

IN-HABIT – Inclusive Health And wellBeing In small and medium size ciTies

D3.5 - Upscaling Plan of Lucca

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HISTORY OF CHANGES

Page	Description
2	Update of the VERSION LOG and HISTORY OF CHANGES
13	Update of Chapter 2 introducing a box
14-65	Revision of Chapter 3 to include changes needed to better present the hum-animal concept, the A-NBS implemented in Lucca and key elements for their upscaling to address the comments of the reviewers
67	Annex 1: Regulatory approaches in some EU cities



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LIST OF ACRONYMS

AAI	Animal Assisted Interventions
A-NBS	Animal-Nature Based Solutions
EU	European Union
H	Humans
HA-VIS	Hum-Animal solutions
HNHA	Humans-Non-Humans-Animals
NHA	Non-Huma-Animals
VIS	Visual and Integrated Solutions



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EXECUTIVE SUMMARY

Project partners:

Dept. Veterinary Science - University of Pisa, Municipality of Lucca, Lucca Crea

Lucca city pilot

Medium size city, 89.048 inhabitants (ISTAT, 2023), high rate of elders

Main ambition:

to up-scale the first EU hum-animal city with and Integrated hum-animal urban policy and their Animal Nature Based solutions (A-NBS) in other cities and territories at national, EU and international level.

Timeframe of the report:

Final report delivered in August 2025

Target groups addressed in the upscaling initiative:

EU/national/regional/city institutions, NGOs, Private firms, citizens

Target groups addressed by the upscaling solutions:

Elderly, vulnerable/fragile people, persons with disabilities, children and families, city inhabitants at large, youngsters and women, tourists moving with pets.

Undervalued resources valorised to boost Inclusive Health and Well-being (IHW):

human-animal bonds and interactions, Animal-Nature Based Solutions (A-NBS)

Hard VIS:

Animal Lines and relational areas

Soft VIS:



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Animal Assisted Interventions (AAI) in nursing homes, Pet care services for people owning pets but in temporary need, educational activities with children and families, board game on pets, events on the newly built relational areas for social interactions of various groups, social activities with children and adults, city map with pet friendly services, business-oriented training.

Innovative aspects:

Introduction to the idea of *A-NBS as a common good provider and of the opportunity of an Integrated Hum-Animal Urban Policy (IHAUP)*. The **Lucca case** within the European project **IN-HABIT (INclusive Health and Well-being in small and medium size ciTies)** developed a pioneering approach to improving inclusive health and well-being by introducing **animals as Animal-Nature Based Solutions (A-NBS)**. This innovative perspective reframed animals from being private resources to **urban public goods**, integrated into regeneration policies and citizen services.

Upscaling key elements:

Upscaling the hum-animal city concept has implication in a mental shift able to involve both internally the public administration and the main urban stakeholder into the new perspective able to activate hum-animal bonds and A-NBS in a public perspective able to enhance inclusive health and well-being for fragile people and all citizens. The management of a transformative change is crucial and demands the introduction of new governance mechanism (IN-HUB) of well-trained new competences (a urban pet policy manager)

Upscaling process:

Upscaling might be facilitated top-down by the EU/national/Regional/City institutions toward specific funding and communication policies as well as bottom-up by activating citizens and NGOs around specific pilot solution in a progressive positive spiral.



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1. Introduction: what is IN-HABIT?

IN-HABIT is giving answers to the challenges specified in SC5-14-2019: Visionary and integrated solutions to improve well-being and health in cities: *“delivering visionary and integrated solutions at the intersection of social, cultural, digital and nature-based innovation to increase citizens' health and well-being in cities; demonstrating how the integration of these solutions into innovative land use management, urban design and planning could reduce health-related environmental burdens in socially deprived neighbourhoods, foster equitable access for all to public spaces, enhance their quality and use and promote sustainable urban mobility patterns; and testing new transition management approaches, governance models, legal frameworks and financing mechanisms to re-design public spaces and urban commons and assess their contribution to improving health and well-being. They should promote multistakeholder initiatives, citizens' engagement and co-creation and co-ownership of public spaces.”*

Over the past five years, the project has been developed in four European peripheral medium-sized cities: SMSCs - Córdoba (Spain), Riga (Latvia), Lucca (Italy), and Nitra (Slovakia). It focuses on **innovative methods of resource mobilisation** to promote **Inclusive Health and Well-being (IHW)** in cities, targeting both **vulnerable groups** and the broader **urban population**. Each city addresses specific urban challenges, but all utilise a **similar methodological framework** based on **participatory action** research, the creation of people-public-private partnerships (PPPPs) involving the **public, private sector, and local communities** to **mobilise existing and underused resources**. This approach allows them to co-design, co-deploy, and co-manage visionary and integrated solutions (VISs) to **tackle emerging societal issues** and a **holistic monitoring framework** to co-assess the impact of the VISs, measuring aspects related to social, economic, environmental, spatial, and subjective well-being and healthy lifestyles (CO-CO-CO-CO method)

In Córdoba, cultural and environmental resources are leveraged within a **deprived neighbourhood**, affected by segregation, concentration of socio-economic-environmental



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problems and territorial stigma. Riga concentrates on **food and food culture** by revitalising an old traditional food market. Lucca focuses on human-animal bonds by establishing the first EU city **with an integrated human-animal urban policy**, addressing the needs of **vulnerable populations** and revitalising urban dialogue. Nitra aims to foster a **new culture for architectural manufacturing** and design by engaging with residual areas and **marginalised communities**, harnessing environmental resources.

Throughout the process, the cities encountered several challenges, including the onset of the COVID-19 pandemic in 2020, the economic repercussions of the Russia–Ukraine conflict, inflation affecting physical investments in public space reorganisation, and mid-term political changes in the city's administration. These factors **slowed progress but simultaneously enriched** the research by providing valuable insights for future replication strategies. Despite these challenges, the project achieved **significant and innovative outcomes** that can be of interest to other cities.

IN-HABIT introduced new approaches to **transition management, governance models, legal frameworks, and financing mechanisms** to reimagine public spaces and urban commons, while assessing their contribution to health and well-being. The project demonstrated the **feasibility of delivering visionary and integrated solutions (VIS)** at the **intersection of social, cultural, digital, and nature-based innovation to improve health and well-being in cities**.

