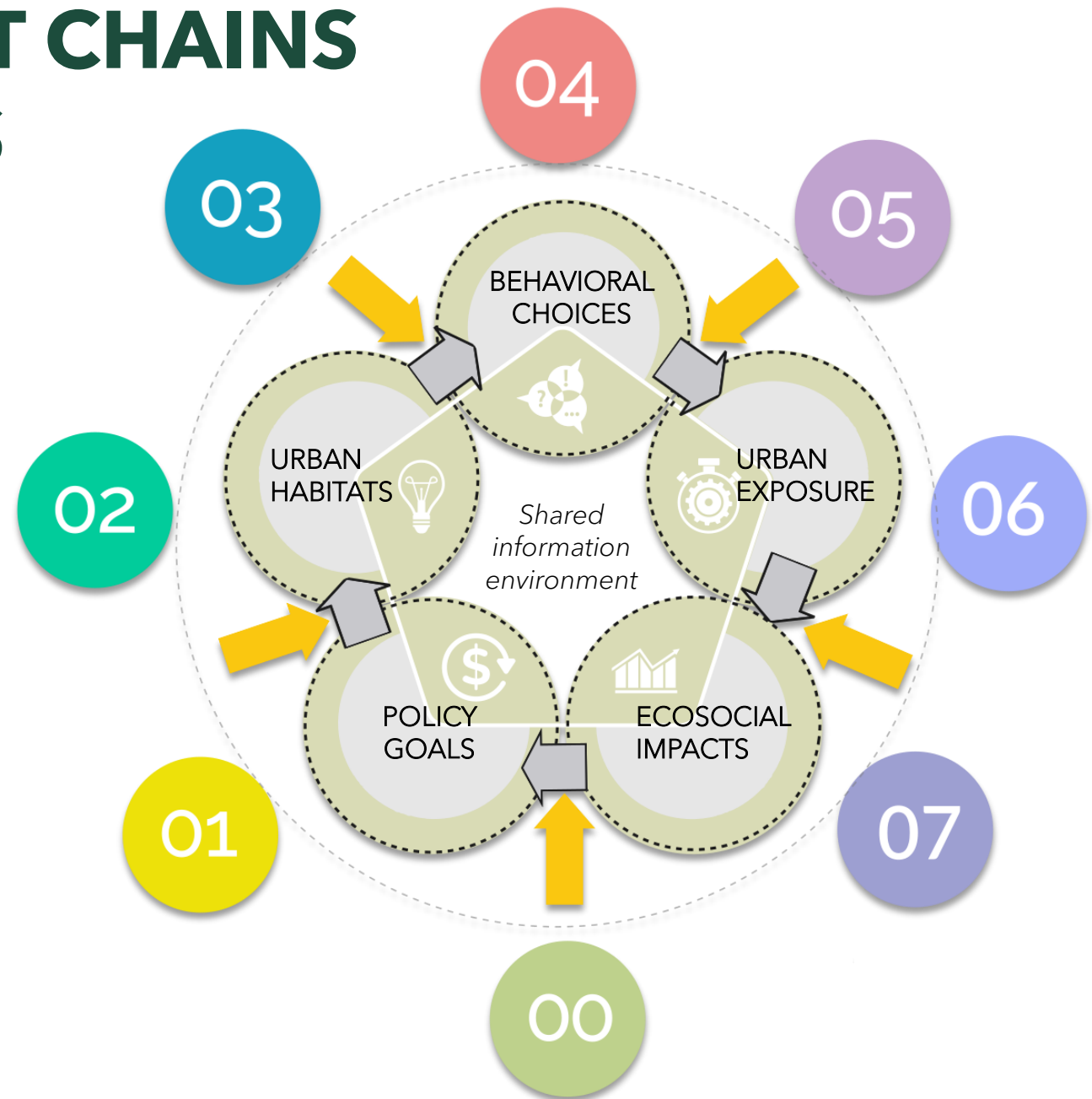
EVALUATION /
MONITORING TOOLS

ONE HEALTH IMPACT CHAINS & LEVERAGE POINTS

Identifying potential **leverage points** that will push researchers, policymakers, and planners towards shared one health policies and coordinated, evidence-based interventions

RELATED FIELDS OF SCIENCE

- Policy research
- Design/Planning research
- Social Sciences
- Built Environment research
- Behavioural Sciences
- Environmental / Public Health research
- Medical research
- Evaluation research



