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Animals as a Nature-Based Solution to improve people welfare

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Let me introduce myself

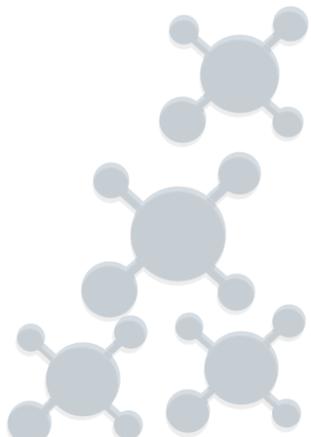
- DVM
- PhD
- 3y degree in dog breeding and training
- Master in behavioural medicine of companion animals
- Diploma of European College in Animal Welfare and Behavioural Medicine
- Associate Professor at Dep. Veterinary Sciences, University of Pisa (I)

pet welfare

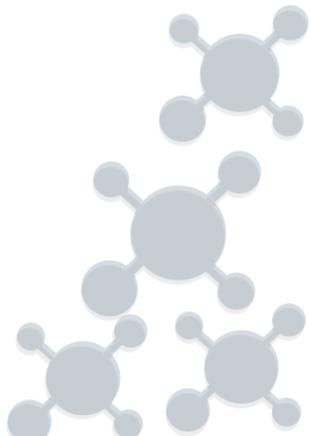
anthrozoology

pet behaviour

endocrinology



- ✓ **Societal/urban challenges (framework)**
- ✓ **Nature-based solutions (definition, outcomes)**
- ✓ **Animals as a NBS (underlying concepts)**
- ✓ **Pilot of Lucca (In-Habit)**



Societies are rapidly changing, experiencing challenges

- **Natural challenges**

Climate changes, natural resource scarcity, etc

- **Societal challenges**

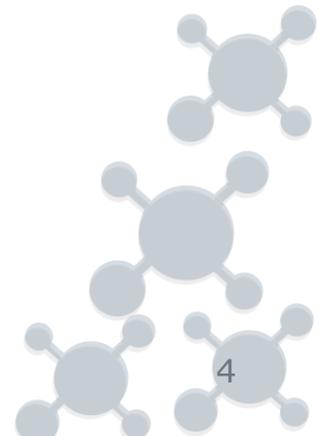
Ageing, isolation, emerging fragilities (elders, homeless, people with autism), demand for nature, demand for effective relationships

- **Economic regime change**

Public fund scarcities

Extractive economies

Geopolitical tensions



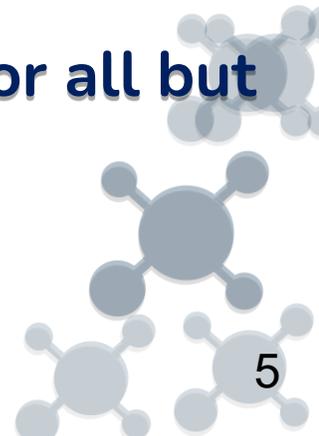
- Increasing world population, urbanization (2/3) and population density
- Cities are cumulating people with new needs and demands
- Migratory flows, ageing, isolation, economic and social disparities are quickly growing



growing demand for urban re-generation



urban dwellers needs innovative transformative solutions to improve quality of life for all but most fragile especially