We took an innovative approach to nature-based solutions (NBS), developing the concept of social NBS (S-NBS) by incorporating co-design, co-deployment, co-management, and co-assessment processes in the naturalisation of public spaces that reduce health-related burdens and promote equitable and sustainable urban regeneration. Additionally, the Lucca pilot advanced the vision of an innovative human-animal city, introducing animal NBS (A-NBS) based on multistakeholder collaboration, citizen engagement, co-creation, and co-ownership of public spaces.



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Each city has prepared a deliverable to share the main VISs and the specific methodological adaptations it has developed and tested over the past five years, along with opportunities for replication and upscaling. Collectively, the cities have addressed the most pressing needs they face to enhance IHW, such as social transformation of vulnerable neighbourhoods (Córdoba), creating a new culture of food markets as multifunctional hubs (Riga), developing spaces and initiatives to include pets in city life and valorise animal-human bonds for promoting new public goods (Lucca), and using art, design, and nature to build links with marginalised communities (Nitra).

This deliverable presents the **Lucca results**, but the other three can be accessed on the [IN-HABIT Zenodo community](#).

While the four deliverables follow a similar approach, they are tailored to the specific contexts and solutions tested in each city. Together, they form **a collection of potential actions, methods, and solutions** that can be **scaled up** to tackle a wide array of **urgent societal challenges**, such as increasing poverty and vulnerability, an ageing population, contradictions caused by migratory flows, rising animal populations, and the growing need for greater cohesion and societal dialogue in our cities. The variation in the scale of the pilot areas, the main issues addressed, and the VIS implemented open up numerous options for replication and upscaling, which can be **customised** to suit the **resources and contexts of other cities**.

Contribution to EU Policy Objectives

The proposed **catalogue of replication and upscaling opportunities directly contributes to key EU policy objectives, values, and principles** by fostering an inclusive, equitable, and sustainable approach to community development and by facilitating active participation in the policy design processes.

IN-HABIT VISs and working methods advance the **EU policy objectives of social inclusion and equality by creating participatory frameworks** that empower vulnerable communities, promote equal opportunities, and reduce disparities. Additionally, by addressing well-being through community-led initiatives, it supports the **health and well-being** objective, ensuring access to



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resources that improve quality of life. In alignment with **EU values**, particularly **freedom**, the solutions empower individuals and communities to actively shape their environment, ensuring inclusive participation and self-determination. The solutions embody the **EU Principle of Solidarity**, fostering cooperation, mutual support, and collective action to address shared challenges. By strengthening social cohesion and reducing disparities, the solutions contribute to national and city-specific policy priorities focused on economic resilience, digital inclusion, and public well-being. Through its multi-faceted and participatory approach, the solution drives meaningful progress while reinforcing fundamental EU commitments to equality, sustainability, and innovation.

The solutions also reinforce the **education system**, promoting **inclusion and social cohesion** by engaging students in reflective activities and designing solutions focused on assisting vulnerable members of society. They also support the goal of **Democracy and Active Citizenship** by fostering democratic values and empowering individuals to participate fully in society.

The European Union promotes the **Right to the City** and **public spaces** to foster democracy, social cohesion, and cultural integration. In this context, the INHABIT VISs and regenerated urban spaces create new opportunities for inclusivity, dialogue, accessibility, and active citizen participation, fully aligned with the **EU Urban Agenda** and **Urban Innovative Actions**. These interventions aim to build vibrant, safe, and well-designed areas that symbolise EU values by supporting citizens' rights, respecting diversity, equity, and human rights, and strengthening social cohesion. They also foster encounters across social groups and generations, generating belonging, pride, and stronger community bonds. The new public spaces actively involve citizens in co-design, co-deployment, and co-management, ensuring that strategies remain responsive and incorporate feedback through co-assessment. Their added value lies in their inclusivity and openness, their role in reinforcing democracy and freedom of expression through public discourse, and their ability to nurture community identity and belonging. They can also contribute to the local economy and tourism by attracting visitors, enhancing attractiveness, and encouraging broader social exchanges, while simultaneously creating opportunities to share innovative solutions linked to the Urban Agenda. Finally, the reorganisation of public spaces, together with the integration of social and animal-based nature solutions (S-NBS and A-NBS), directly supports the objectives of the **New European Bauhaus** (NEB) by enhancing sustainable aesthetic and inclusive urban development.



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In this deliverable we begin with a brief overview of what we mean by upscaling. We then situate the work within the city's specific context, outlining local challenges, opportunities, and the solutions that were designed to address them. Next, we detail the replication activities carried out during the project. Finally, we present a clear plan for upscaling those solutions, specifying the step and resources needed to extend the impact beyond the initial scope.

2. Purpose of upscaling plan

Upscaling refers to activities that aim to **expand the reach and impact of a VIS** (or combination of VIS), often involving modifications to fit new contexts and suit diverse settings. Upscaling activities require innovative and reflexive strategies to address larger-scale challenges and resource constraints. This may include (but is not limited to):

- Increasing the number of beneficiaries or coverage area (e.g. entire city) within the original context (city).
- Integrating with city-wide urban planning
- Deepening the intervention's impact through enhanced features or services.
- Strengthening capacity to deliver the solution at a larger scale.
- **Replicate the activities in new interested cities.**
- Integrating the solution into existing city-wide systems and policies.
- Establishing new partnerships and stakeholder networks that expand the scope of the innovation.

Why Upscaling?

Upscaling is important for IN-HABIT for several reasons. It maximises the potential impact of the piloted solutions by ensuring they reach more people who could benefit from them. It builds on existing achievements, relationships and an intimate understanding of the local context. Successful upscaling can lead to transformative change by embedding solutions into broader local systems and policies, creating lasting institutional change that supports long-term innovation and sustainability. Upscaling often creates **opportunities for refining solutions that might not be apparent at a smaller scale.** As programmes grow within their original context, they can develop more sophisticated and tailored responses to the needs of a greater number of socioeconomic groups, build stronger partnerships with local stakeholders, and create more robust implementation mechanisms. This process of learning, adaptation and extension can subsequently inform future efforts to scale impact.

In the urban context of IN-HABIT, upscaling refers to the expansion of a VIS beyond its initial scope to reach wider geographical or institutional levels (e.g. regional, national, or international). For instance, this may involve transforming a pilot programme into a citywide or nationwide initiative. However, multiple pathways for upscaling remain possible, depending on context and objectives.