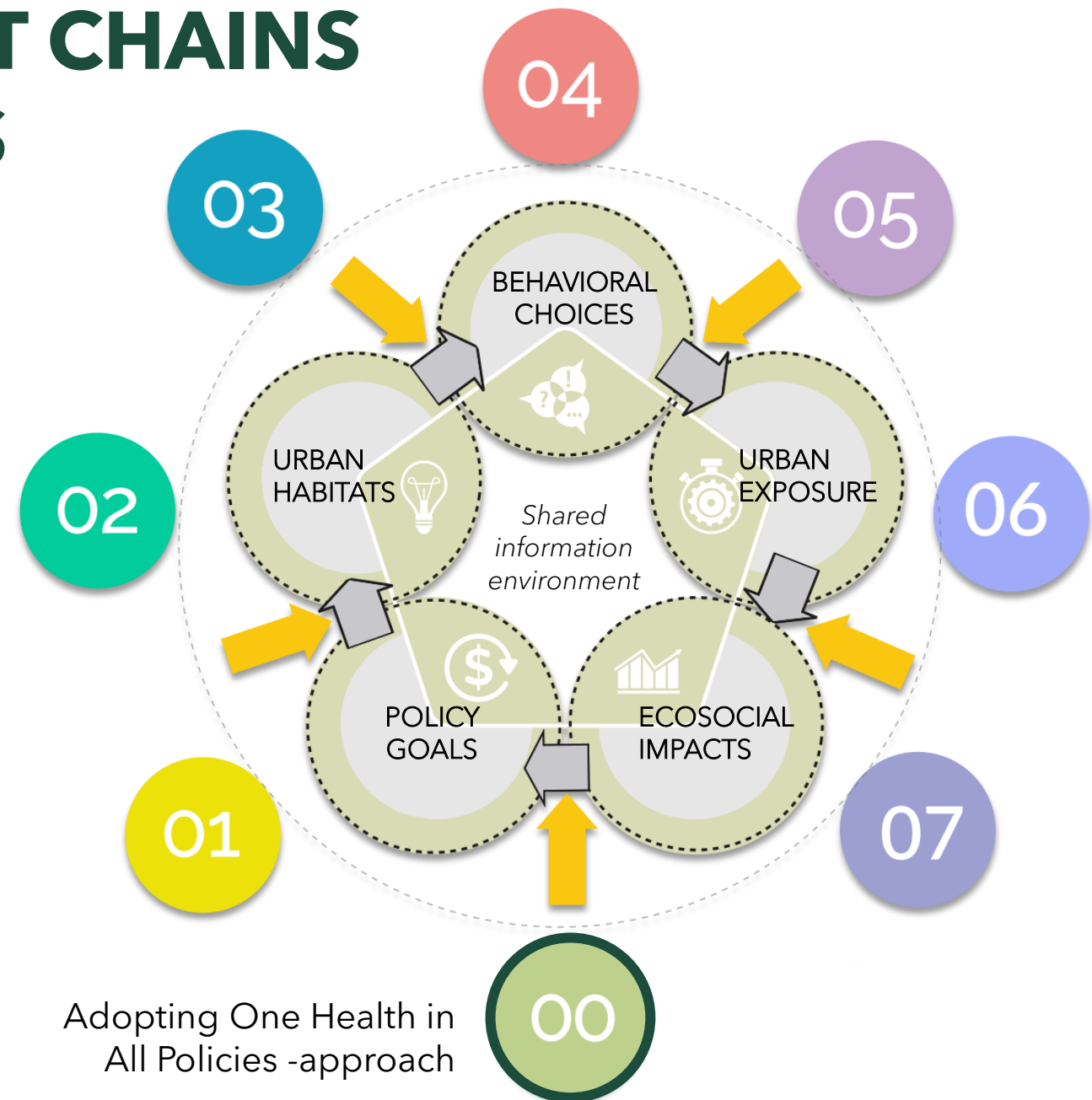
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Rönkkö et al. (2025), *Towards One Health impact assessments in urban planning.*



ONE HEALTH IMPACT CHAINS & LEVERAGE POINTS

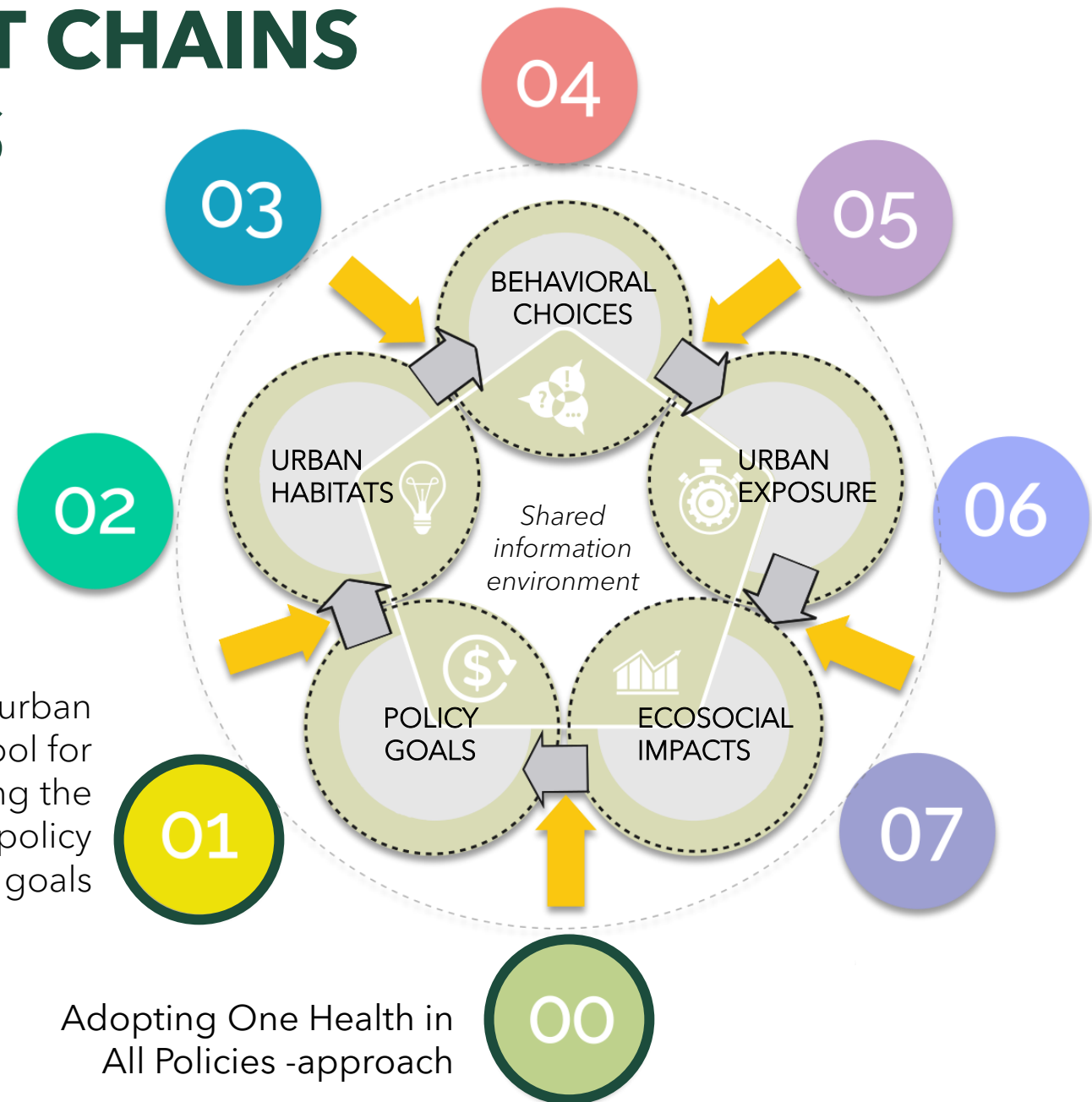
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Seeing urban planning as a tool for implementing the One Health policy goals