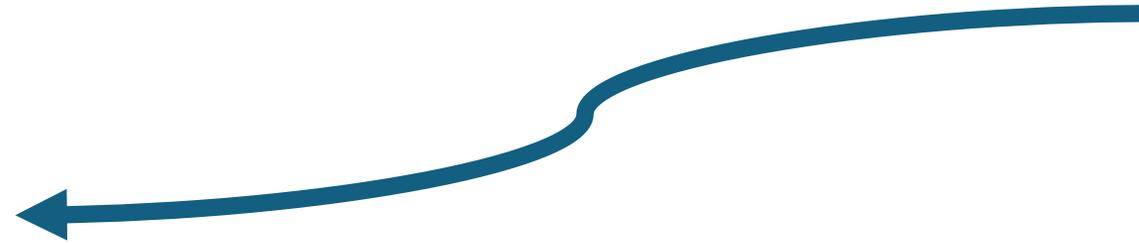
Urban evolution

From dispersed to concentrated living

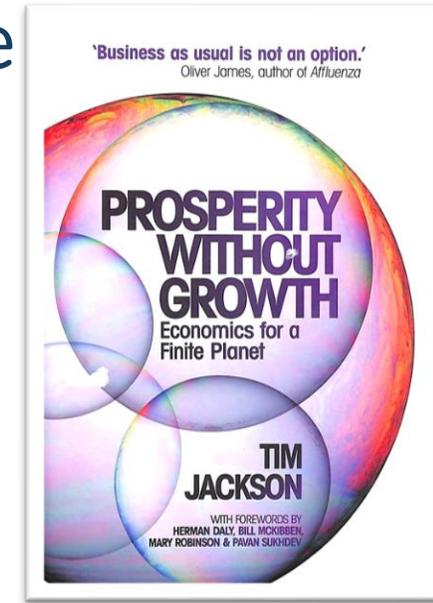


benefits and costs for human
and non-human animals

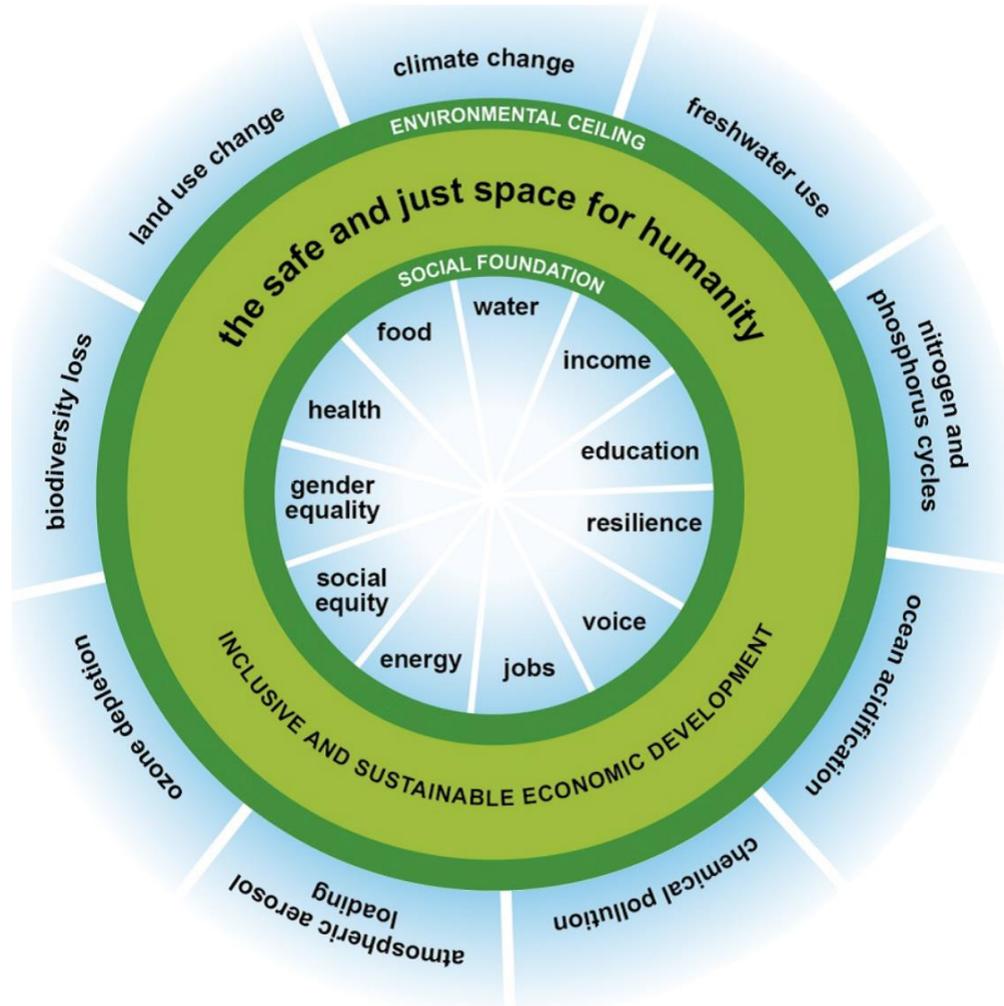
From an economic development perspective



Prosperity without growth perspective
(Jackson et al., 2009)



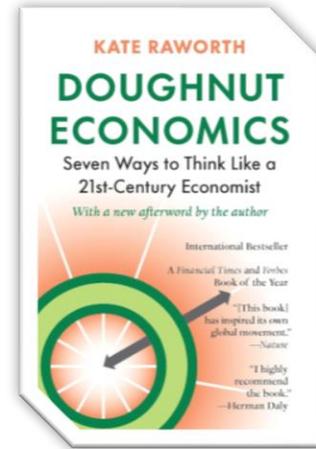
Prosperity by means of: greener economy, relational and environmental goods to sustain quality of life for the most



Enlarging the donut :
from challenges to solutions for
societal challenges

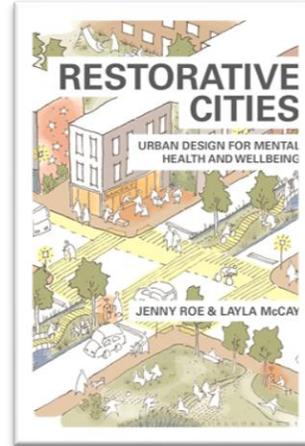
through transformative models
based on new principles

- From state/market divide to community-based welfare
- New resources and social innovation
- Community alliances