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IN-HABIT upscaling plans serve as roadmaps for expanding the solutions explored and implemented in the project to a broader context, ensuring their continued impact, effectiveness and sustainability on a larger scale. Building on the replication activities carried out in the project, the plans provide a summary overview of the process in each of the cities, outlining the steps, methodologies, and resources employed. They provide comprehensive guidelines that offer actionable strategies for scaling and adapting solutions aimed at fostering inclusive health and well-being, while also addressing potential challenges. The plan does not focus solely on positive results but also shines a light on the barriers encountered during the project's initial and implementation stages. By documenting these obstacles and detailing the strategies used to overcome them, the plan equips stakeholders and interested parties with valuable insights to anticipate and navigate similar challenges in future implementations.

3. Information about LUCCA Hum-animal concept and problem statement

3.1. Introduction and scope of the document

European cities are undergoing profound transformations driven by economic restructuring, environmental pressures, demographic change and evolving social expectations. These transformations challenge traditional models of urban governance, which have often relied on sectoral approaches and anthropocentric assumptions. Within this context, the presence of animals in cities—whether for food production, as wildlife or as companion/inclusive animals—has become an increasingly visible and structurally relevant dimension of urban life.

<p>City: Lucca Country: Italy Project Partners: Lucca Municipalities, Lucca Crea, Department of Veterinary Science Pisa University Identified Challenges: Animals in the cities</p>

Despite its growing importance, the governance of human–animal relations in urban contexts remains fragmented. Policies addressing animals are typically confined to specific regulatory domains such as veterinary control, public hygiene or animal welfare, while their broader implications for public health, urban planning, social inclusion, environmental sustainability and



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economic development are rarely addressed in an integrated manner. This fragmentation limits the capacity of cities to fully harness the potential benefits of human–animal interactions, while increasing the risk of unmanaged conflicts and unintended consequences.

The concept of **hum-animal urban governance** responds to this gap by proposing a relational and integrated approach to urban policy, capable of addressing the presence of animals as a cross-cutting issue within urban systems. Building on the experiences developed within the IN-HABIT project, this document aims to provide a strategic and operational framework to support the **upscaling and mainstreaming** of the hum-animal approach in European cities.

The document is conceived both as a **project deliverable** and as a **stand-alone strategic report**. It is addressed to policy makers at local, national and European levels, as well as to urban planners, public administrators and other stakeholders involved in urban governance. Its objective is not to promote a single model, but to offer guidance, principles and tools that can be adapted to different urban contexts.

3.2. Urban transformations and emerging challenges

European cities are increasingly shaped by interconnected economic, environmental and social challenges that require integrated and forward-looking policy responses. From an economic perspective, cities are experiencing changes in value creation mechanisms, with the growth of service-based economies, the emergence of new forms of work and increasing pressures on public finances. These dynamics constrain the resources available for the provision of urban services, while simultaneously intensifying the need for innovative, efficient and cost-effective policy solutions.

Environmental challenges are equally pressing. Climate change, biodiversity loss, and environmental degradation directly affect urban environments, altering ecosystems, increasing exposure to extreme events and reshaping the conditions for both human and non-human life in cities. Urban areas are no longer insulated from ecological dynamics; rather, they constitute critical arenas in which the interactions between human activities and natural systems become both visible and consequential.



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Socially, European cities are facing significant demographic changes, including population ageing, increased migration and growing social inequalities. These trends influence patterns of vulnerability, care needs and social cohesion. In this context, expectations towards urban policies are evolving, with increasing attention to quality of life, well-being and inclusiveness.

Taken together, these transformations reveal the limitations of traditional sectoral approaches to urban governance. Addressing economic, environmental and social challenges in isolation is increasingly ineffective. Cities therefore require **integrated frameworks** capable of recognising interdependencies and managing complexity. The governance of human–animal relations provides a particularly illustrative case of this need for integration.

While cities face common challenges, they also differ in terms of size, specific issues, and approaches to management. These variations also influence how animals are perceived, understood and valued within urban contexts. The IN-HABIT hum-animal proposal aligns with this integrative perspective, viewing animals in cities as a valuable resource that can contribute to more active, inclusive, and responsive urban environments, capable of adapting to the changing needs of their residents. In this context, urban planning can explore new directions by adopting an innovative approach to the presence of animals and their beneficial interactions with humans, while developing new tools and more integrated policy frameworks.

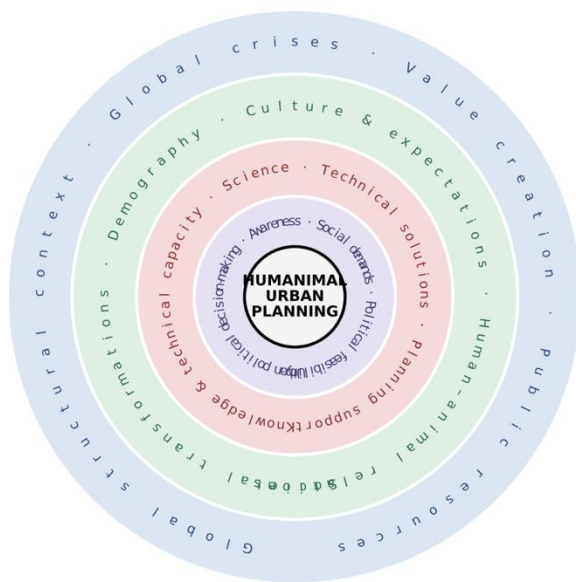


Figure 1. Hum-animal urban planning process. (elaboration from the authors)

Figure 1 provides a synthesis of the main elements involved in the organization of a hum-animal urban planning approach. The graph presents - from the external layers to the core - the global existing challenges and societal dimensions currently shaping the Human-Non Human Animals (H-NHA) relationships. Moving towards the core, the availability of scientific and



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technical knowledge and supports for the decision-making process can foster the development of political and societal awareness and enhance the potential for shared visions and convergent policy decisions. These converging visions may reframe the political arena, processes, and consensus from a more-than-human perspective, while strengthening the political will to advance a new, integrated policymaking process that culminates in hum-animal urban planning.

3.3 Animals in European cities: an underestimated dimension

Animals - as non-human-animals (NHA) - are a longstanding yet often underestimated growing presence in European cities. On the contrary, NHA live traditionally with humans (H) and in cities under diverse circumstances. Their roles and forms of presence vary significantly, but they can be broadly grouped into three interrelated dimensions.