Adopting One Health in All Policies -approach



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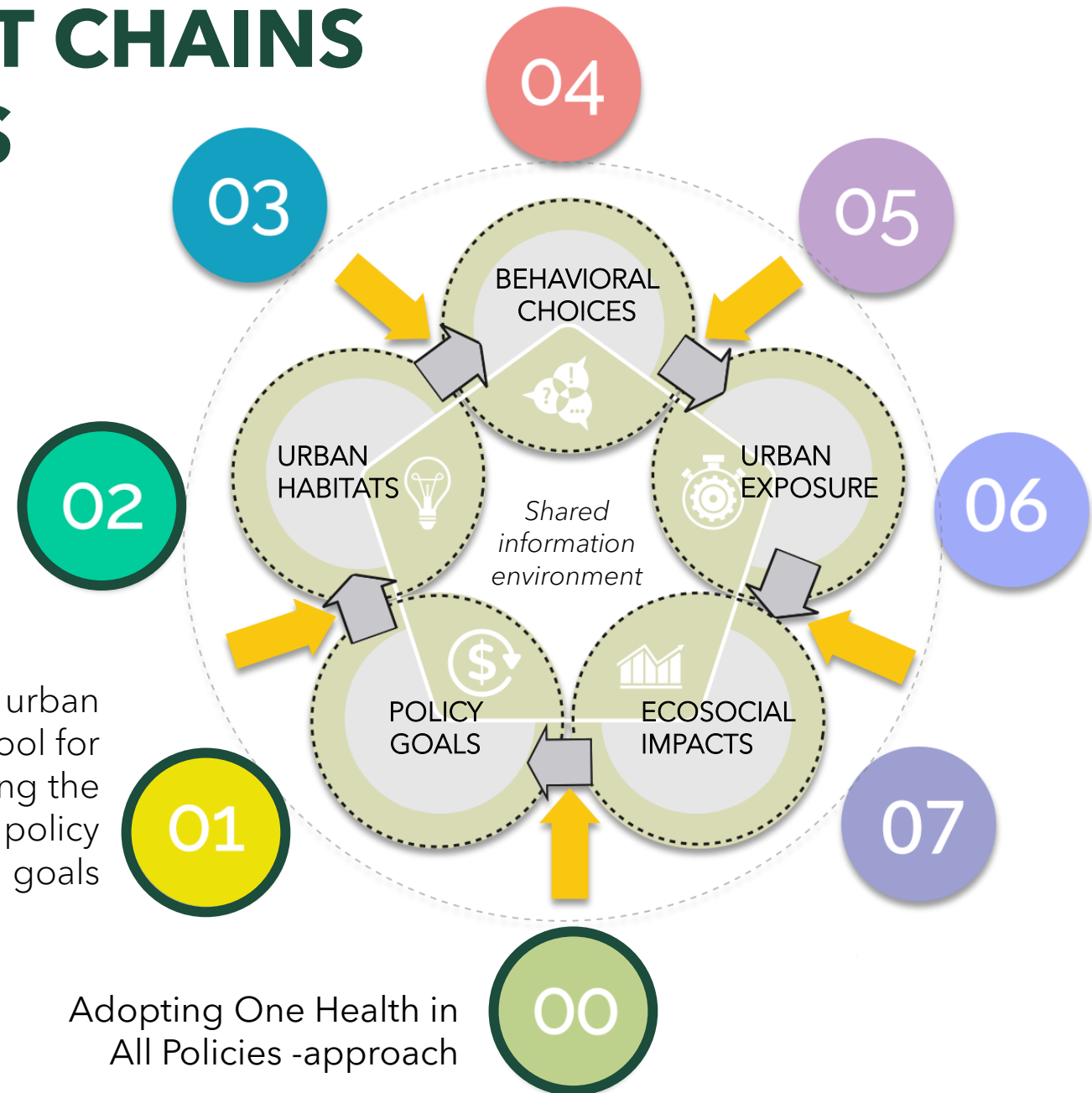
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Designing for diversity