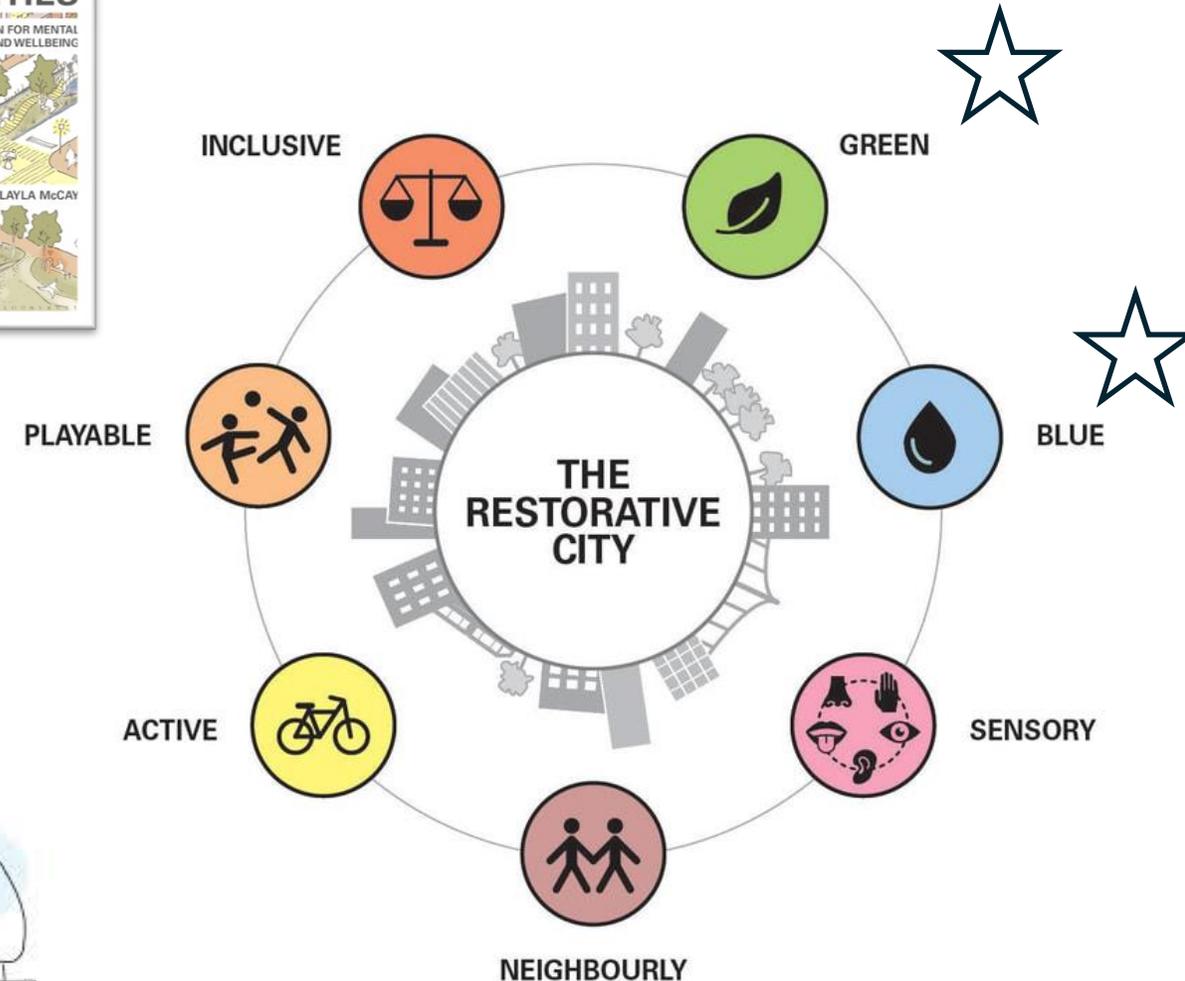


(Animal) Nature-Based Solutions

- Urban Urban regeneration operates across 7 dimensions (*Restorative Cities: urban design for mental health and wellbeing*. Roe & McCay, 2021)



- New European Bauhaus (NEB) is “a policy and funding initiative that makes green transition in built environments and beyond enjoyable, attractive and convenient for all”



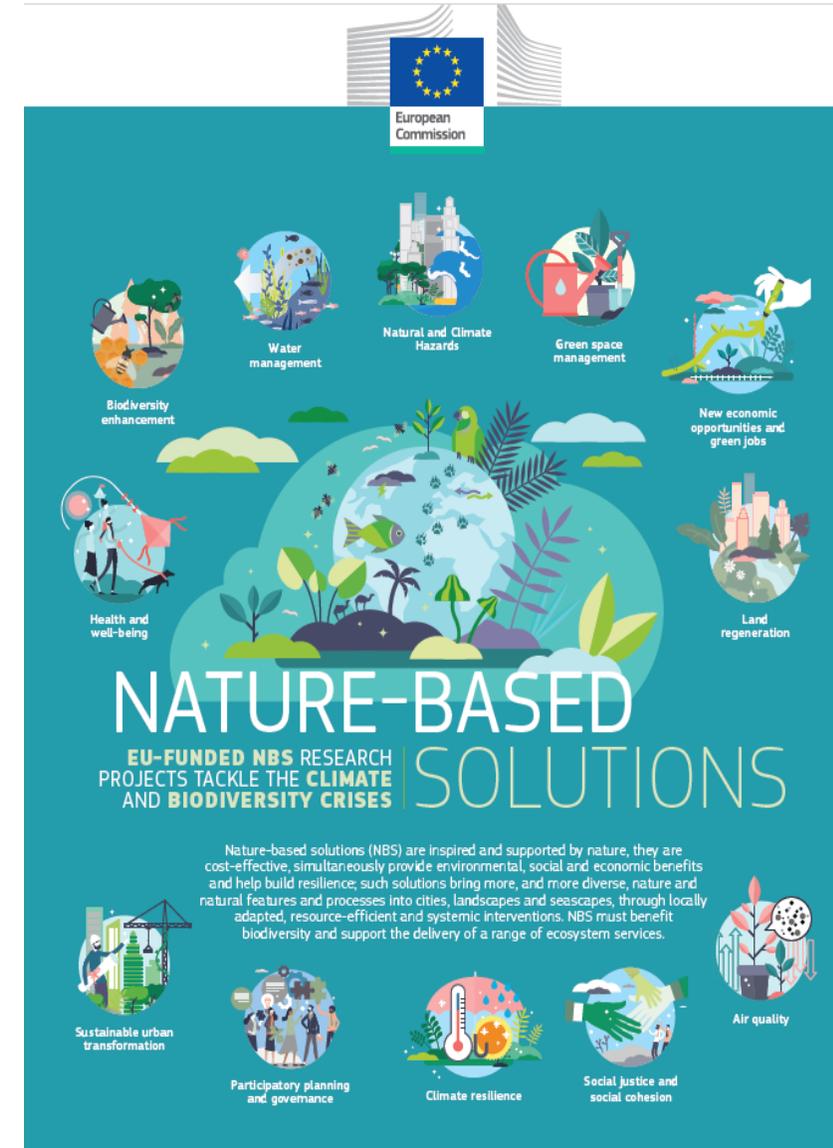
Nature-Based Solutions

NBS: definition (EU Commission 2016). Solutions

- inspired and supported by nature,
- which are cost-effective,
- simultaneously provide environmental, social and economic benefits
- help build resilience.

Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.”

(https://ec.europa.eu/info/research-and-innovation/research-area/environment/nature-based-solutions_en).



NBS: definition (International Union for Conservation of Nature - IUCN)

“actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.”

(Cohen-Shacham et al., 2016).