First, **food-producing animals** have traditionally been present in urban areas, and in some cases, continue to be so. They are increasingly reappearing in urban and peri-urban contexts through innovative practices such as urban farming, aquaponics, insect production and educational farms. These initiatives address growing concerns around food security, sustainability, and public awareness of food systems, while also supporting local protein production and sustainable food transitions. At the same time, urban food production involving animals poses significant governance challenges. Issues such as animal welfare, environmental impacts, food safety, veterinary regulation, and zoonotic risk prevention require coordinated action across policy domains. Without integrated frameworks, cities may resort to restrictive regulations or ad hoc authorisations, which can limit both innovation and public trust. A human–animal approach helps cities develop **balanced policy frameworks** that enable experimentation while ensuring ethical, environmental, and health standards. In small and medium-sized cities, where urban–rural relationships are often stronger, attention to these issues can be reinforced through collaborative approaches involving neighbouring municipalities.

Second, **urban wildlife** plays a key role in maintaining biodiversity and ecosystem services in cities. Green corridors, parks, and peri-urban areas support a variety of species, offering citizens daily opportunities to engage with nature. Urban regeneration initiatives increasingly focus on green spaces and the management of diverse wild animals as essential elements for ecological complexity and biodiversity conservation. The presence of birds, mammals, insects, and other



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species contributes to ecological connectivity and ecosystem services, while encounters with wildlife can positively affect mental health and well-being. At the same time, urban wildlife presents challenges, including potential health risks, conflicts with human activities, and safety concerns in the case of large animals. These challenges can differ between metropolitan areas and small-to-medium-sized cities, where urban–rural interactions are often more pronounced. Governance responses frequently oscillate between protection and control, with limited attention to coexistence strategies. A hum–animal governance approach promotes **coexistence-oriented policies**, grounded in ecological knowledge, spatial planning, and public communication, allowing cities to manage wildlife proactively rather than reactively.

Third, **companion animals** represent the most visible and socially embedded dimension of animal presence in cities. They contribute to emotional support, social interaction, and well-being, particularly for vulnerable groups such as older adults and people with disabilities. While traditionally considered a **private** aspect of H-NHA interactions, their potential role in inclusive social and health support at the city level is increasingly recognized. **The social and health contributions of companion animals remain underappreciated and should be better understood and promoted to strengthen public goods and services for vulnerable populations.** Companion animals also have a growing economic role through services, employment, and tourism. At the same time, their increasing numbers present governance challenges, including responsible ownership, access to services, affordability, and potential conflicts with other urban functions or wildlife. Social inequalities may limit the capacity of vulnerable groups to provide adequate care, while insufficient regulation can generate environmental or social externalities. Within a human–animal framework, companion animals are considered as integral elements of complex **urban social systems**. Their management requires **coordinated policies across human and animal health, social, educational, economic, tourism, transport, and planning domains, to ensure inclusive well-being and maximize the potential for public good provision.**

The three components of NHA (see also figure 2) are consistently present in urban contexts, although their relative significance varies considerably depending on geographical, cultural, and socio-economic conditions, city size, and temporal dynamics. These three dimensions are deeply interconnected and collectively shape human–animal relationships within urban systems. Nevertheless, they are seldom addressed within a coherent and integrated policy framework.



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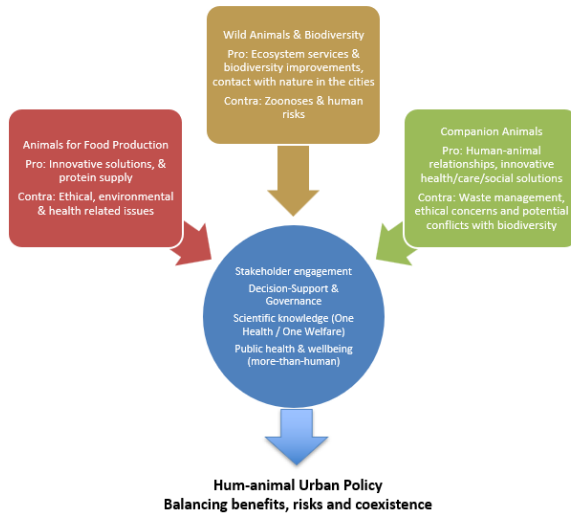


Figure 2. Hum-animal Urban Governance Flow: Integrating food production animals, wildlife, and companion animals into urban decision-making through a hum-animal governance approach. (elaboration from the authors)

benchmarked with positive contributions, key criticalities and potential areas for planning and policy intervention.

Instead, they are typically governed through fragmented regulations and sector-specific interventions, which fail to capture their cumulative effects and potential synergies.

Reflection on a **more-than-human perspective** for the development of hum-animal urban policy is not entirely new; however, it remains partial and unevenly implemented across urban contexts, with existing city experiences often addressing these issues in a fragmented manner. Each NHA component encompasses both positive contributions and critical challenges that can be integrated within a comprehensive hum-animal policy framework. As illustrated in table 1, the three dimensions of NHA presence in urban environments are

Table 1. Hum-animal Dimensions of Animal presence in cities. (elaboration from the authors)

Dimension of animal	Positive contributions/ Opportunities	Critical issues / Challenges	Implications for hum-animal urban planning
Animals as food producers	Innovative technical solutions (aquaponics, insect farming, urban beekeeping, educational farms); local and innovative protein supply; increased food-system awareness; shorter food chains.	Ethical concerns on animal welfare; environmental impacts; regulatory and veterinary constraints; zoonosis risks and food safety requirements.	Clear zoning and regulation; integration of animal welfare standards; health surveillance systems; inclusion of urban food production in planning strategies. Food planning policies & impacts in food consumption.
Wild animals and urban biodiversity	Protection of urban biodiversity; ecological corridors and green infrastructure; citizens' exposure to nature; environmental education.	Zoonotic risks; hygiene and safety concerns; conflicts or accidents with large wildlife; management complexity in dense areas.	Design of ecological networks; risk mitigation and monitoring strategies; public awareness and coexistence policies; coordination between environmental and health authorities.



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Companion / Inclusive animals	Emotional and social support; improved health and well-being; social interaction and community building; positive effects on public health, especially for vulnerable groups.	Challenges of regulation and responsible ownership; unequal access to veterinary care; conflicts with wildlife; impacts on public spaces.	Provision of pet-friendly urban spaces; inclusive services and health-social support programs; regulation of ownership and care; integration with public health, social, economic, and educational policies.
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The table synthesises the core dimensions of animal presence in urban contexts, the key governance functions required to manage them, and the relevant policy domains involved in a hum-animal urban governance perspective. Figure 2 further illustrates how different forms of animal presence in cities (food production animals, wildlife, and companion animals) generate both benefits and risks.