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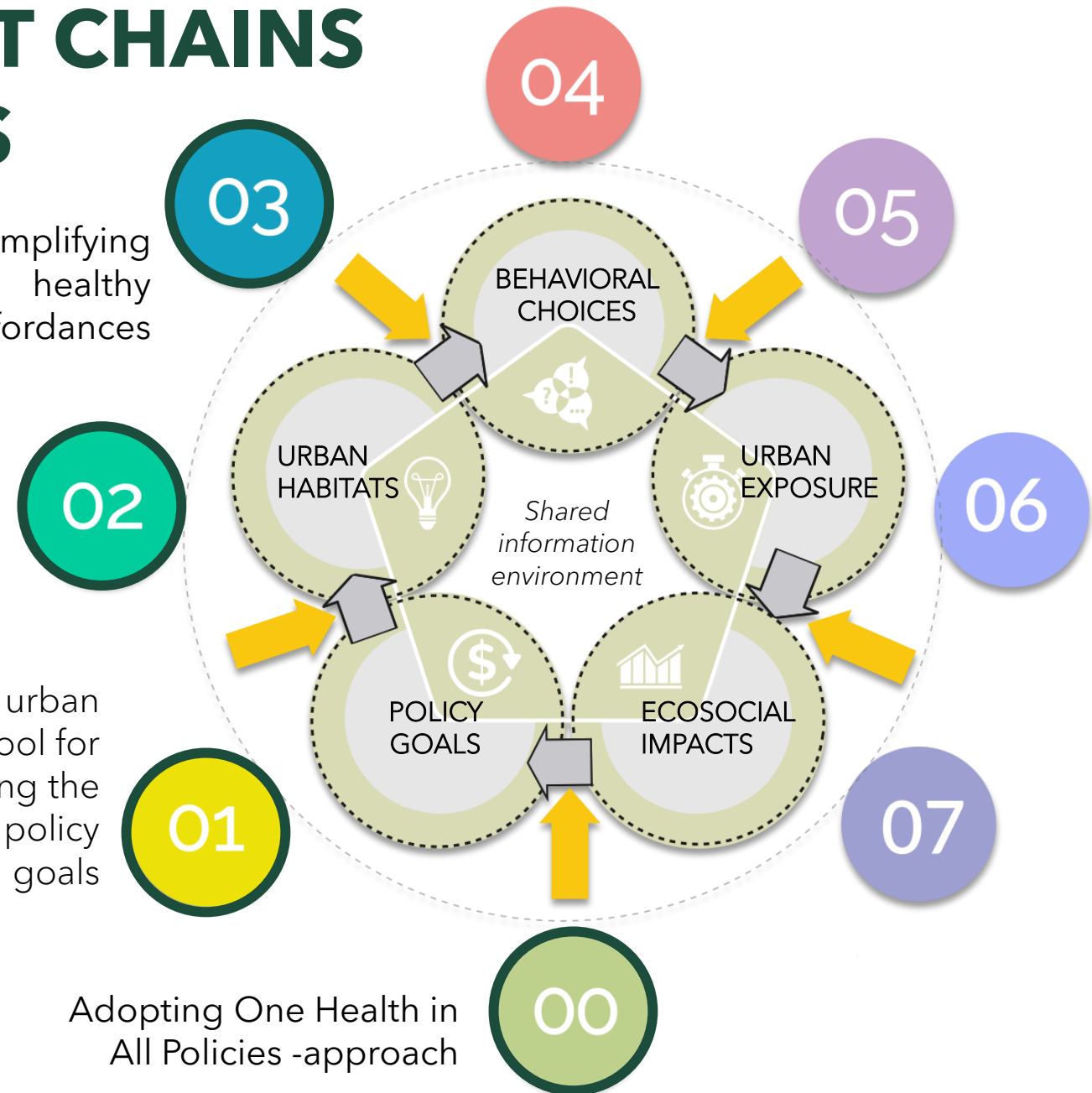
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Designing for diversity