NBS as public goods:

- ✓ A commodity or service that is **non-excludable** and **non-rivalrous**, meaning that it is difficult or impossible to prevent individuals from consuming it, and one person's consumption does not diminish the amount available for others.
- ✓ They are not part of the market economy, and they can be used by all (like quality of the air or temperature).
- ✓ They are accessible to all, also the fragile and the less empowered ones

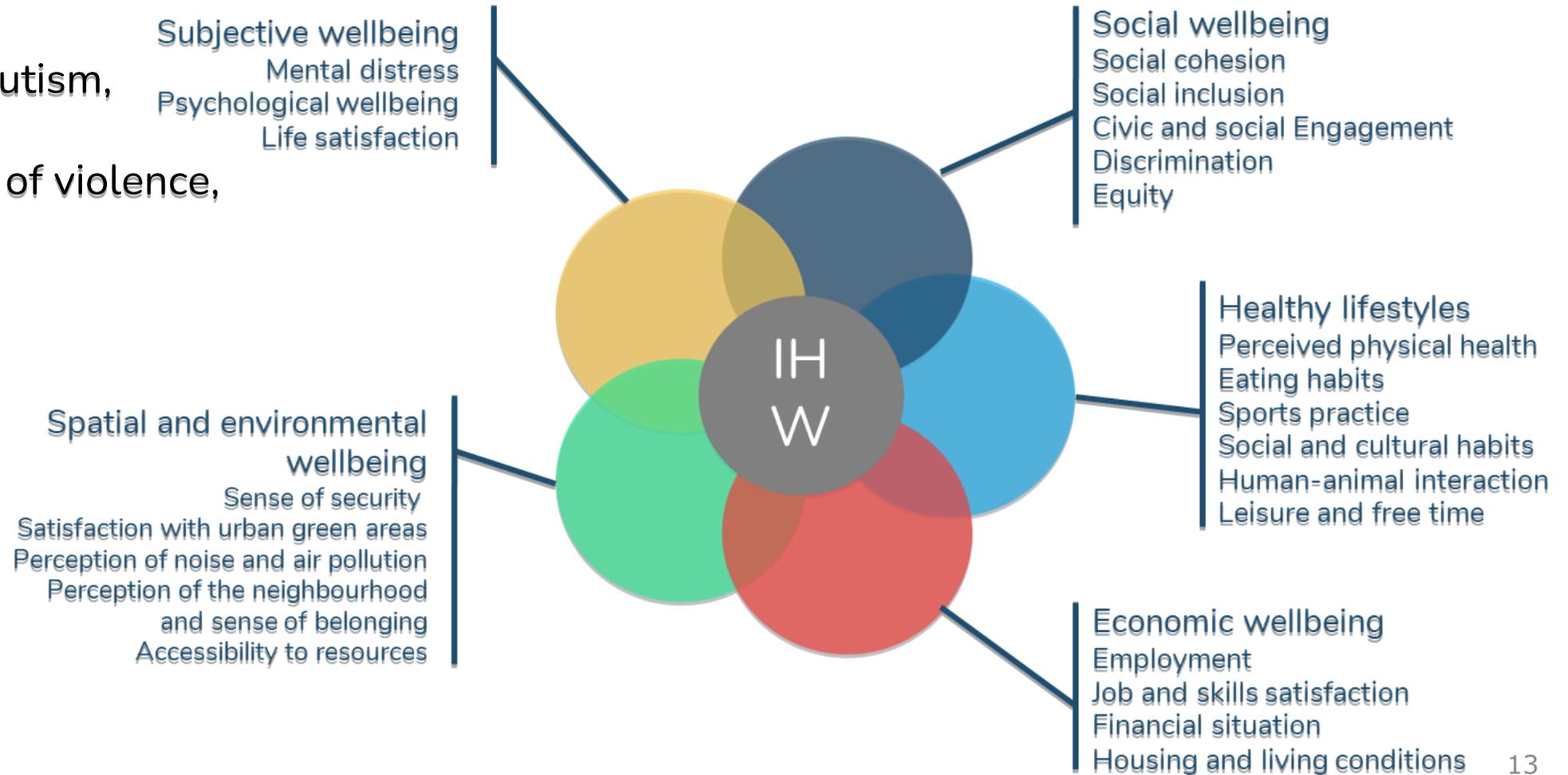


enlarging the donut and enlarging prosperity

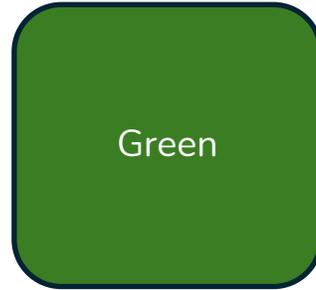
Diverse Targets:

- Elders,
- NEET,
- Persons with autism,
- Homeless,
- Women at risk of violence,
- Children,
- All

Possible outcomes:

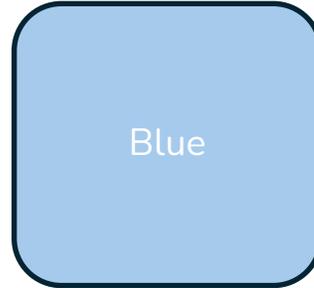


Mainly in urban contexts



Green

CO₂ absorption
Noise reduction
Temperatures cooling
Improving urban landscape
etc.



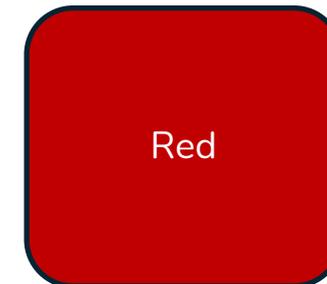
Blue

H₂O management and
safeness
Water flows
management etc.

No reflection on non-human
animals when analysing
scientific literature and
practices

Focusing on solutions... for humans

- ✓ Animals are constantly growing in cities
- ✓ Animals are (culturally becoming) citizens (members of family)
- ✓ Animals might offer solutions for (fragile) people
- ✓ Pet-economy is generating job opportunities



Red



animals



Communication

Animals and Cities: A Reflection on Their Potential in Innovating Nature-Based Solutions

Giulia Granai ^{*}, Carmen Borrelli , Chiara Mariti  and Francesco Di Iacovo

Animals represent a new and growing form of contact with nature in urbanized environments (and new citizens)

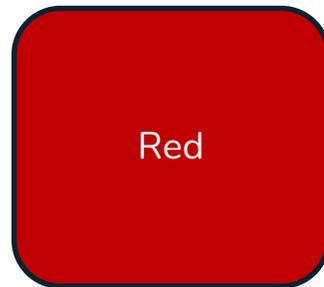
Red

Animals are a resource to be mobilized as a public good to improve well-being and quality of life

Animal-Nature Based solutions

Defining:

A-NBS (red solutions) are all the innovative services that take advantage from the promotion of human-animal interactions/bond in the advancement of inclusive health and wellbeing of citizens in the different dimensions (Spatial and environmental wellbeing; Subjective wellbeing; Social wellbeing; Healthy lifestyles; Economic wellbeing) and help regenerate urban settings (Granai, 2025; unpublished PhD thesis).