These inputs converge within decision-support and governance processes, in which scientific knowledge, public health considerations, and stakeholder engagement are integrated (see table 2). The resulting outcome is a hum-animal urban policy capable of balancing coexistence, health, well-being, and sustainability. Feedback mechanisms enable policies to evolve over time in response to social, environmental, and health-related outcomes.

Table 2. Hum-animal urban governance matrix. (elaboration from the authors)

Animal presence dimension	Knowledge & evidence	Regulation & planning	Health, care & well-being (more-than-human)	Participation & mediation	Implementation & institutional capacity	Relevant policy domains
Animals for food production	Scientific knowledge on urban-compatible animal production systems (e.g. aquaponics, insect farming, beekeeping); assessment of environmental impacts, food safety and zoonotic risks.	Land-use and zoning rules; animal welfare and veterinary regulations; food safety and biosecurity standards; integration into urban and peri-urban planning tools.	Application of One Health and One Welfare approaches; zoonosis prevention; ethical considerations of animal use.	Engagement of citizens, producers, consumers and civil society in debates on urban food systems and ethics.	Veterinary services, inspection bodies, technical expertise and interdepartmental coordination.	Urban planning; environmental; public health; agricultural and food; economic and labour; educational policies.
Wild animals and urban biodiversity	Ecological knowledge on species behaviour, habitats, movement patterns and	Habitat and species protection; green infrastructure and ecological	Management of sanitary risks; ecosystem health protection; reduction of stress, injury and	Environmental education; public awareness; mediation of	Coordination among environmental agencies, municipalities,	Environmental and biodiversity; urban planning; public health; educational;



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	ecosystem services; biodiversity monitoring.	corridors; conflict-prevention regulations.	mortality for wildlife.	human-wildlife conflicts.	wildlife experts and emergency services.	tourism and city branding policies.
Companion animals (pets)	Data on pet ownership trends, demographic change, social and health impacts; interactions with wildlife.	Animal welfare and registration rules; housing and public space regulations; pet-friendly urban design.	Promotion of human and animal well-being; support for vulnerable groups; veterinary care and disease prevention.	Community initiatives; pet-friendly spaces; mediation between pet owners, non-owners and conservation needs.	Veterinary services, social support mechanisms, enforcement capacity and service coordination.	Urban planning and housing; public health and social; economic and labour; transport and mobility; tourism; educational policies.

3.4 Animals in European cities: existing approaches

An examination of existing urban policies addressing the presence of animals reveals a wide range of approaches, shaped by city size, administrative traditions, and societal priorities. In most cities, regulatory frameworks are well established for the management of companion animals, with the primary aim of ensuring public safety and mitigating risks for both H and NHA (see also annex 1)¹. Traditionally, urban policies have focused on zoonotic risks and hygiene-related concerns associated with animal presence, with public veterinary services playing a central role through standardized measures such as per registration databases, regulations on animal care, and, in some cases, mandatory training for pet owners. Beyond regulatory measures, municipalities often intervene through the provision of dedicated spaces and facilities for companion animals and, in certain cases, by supporting low-income citizens with pets and operating services and infrastructures for abandoned animals. This approach can be observed in cities such as Zurich and Basel, as well as in many other cities in Europe and beyond (as summarised in table 3). The city of Amsterdam has adopted a more comprehensive policy framework focused on animals in the city, encompassing not only pet management but also

¹ In many cities there is a specific frame of rules related to the animal management by owner, and in specific settings. There are laws against cruelty, neglect, and improper care, with specific rules for keeping certain wild animals and for specific breeds of dogs, or cat management. Also, rules for transportation, access to public spaces are introduced. Specific aspect regards health management and prevention from potential zoonosis and human risks linked with the presence of animals. As for the Swiss law there are ethical breeding rules, pet transportation, rules, policies for workplaces, waste management, leash and control, Some national law support training for pet owners, sometimes in mandatory way.



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ethical and environmental concerns related to animal-based food consumption, regulatory frameworks for urban farming, and educational initiatives promoting responsible consumption practices. More recently, increasing attention to NBS and the development of ecological corridors has raised public awareness and stimulated policy initiatives aimed at improving the management of urban nature and wildlife. This trend has been supported by the emergence of specialised technical groups and start-ups capable of providing cities with new knowledge and innovative solutions related to biodiversity and ecological corridors at city level², and/or the presence of association supporting a role of agency regarding the presence of animals in the cities for their protection aiming for better integrating policies³. In some cases, cities have also promoted “pet-friendly” policies, responding to the growing number of citizens living and travelling with companion animals by providing dedicated facilities and targeted information services, as exemplified by the City of Riga. Nevertheless, across existing experiences, limited attention is typically given to the role of companion animals beyond private ownership and basic public health considerations, particularly regarding their potential contribution to public goods such as collective well-being and urban quality of life for both H and NHA.

² Among other initiatives, Studio Animal-Aided Design brings together interdisciplinary expertise from biologists and architects to implement the Animal-Aided Design (AAD) method. This approach aims to promote biodiversity and urban nature within urban development, landscape architecture, and architectural projects by integrally planning for the presence of animals as part of open-space design. Guided by the principle of co-habitation, AAD is socially possible and can find acceptance through processes that consider the adaptation of animal species to urban environments, the increasing tolerance of urban residents toward wildlife, and the recognition of cities as areas of high biodiversity. <https://animal-aided-design.de/en>.

³ In Italy, organisations such as LAV, Legambiente, and WWF actively promote attention to environmental and animal-related issues at both national and municipal levels. At EU level, lobbying groups work to raise awareness of animal-related concerns across various contexts, including organisations such as the European group for animals, or Vienna animal studies.



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Table 3. The hum-animal policy approach in selected cities (elaboration from authors)

Reference Cities	Animal-Nature-Based Solutions					
	Animal as food-producing		Animal as biodiversity		Companion animal	
	Urban farms Rules for producers	Ethical concern and education in food consumption	Green and biodiversity corridors	Monitoring biodiversity	as private good (rules for owners)	as public good (services for and with animals)
Amsterdam	*	*	*	*	*	
Basel					*	
Cordoba					*	
Lucca	*	*	*	*	*	*
Riga					*	
Rome					*	
Viena			*	*	*	
Zurich					*	

Addressing this gap represents an additional frontier that can complement existing efforts and contribute to the development of a more comprehensive Hum-animal urban policy. From this perspective, the integration of animals into urban planning can be understood as an opportunity to further explore Animal-NBS, supporting urban liveability and resilience, especially in the context of ongoing environmental, social, and economic challenges.