Amplifying healthy affordances

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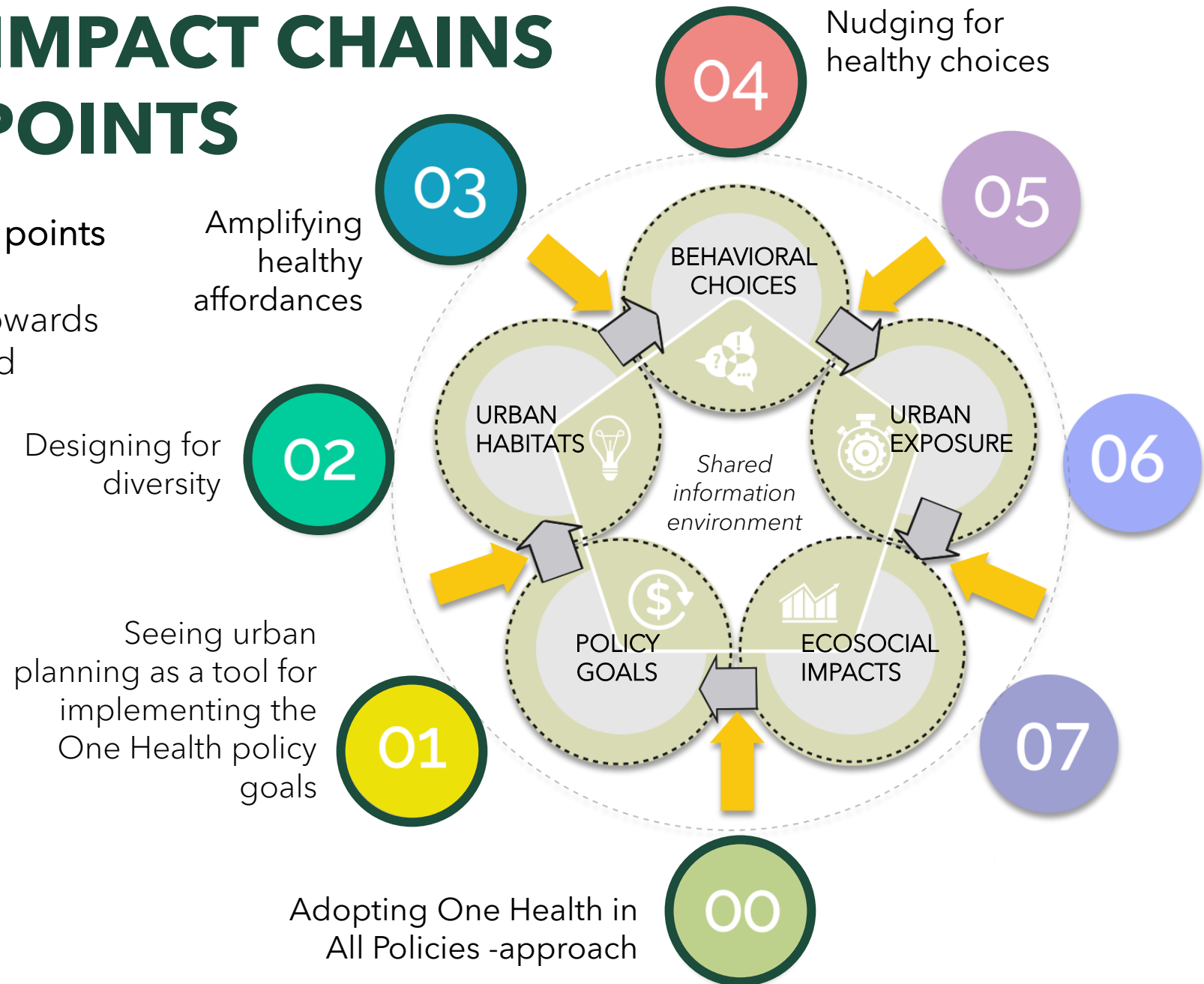
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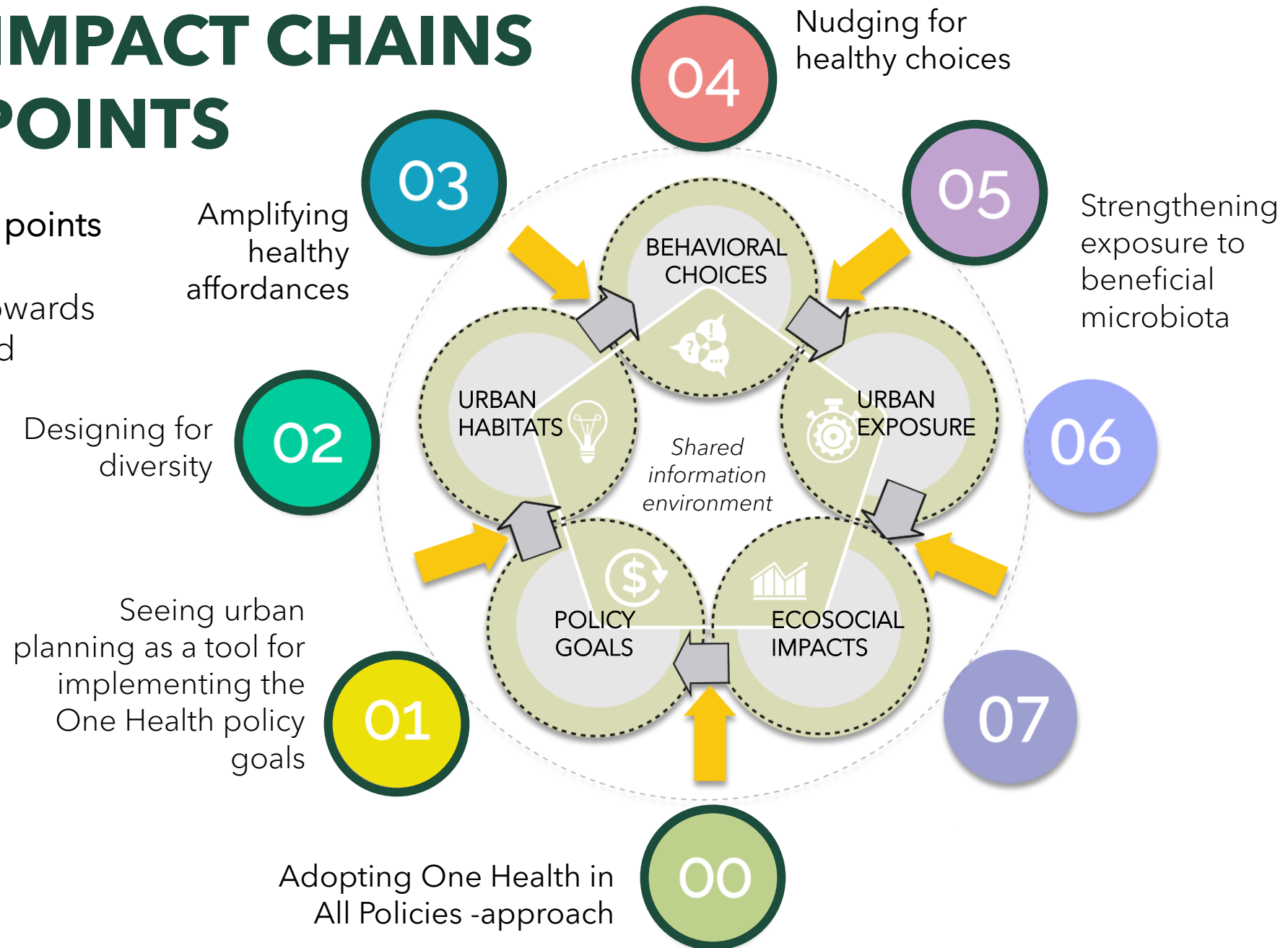