AAI

Innovative services

Daily routines with animals

Educational projects with animals

Etc..

Animal-Nature Based solutions

ANBS can be promoted both in:

- Urban settings: favoured by hum-animal cities

- Peri-urban/rural settings

✓ **didactical farms**

✓ **social farms**

✓ **Wild**

✓ **Animal & nature observation/embedding**

✓ **Walking with companion animals**

“Human-Animal Interaction (HAI) encompasses any situation where there is interchange between human(s) and animal(s) at an individual or cultural level. These interactions are diverse and idiosyncratic, and they may be fleeting or profound.

The human-animal bond (HAB) can be defined as a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors considered essential to the health and wellbeing of both. The bond includes, but is not limited to, the emotional, psychological, and physical interactions of people, animals, and the environment”

AVMA (American Veterinary Medical Association)

Wild animals (urban visitors or dwellers)

- interactions with wild animals might generate positive outcomes in terms of contact with nature, education about nature, education about sustainability, exploration and observation of nature, and coexistence with nature (Egerer & Buchholz, 2021; Wu et al., 2019)
- can improve biodiversity and natural equilibrium
- can lead to climate mitigation and the potential adaptation of ecosystems,
- can help environmental monitoring

Food producing animals

- food availability & sustainability, also in the cities with new methods
- job creation
- cultural identities →
 - ✓ innovative entrepreneurial
 - ✓ inclusive social innovation projects
- impacts on humans with their interaction (educational, emotional, religious, etc),
- controversial impacts on nature (depending on the animal husbandry systems)

The return of livestock to urban areas is rife with tensions, including concerns about public health and challenges to dominant perspectives about the separation of urban from rural life



Journal of Agriculture, Food Systems, and Community Development
ISSN: 2152-0801 online
www.AgDevJournal.com

Welcoming animals back to the city: Navigating the tensions of urban livestock through municipal ordinances

Nam H. Butler, Department of Urban and Regional Planning, Florida State University



Companion animals and benefits on:

The benefits of dog ownership on people as an undervalued resource in urban environments

Carmen Borrelli^{1*}, Giulia Granai¹, Francesco Paolo Di Iacovo¹, Giacomo Riggio¹, Massimo Rovai², Roberta Moruzzo¹, Francesco Riccioli¹, Carlo Bibbiani¹, Angelo Gazzano¹, Chiara Mariti¹

- physical health and wellbeing (heart and blood pressure, exercise...)
- mental health and psychology (loneliness, anxiety, emotional support...)

social life

Contents lists available at SciVerse ScienceDirect

Journal of Veterinary Behavior

journal homepage: www.journalvetbehavior.com

Research

Dogs' features strongly affect people's feelings and behavior toward them

Angelo Gazzano, Marcella Zilocchi, Eleonora Massoni, Chiara Mariti*

*Istituto di Scienze Fisiologiche, Università di Pisa, Pisa, Italy

during COVID 19 pandemic

Article

Cat-Owner Relationship and Cat Behaviour: Effects of the COVID-19 Confinement and Implications for Feline Management

Giacomo Riggio¹, Carmen Borrelli¹, Patrizia Piotti², Anna Grondona¹, Angelo Gazzano¹, Francesco P. Di Iacovo¹, Jaume Fatjó³, Jonathan E. Bowen^{3,4}, Daniel Mota-Rojas⁵, Federica Pirrone², Chiara Mariti¹

Animals can contribute to all 7 dimensions of “Urban regeneration” (Roe & McCay, 2021)

to improve welfare at 5 levels:

- 1) individual
- 2) social
- 3) economic
- 4) spatial and environmental
- 5) adoption of healthy lifestyles.



Dimensions	Possible A-NBS	Expected outcomes on IHW
Green	Re-design of areas for animal-human interaction, observation for innovative activities able to increase personal wellness and to reduce states of anxiety and depression	Spatial and environmental wellbeing: sense of security, satisfaction with urban green areas (devoted to pets), perception of neighbourhood and sense of belonging Subjective wellbeing: mental distress, psychological wellbeing, life satisfaction Social wellbeing: social cohesion, equity Healthy lifestyles: human-animal interaction, leisure and free time, sports practise
Blue	Observation and educational activities of animal wildlife, water channels and small wild aquatic fauna (through NGOs' initiatives) to improve comprehension of water resources for wellbeing	Subjective wellbeing: mental distress, psychological wellbeing, life satisfaction Social wellbeing: civic and social engagement Healthy lifestyles: human-animal interaction, leisure and free time
Sensory	Spaces devoted as refugees from noises and space for personal engagement in nature, wild animal sound (insects, birds, etc.), possible negative sensorial outcomes of pets	Spatial and environmental wellbeing: satisfaction with urban green areas, perception of neighbourhood and sense of belonging, accessibility to resources Healthy lifestyles: sports practice, human-animal interaction, leisure and free time
Neighbourly	Social dialogue and interconnections among different categories of people facilitated by pets in devoted public spaces. Social engagement in associations and groups devoted to specific animal-linked activities	Spatial and environmental wellbeing: satisfaction with urban green areas (devoted to pets), perception of neighborhood and sense of belonging, accessibility to resources Social wellbeing: social cohesion, civic and social engagement Healthy lifestyles: human-animal interaction, leisure and free time
Active cities	Paths for walking/running with pets, specific designed paths for people with diverse abilities and demands, pets and elderly' mobility, pets and women security in their personal activities	Spatial and environmental wellbeing: satisfaction with urban green areas, perception of neighbourhood and sense of belonging, accessibility to resources Social wellbeing: social cohesion, civic and social engagement Healthy lifestyles: human-animal interaction, leisure and free time
Playable	Training, education and gaming activities with pets, citizen science linked to animals, excursions linked to animals' observation, education in the school	Subjective wellbeing: mental distress, psychological wellbeing, life satisfaction Social wellbeing: social cohesion, social inclusion, equity Healthy lifestyles: perceived physical health
Inclusive	Innovative services for specific target groups: Animal Assisted Activities (schools), Animal Assisted Interventions (elders, people with dementia, people with physical disabilities), services for vulnerable people, Support for homeless people with pets, diverse cultural behaviors in pet management and interactions, creation of new job opportunities (also for young and fragile people)	Subjective wellbeing: mental distress, psychological wellbeing, life satisfaction Social wellbeing: social cohesion, social inclusion, equity Healthy lifestyles: perceived physical health, human-animal interaction Economic wellbeing: employment, financial situation