3.5. Towards policy integration: why a hum-animal approach is needed

The increasing significance of animals in urban contexts necessitates a transition from fragmented, reactive governance toward **integrated and anticipatory policy frameworks**. The hum-animal approach advocates such a transition by recognising that human well-being, animal welfare, and environmental sustainability are interdependent and cannot be effectively addressed in isolation.

Focusing on human–animal relationships at the urban level opens the door to a “**more-than-human**” perspective, where the diverse needs of both H and NHA can be represented either directly by stakeholders or through intermediary agencies. In terms of health and well-being, attention to NHA alongside H introduces the concepts of **One Health** and **One Welfare**, in which the health and welfare of H and NHA are recognised as mutually interdependent. Designing



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innovative approaches to enhance H–NHA interactions also requires careful consideration of the socio-technical and political components inherent in a “more-than-human” or “hum-animal” urban planning perspective.

In line with the New European Bauhaus (NEB) initiative, a hum-animal city could leverage A-NBS to create attractive, inclusive, and liveable urban environments for all residents. Such approaches contribute to urban regeneration, foster well-being and a sense of belonging, and specifically address: **a)** environmental objectives, by mitigating urban environmental risks and promoting biodiversity and green infrastructure; **b)** food education, through urban farming and related educational initiatives that enhance understanding of food production systems; **c)** the promotion of human–animal bonds, supporting inclusive health and well-being across diverse social groups and vulnerable populations.

Analysis of existing urban experiences suggests that the potential of human–animal bonds to enhance well-being and quality of life remains largely underestimated. Urban policies tend to prioritise regulations concerning NHA rights, owner responsibilities, and human–animal coexistence. Meanwhile, the number of companion animals—and the societal attention devoted to them—is rapidly increasing worldwide (Redazione Vet33, 2024), introducing both new challenges and opportunities for urban planning. Within this evolving urban context, animals represent a form of **Animal-Nature Based Solutions** that, if better understood and managed, can improve quality of life, promote inclusion, and enhance social dialogue, while contributing to urban regeneration and responding to growing societal demands for positive and appropriate animal management.

From a policy perspective, this hum-animal approach aligns closely with emerging European frameworks such as **One Health and One Welfare**, the **European Green Deal**, the **EU Biodiversity Strategy**, and the **Urban Agenda for the EU**. These agendas emphasise the need for holistic, cross-sectoral solutions and provide a supportive context for mainstreaming hum-animal considerations.

However, alignment at the level of principles alone is insufficient. Effective implementation requires the **translation of these principles into concrete governance mechanisms, planning tools, and policy levers that cities can adopt and adapt**. This document addresses this challenge by proposing a structured framework for **hum-animal urban governance**, with a particular focus **on upscaling local experimentation toward broader policy integration**.



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From this perspective, the urban hum-animal decision-making process acquires a new level of complexity, which can be structured as illustrated in Figure 3. The process begins with the collection and analysis of qualitative and quantitative urban data, including health and environmental indicators. A comprehensive stakeholder map can then be developed, alongside the formal establishment of a public hum-animal arena to support subsequent co-design, co-deployment, co-management, and co-monitoring activities. Analysis of existing policies and regulations further informs the decision-making process. The **hum-animal public arena** ensures that both H and NHA perspectives are represented, while also integrating diverse technical and thematic considerations, including urban and city planning, environmental management, animal-related issues, education, social and health aspects, and economic and tourism-related elements. **Hum-animal urban planning requires strong intersectoral coordination and transversal alignment of political choices.** Simultaneously, it demands a **process of social facilitation and mediation** to identify and integrate suitable solutions into a coherent hum-



Figure 3. Urban decision-making process for integrated hum-animal policies. (elaboration from the authors)

animal urban policy. Intermediate and final decisions may lead to the implementation of **pilot projects**, services for H and NHA, **regulatory frameworks**, and the **reorganization of urban spaces** from a hum-animal perspective, thereby **enhancing health and well-being in a more-than-human context.** **Monitoring and evaluation** are integral to this process, supporting an ongoing cycle of policy and process improvement.

3.6. Analysing the regulatory frame for supporting a hum-animal urban policy

The development of a hum-animal urban policy requires a high level of integration across competencies, regulatory frameworks, and policy domains, in line with the diverse potential outcomes that A-NBS can offer in support of urban life and its quality, as illustrated in Figure 4. The figure shows how the different dimensions of animal presence in



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cities are addressed through core governance functions and a range of cross-cutting urban policy areas.

	A-NBS	Hum-animal outcomes	Hum-animal urban governance	Competences	Policies
urban hum-animal policy	Animals as Food Provider	Urban farming, insects, beekeeping, aquaponics, local food chains	Participation & Mediation Engagement, dialogue, conflict management	Farmers, Planners, Veterinaries, Biologists, Social workers, Health workers & doctors, Engineers, Marketing, Entrepreneurships, Educators, Gamers	Urban Planning, Environmental, Public Health, Educational & Cultural, Food policies, Social, Human health, Economic & Labour, Transport, Tourism
	Wild Animals in cities	Biodiversity Urban nature, ecological corridors, human-wildlife interactions	Knowledge & Evidence Scientific knowledge, monitoring, data		
	Pets in cities	Care, companion, innovative services & solutions, social and health impacts	Regulation & Planning Space management, rules and standards		

Figure 4. Conceptual framework of hum-animal urban governance. (elaboration from the authors)

At national and local levels, policies can be supported by specific regulatory frameworks that implement EU rules and standards, while also reflecting national approaches and local regulatory frames. This applies in particular to environmental policies and the management of wild animals (starting from relevant EU directives and regulations), as well as to animal welfare legislation, strategies and policies adopted at EU level and implemented locally in food-producing systems. It also includes regulations governing the management of companion animals, both at the level of individual ownership and at the city level. In addition, health and social inclusion policies may incorporate specific provisions related to animals, particularly concerning their use in co-therapeutical interventions, both from a procedural standpoint and through dedicated policy measures to support such practices.

The hum-animal urban framework is fully aligned with the European Union’s strategic orientation toward integrated, place-based, and cross-sectoral policy approaches. Rather than introducing a new policy domain, the framework functions as an enabling and connective governance perspective, supporting the implementation of existing EU strategies at the urban level. The EU Urban Agenda recognises cities as key arenas for addressing global challenges such as climate change, public health, social inequalities, and biodiversity loss. Within this



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context, human–animal relations constitute a structural yet underexplored dimension of urban systems, with the potential to contribute meaningfully to multiple EU strategic priorities and policy frameworks.