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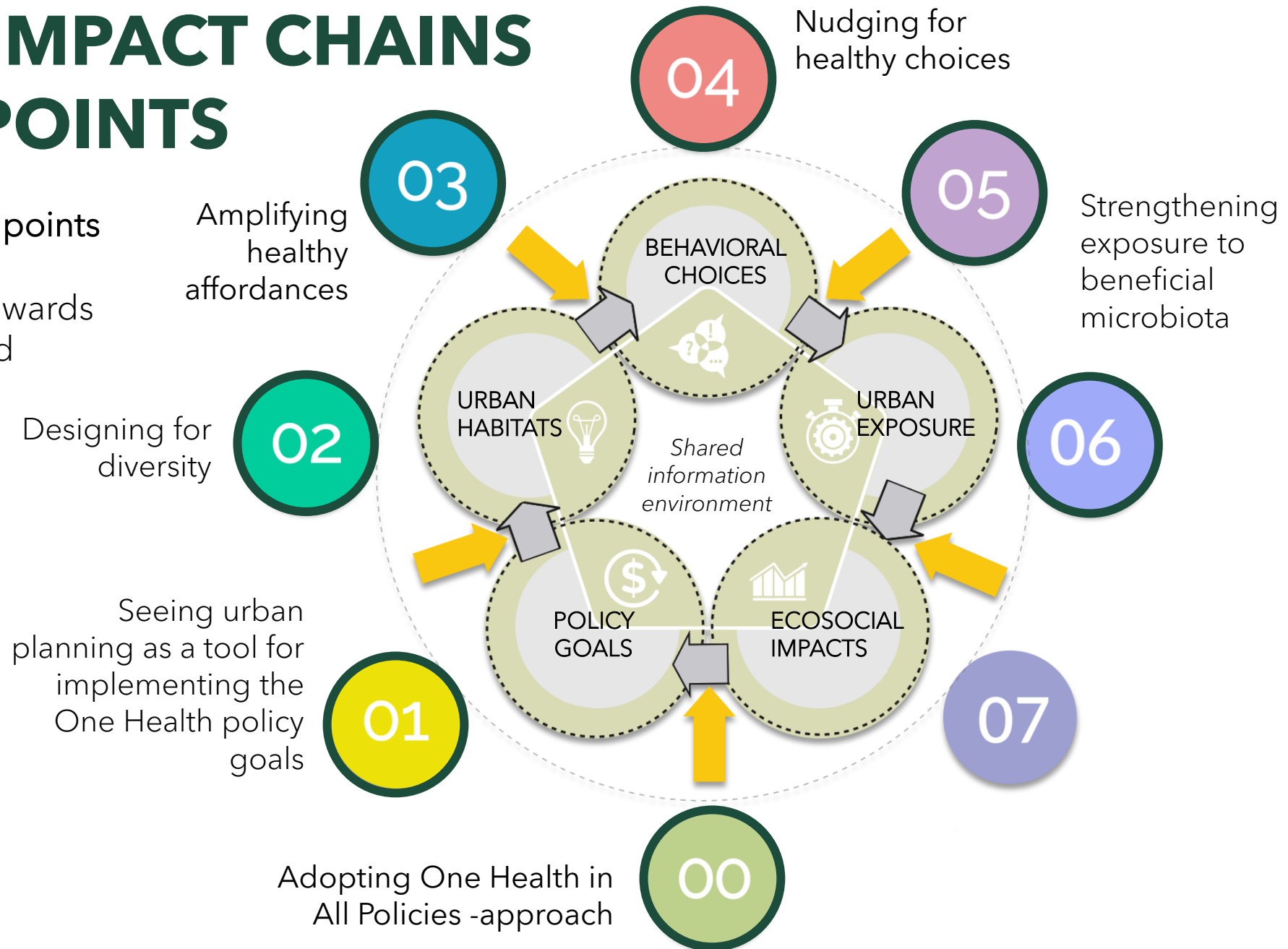