INclusive Health And wellBeing In small and medium size ciTies

designing integrative actions modelled on the needs of local vulnerable groups

Cordoba (E)



Riga (LV)



Nitra (SK)



Lucca (I)



Lucca first hum-animal city: exploring human-animal bonds to improve the quality of life for all



Building the 1st EU Hum-animal city



- ✓ A participatory action research project
- ✓ Based on a EU-research call on smart solutions, public spaces reorganization, PPPP initiatives, innovative resource mobilization
- ✓ A 5 year project mixing a multidisciplinary perspective, theory, actors involvement (public/private/NGOs), pilot initiatives, monitoring and evaluation activities, research conclusions
- ✓ Facilitating urban transition toward a mindset change to build new glasses to look A-NBS in generating prosperity
 - ✓ A-NBS, public goods, urban hum-animal integrated policies





Article

Between Participatory Approaches and Politics, Promoting Social Innovation in Smart Cities: Building a Hum-Animal Smart City in Lucca

Giulia Granai ^{1,*}, Carmen Borrelli ¹, Roberta Moruzzo ¹, Massimo Rovai ², Francesco Riccioli ¹, Sara Mariti ¹, Carlo Bibbiani ¹ and Francesco Di Iacovo ¹

CO-CO-CO-CO methodology (IN-HUB)

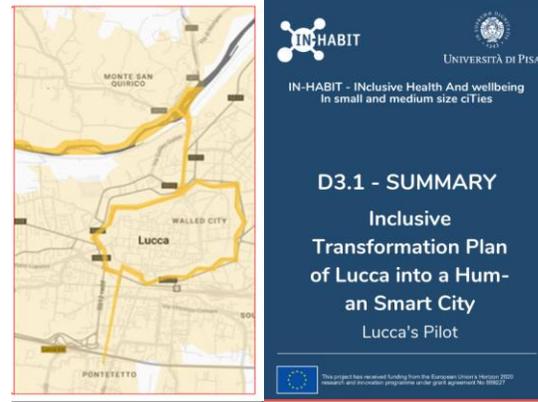
- Co design
- Co deployment
- Co management
- Co monitoring

Co-design: within the city,
with the local stakeholders

From online



To In-presence



- **Visionary and Integrated Solutions (VIS)** to be tested in the city
- **Hard and soft solutions**
- **CO-CO-CO-CO** methodology: IN-HUB
- **Inclusive Transformation Plan (ITP)** for each city
- Attention to **gender** differences
- **Mindset change** methods
- Support to new **pet-based businesses**

Hard solutions

Different participative methodologies to co-design hard solutions together with the **IN-HUB**

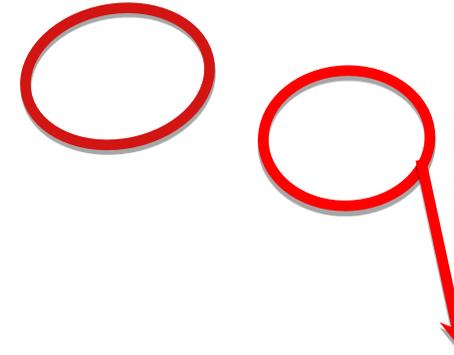
- Accessible
- Clean
- Safe
- Comfortable
- Shadow
- Not impacting
- etc

ANIMAL LINES:

PANCHINE e LUOGHI DI SOSTA per umani e per cani, con sistema ombreggiante, di illuminazione (fotovoltaico - ricarica cellulari - wifi integrato)
- eventuale coinvolgimento dell'artigianato locale
PUNTI DI INTERESSE: Paesaggistico, Monumentale, Sociale



New hum-animal urban infrastructures: the **Animal Lines**

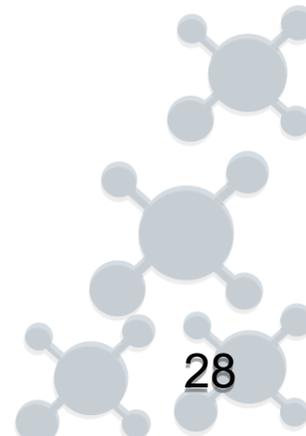


Area Parco Fluviale

Regulation

Area Ex-Hospital Campo di Marte

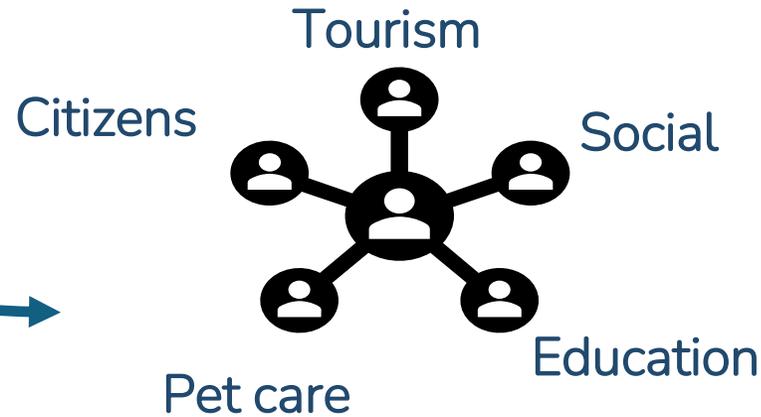
Inauguration of “relational areas”