The hum-animal framework advances this contribution by conceptualising urban ecosystems as more-than-human systems and by promoting inclusive health and well-being alongside biodiversity conservation, nature restoration, and climate adaptation in cities. More specifically, the framework operationalises the **One Health and One Welfare** principles at the urban level by integrating health promotion, prevention, and risk management, in alignment with **EU4Health**, the **EU Health Union**, and the **EU Mental Health Strategy**.

As reported in Table 4, companion animals contribute to social inclusion, animal-assisted services, and individual and collective well-being, thereby supporting key EU priorities such as the **European Pillar of Social Rights** and the **EU Disability Strategy**. Urban planning functions as a mediating and integrative instrument within the hum-animal framework, in line with the **New Leipzig Charter**, the **Territorial Agenda 2030**, and the **Urban Agenda** for the EU. Upscaling is conceived as a governance process consistent with the strategic orientations of Horizon Europe, EU Missions, and European urban knowledge and innovation programmes.

At EU level, environmental and biodiversity objectives are addressed through a comprehensive policy framework led by the EU Green Deal strategy, which encompasses a wide range of policy interventions. **The EU biodiversity Strategy aims to halt and reverse biodiversity loss as a means to strengthen resilience against climate change, food insecurity and disease. The Nature Restoration law (2024) introduces specific provisions for restoring** degraded terrestrial and marine ecosystems, with particular attention to pollinators, urban green spaces, and forests. In addition, the **Habitats and Birds Directives** focus on the protection of species and natural habitats, forming the basis of the Natura 2000 network of protected areas. Within these frameworks, support for protected areas, the promotion of NBS to integrate nature into urban planning, and the advancement of circular economy approaches to reduce waste and pollution represent key pillars. To facilitate effective implementation, EU funding is channelled to support these policies, scientific knowledge and research are mobilised to enhance understanding, and integrated strategies are promoted to achieve the expected environmental and biodiversity targets.



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Table 4. Alignment between the Hum-animal Framework and EU Policies. (elaboration from the authors)

Hum-animal dimension	framework	Key EU strategies and policies	Added value of the hum-animal approach
More-than-human cities		European Green Deal; New Leipzig Charter; Territorial Agenda 2030	Translates systemic EU principles into urban governance practice
Food-producing animals in cities		Farm to Fork Strategy; EU Protein Strategy; Horizon Europe	Integrates food innovation with planning, ethics and public health
Urban wildlife and biodiversity		EU Biodiversity Strategy 2030; Nature Restoration Law	Connects biodiversity goals with governance and social acceptance
Companion animals and social systems		European Pillar of Social Rights; Mental Health Strategy	Recognises pets as social infrastructure and service enablers
Public health (One Health)		EU4Health; EU Health Union; One Health approach	Operationalises One Health at urban scale
Urban planning and public space		New Leipzig Charter; Urban Agenda for the EU	Supports inclusive and health-oriented planning
Hum-animal governance and upscaling		Horizon Europe; EU Missions; Multi-level governance	Provides a meta-governance framework for coordination

In response to the relevant EU call, the IN-HABIT project implemented in Lucca examined whether the presence of animals could contribute to the regeneration of urban spaces and the fostering of more inclusive communities, ultimately enhancing residents’ quality of life. The project was grounded in the recognition that animals are an integral part of urban life, coexisting with people on a daily basis - as companion animals, wildlife moving through urban areas, or animals encountered through professional and institutional mediation. The five-year pilot experience in Lucca produced positive outcomes, with significant methodological implications for the development of a “hum-animal city” model. Within this model, urban planning - covering urban, structural, and infrastructural dimensions - is conceived to actively integrate and valorise appropriate human–animal interactions. To date, no city worldwide has systematically adopted or operationalised the hum-animal city concept, particularly from the perspective of inclusive health and well-being.



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3.7. Towards a hum-animal policy: the contribution from IN-HABIT-Lucca project

The **Lucca case** represents the first attempt to conceptualise an *integrated hum-animal urban policy* as a **potentially innovative response to urban environmental and societal challenges, while promoting inclusive health and well-being for vulnerable populations at the city level.**

In Lucca, the objective was to introduce a new concept of the human–animal city, grounded in both the increasing presence of animals in urban environments and the growing body of scientific evidence demonstrating the benefits of human–animal interactions. The project built on existing practices in the Lucca area - ranging from **responsible food consumption to initiatives supporting animals and biodiversity** - while focusing on the promotion of human–animal interactions as a valuable and innovative public good for fostering inclusive health and well-being. Within this framework, the concept of **Animal–Nature-Based Solutions (A-NBS)** was introduced for the first time in the scientific literature, highlighting the potential of animals **to enhance quality of life and inclusive health for both H and NHA at the city level.** Through A-NBS, NHA can actively contribute to inclusive health and well-being for all living beings. The Lucca hum-animal project structured this vision into a coherent framework, integrating diverse human–animal solutions into a unified and innovative hum-animal policy approach. This framework is designed to be scalable, facilitating its adoption in other cities and contexts. The following chapters describe the Lucca process, providing a reference pathway for potential upscaling initiatives.

3.7.1. Setting the scene in the Lucca context

The hum-animal perspective implemented in Lucca represents both a case study and a pathway for transformative urban change. Building on the objective of promoting H–NHA bonds to enhance inclusive health and well-being for vulnerable populations and citizens, the concept of A-NBS was defined and progressively introduced at the city level, in collaboration with municipal technical and political actors, as well as local NGOs, associations, and individual



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citizens. Early ideas were well received by local stakeholders, initiating a process of social innovation.



Figure 5. Representation of the city of Lucca.

Lucca (figure 5)

A small-medium size city, with a relatively good quality of life, although it faces emerging challenges such as an aging population, gentrification of the city centre, tourism pressure, presence of newcomers. The city maintains strong connections with its surrounding rural areas, and significant efforts have been made in urban food policies, participatory approaches, and green space management. Lucca features natural green corridors around its historic walls, linking the city to the Serchio river (and its park), as well as pathways connecting to the Monte Pisano forest. Targeted studies have been conducted to monitor and evaluate local biodiversity. Along these green corridors, large mammals (wolves, and wild boar) occasionally enter urban areas, occasionally generating coexistence challenges. The city's relatively small size both strengthens its connection with surrounding rural areas and concentrates multiple hum-animal functions within a compact urban area.