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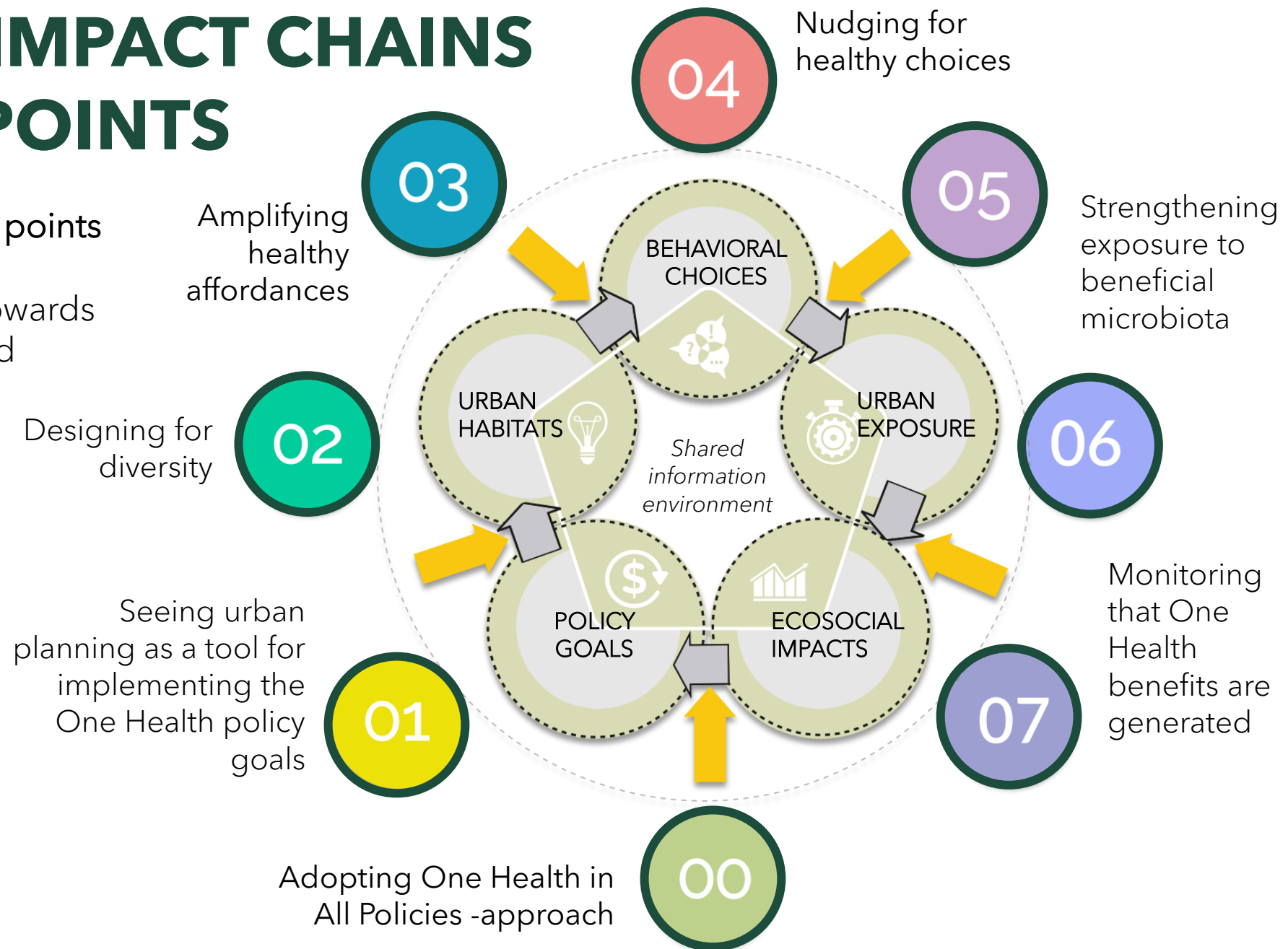