Soft solutions

Different participative methodologies to co-design soft solutions together with

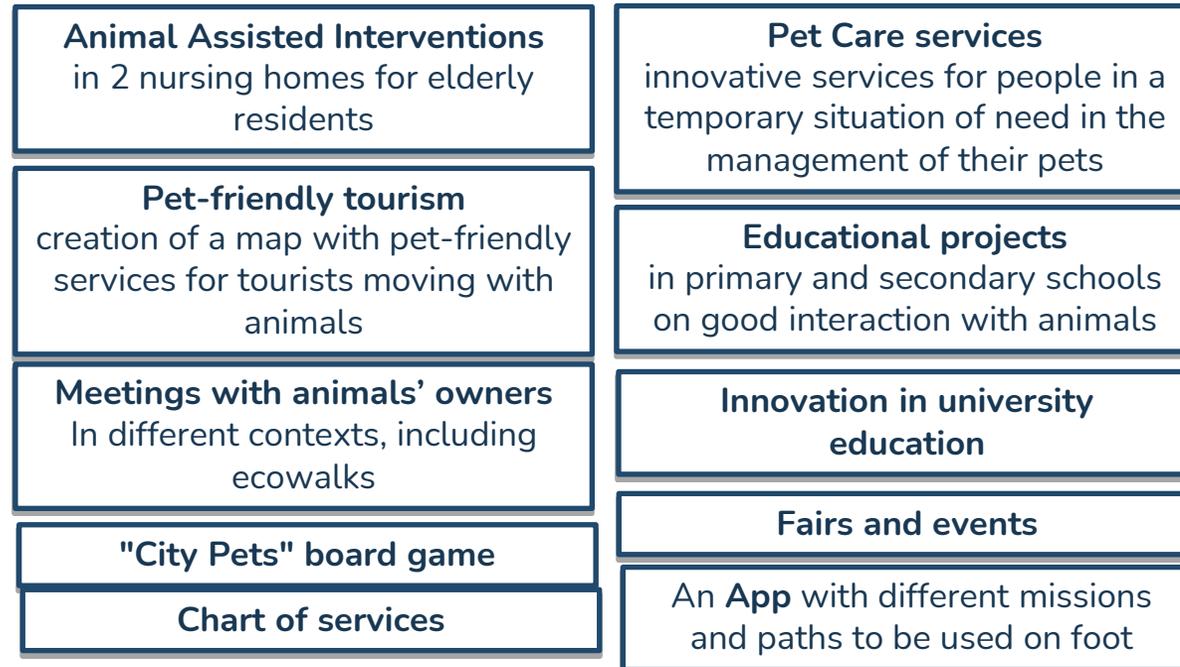
the **IN-HUB**



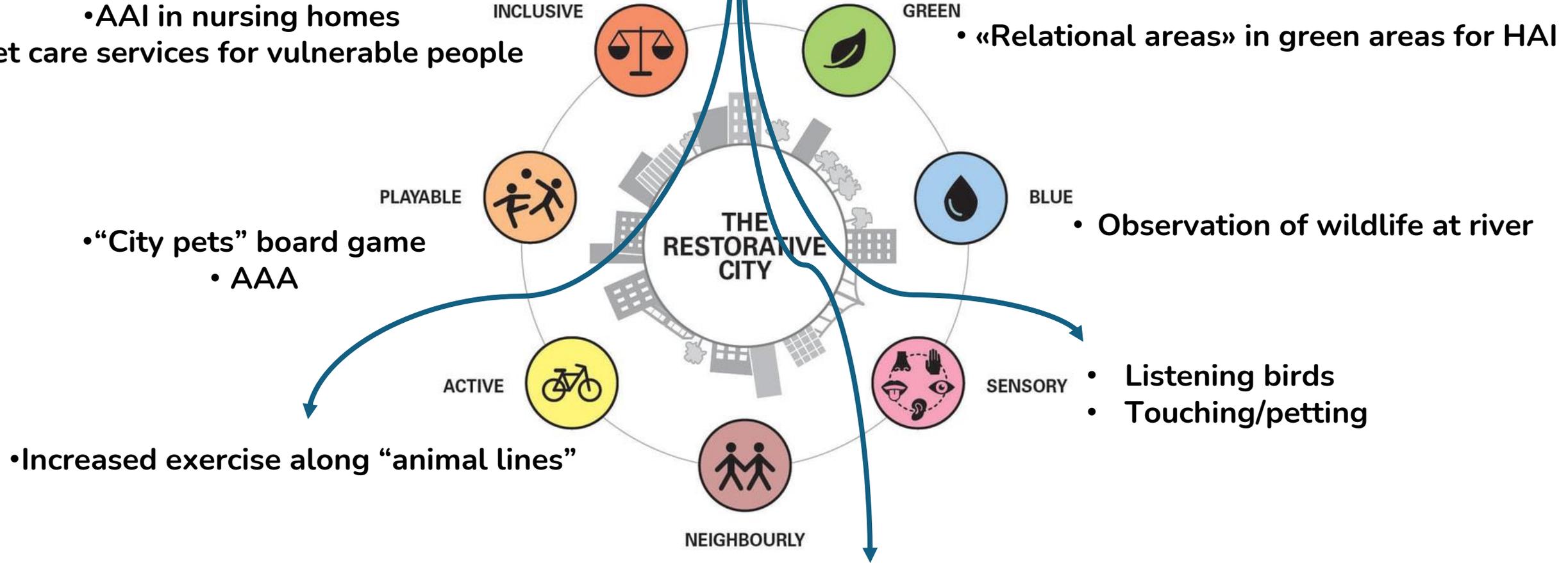
In the IN-HUB various needs emerged:

- Activities for **elders** to improve their wellbeing → **Animal Assisted Interventions in nursing homes**
- **Pet care services** for fragile people in need
- A tourist/business **pet friendly map**
- **Education project in schools**
- **Cultural initiatives** with children

Soft Solutions: building pilots to give evidences



Ecowalks with dogs



Co-design with:

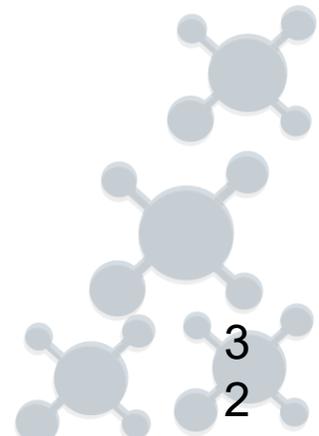
- stakeholders in the IN-HUB
- Municipality of Lucca
- doctors and educators from 2 nursing homes

Co-development from:

- participatory procedures with the 3rd sector (non-profit/third sector organizations)
- public selection of qualified associations and formal co-design with the Municipality of Lucca, University of Pisa, and the nursing homes' managers

Co-management of AAI

- start 1st September '23
- 15 meetings x 6 groups (90)*8/10 elderly residents (810people/day)
- more than 60 meetings held



Qualitative evaluation: Focus Group and Semi-structured interviews

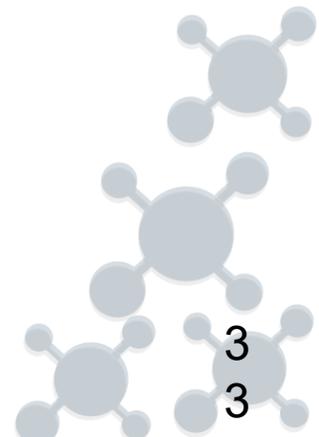
Mobility

Psychological aspects

Social aspects

Quantitative evaluation: Monitoring of AAI in nursing homes

**Assessment of endocrine and physiological parameters
on elderly, dogs and handlers**



Beta testing of the board games



Pet (-human) care services

Innovative services for vulnerable people with pets.

3 macro-categories of service:

- indoor (at home)
- outdoor in the presence of guardians
- outdoor in the absence of guardians

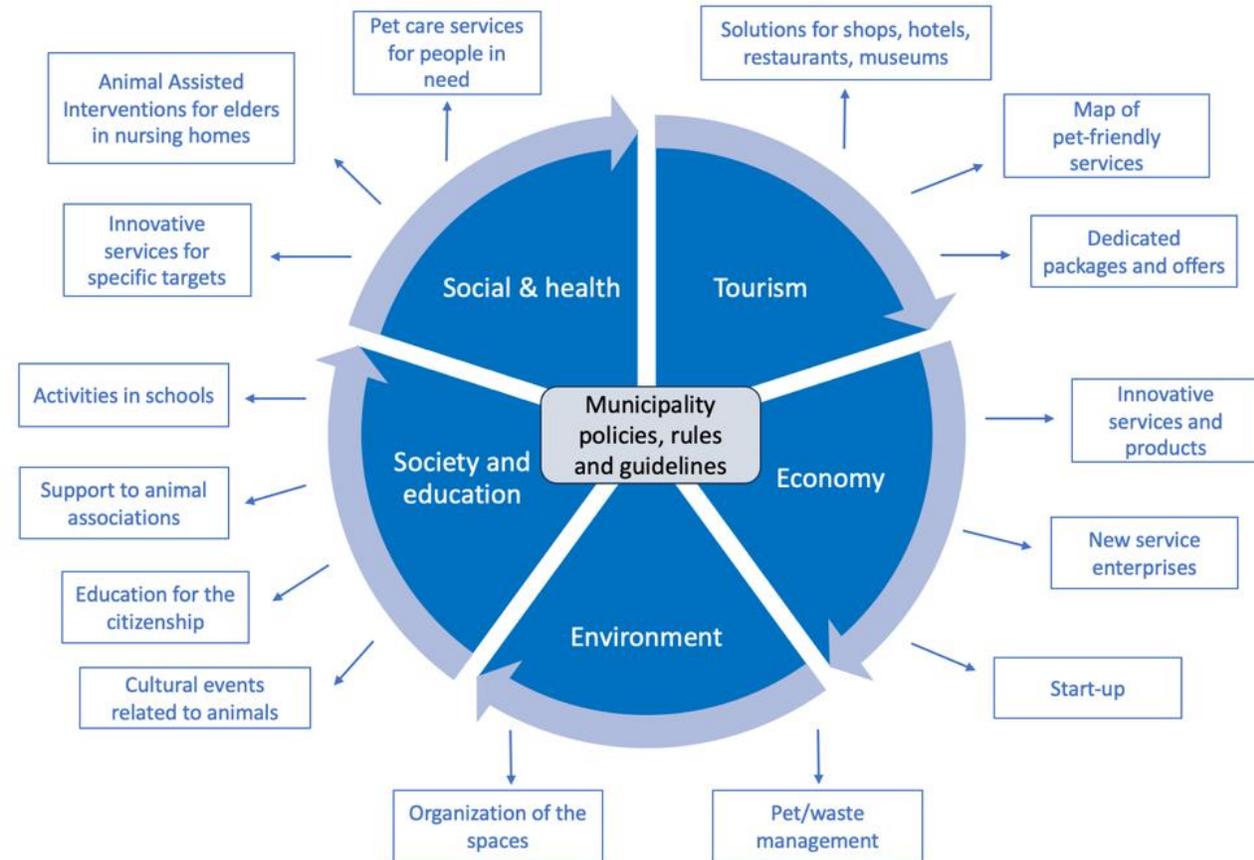


Reduced anxiety for pet management

Building a hum-animal city giving value to A-NBS

- Integrating **policies** within the **hum-animal** logic

(Public works, transportations, education, social services, healthcare, tourism, commerce)



ANBSs are two-sided solutions.

- give more emphasis and attention to the needs of animals in urban spaces and in a urbanized society
- create emerging opportunities to be explored to generate innovative and effective positive outcomes from HAI and HAB

The reshaping of public spaces from the perspective of more open interactions with animals, revising public policies and activities, and reorganizing economic and social opportunities around the valorization of human–animal bonds present opportunities for society to learn and improve, as the IN-HABIT project aims to demonstrate.