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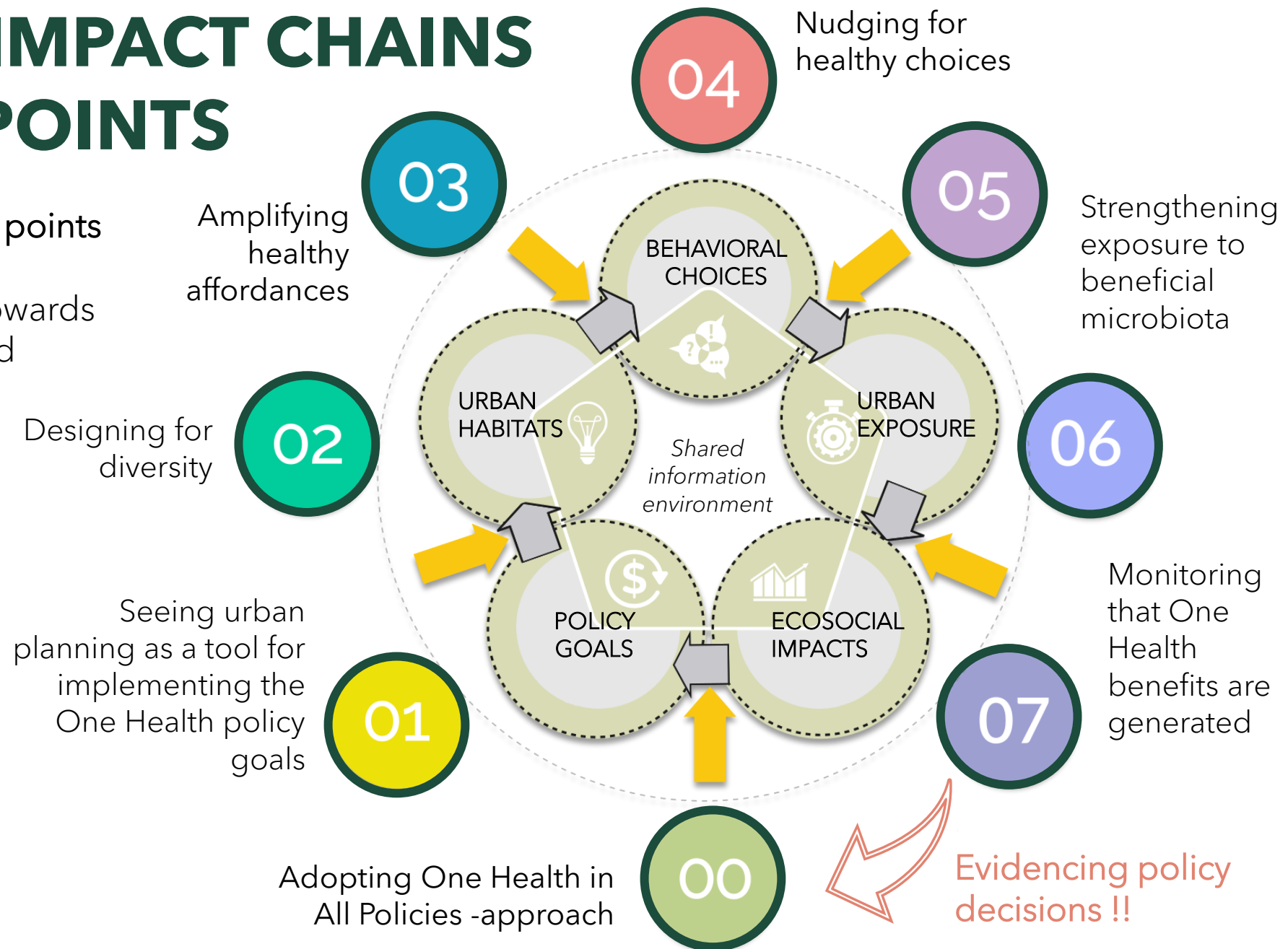


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CONCLUDING REMARKS

Urban Planning For Better Prepared, Pandemic Resilient And Healthy Cities

1. ADOPTING WHOLE-SYSTEMS APPROACH AND FRAMEWORK FOR "ONE HEALT IN ALL POLICIES"



Picture: City of Helsinki light rail

CONCLUDING REMARKS

Urban Planning For Better Prepared, Pandemic Resilient And Healthy Cities

**1. ADOPTING WHOLE-SYSTEMS APPROACH
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**2. URBAN PLANNING WITH MORE-THAN-
HUMAN IN MIND - "ONE HEALTH DESIGN
GUIDELINES & IMPACT ASSESSMENTS"**



Picture: City of Helsinki light rail

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3. LEARNING & MONITORING - "ONE HEALTH
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Picture: City of Helsinki light rail

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3. LEARNING & MONITORING - "ONE HEALTH INTELLIGENCE"
4. EDUCATING THE NEXT GENERATION



Picture: City of Helsinki light rail



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EASTERN FINLAND



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health is more
than human.**

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Contact information:

Mari Honkanen, Training Officer, Faculty of Health Sciences
+358 50 571 7452 | mari.honkanen@uef.fi
www.uef.fi/bhp

Key information

- Degree: Bachelor of Health Sciences
- Major: Human and Planetary Health
- Programme duration: 3 years / 180ECTS
- Programme start: September 2026
- Campus: Kuopio, Finland
- Tuition fee: EU/EEA nationals no tuition fee, non-EU/EEA nationals 10,000€/academic year
- Tuition waivers available
- Application period: 7-21 January 2026 in [Studyinfo](https://www.studyinfo.fi)

Thank you!

emilia.ronkko@uef.fi



Future City 21

Helka-Liisa Hentilä
Aale Luusua
Emilia Rönkkö
Annukka Sailo
Anna Suorsa *Editors*

Pandemics and Urban Planning: Multidisciplinary Perspectives on Cities, Planning and Disease

 Springer