Regarding the three main animal components present in urban environments (reported in table 5), the primary focus in Lucca was on promoting companion animals to support inclusive health and well-being for vulnerable populations, as other components were already partially addressed within the city. Informed by existing European experiences and in response to the EU research call, this focus addressed a clear gap in public awareness, practical experience, and evidence. As previously noted, attention to companion animals in cities is typically limited to private ownership and regulatory concerns, including risk control, zoonotic and hygiene-related issues, and the protection of animal rights. In Lucca, the primary effort was to highlight the public dimension of H-NHA relationships - particularly for companion animals - by promoting inclusive health and well-being for vulnerable populations and the wider community.



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Table 5. The three A-NBS dimensions in Lucca. (elaboration from the authors)

Dimension of animal	Existing A-NBS evidence	Emerging activities
Animals as food producers	Educational farms in close rural areas; urban food policies and societal debate; increased food-system awareness; short food chains in dialogue with rural areas.	On-going projects with Pisa University on social farming and short food chains.
Wild animals and urban biodiversity	Green Lucca plan Biodiversity monitoring around the ancient walls, management of grass to support biodiversity, promotion of existing wildlife	On-going monitoring activities with Florence and Trieste Universities
Companion /inclusive animals	Regulation on responsible ownership and animal rights/welfare Presence of a city observatory on animal rights	Focus in IN-HABIT: Emotional and social support; improved health and well-being; social interaction and community building; positive design of innovative NHA based services effects on public health, especially for vulnerable groups. Provision of pet-friendly urban spaces; inclusive services and health-social support programs; regulation of ownership and care; integration with public health, social, economic, and educational policies.

The collection and analysis of **(a)** statistical social data, **(b)** existing urban policies, **(c)** green spaces, **(d)** stakeholder mapping, and **(e)** the organisation of focus groups with these stakeholders, and across **(f)** various municipal sectors constituted the preparatory work supporting the local process toward a hum-animal perspective, aimed at fostering inclusive health and well-being in the city.

3.7.2. The changing process in the Lucca case

The innovative nature of the hum-animal approach in IN-HABIT-Lucca required a continuous process of translation (Figure 6), consisting of: **a)** starting from the broad

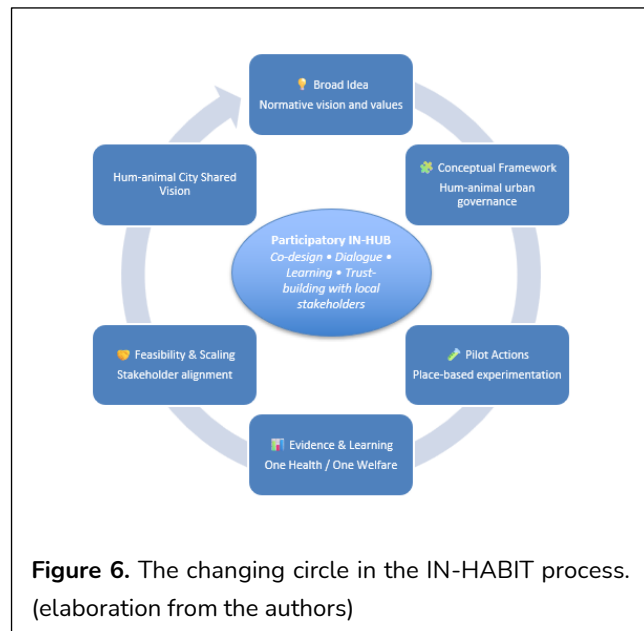


Figure 6. The changing circle in the IN-HABIT process. (elaboration from the authors)



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conceptual idea, **b**) transforming the general concept of the human–animal city into **c**) concrete pilot actions, while simultaneously **d**) strengthening the evidence base, and **e**) demonstrating the feasibility of the concept to an expanding network of public and private stakeholders. A key element of this process was the establishment of a **participatory IN-HUB**, designed to actively involve local stakeholders throughout the evolving implementation process.

The complete IN-HABIT-Lucca process is illustrated in Figure 7. During the project, several initiatives were upscaled at two levels:

1. **upscaling internally within the Lucca project**, aimed at progressively strengthening both the understanding of the hum-animal concept and its application in pilot initiatives—covering social and educational activities, the organisation of public spaces, public transport, economic activities, city reputation and attractiveness, participatory processes, and public dialogue. This engaged local stakeholders in practical pilots and generated evidence to better understand the opportunities and overall potential of the hum-animal approach.
2. **upscaling externally the hum-animal concept and the tested solutions** in a wider environment outside the city itself, engaging new actors and stakeholders.

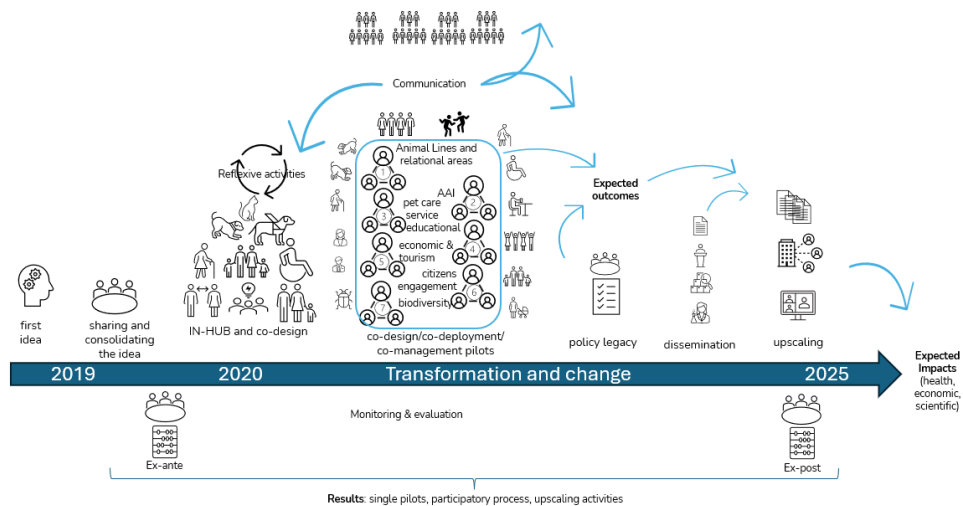


Figure 7. The research action process in Lucca. (elaboration from the authors)



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The solutions piloted and tested in Lucca, are summarised in table 6.

Table 6. Hum-animal solutions tested in the Lucca case. (elaboration from the authors)

Animal Lines and relational areas	Green public spaces devoted to human-animal interaction and human-human inclusive, intergenerational and neighbourly dialogue
Gaming activities	Engaging citizens in the new human-animal dimension with: <ul style="list-style-type: none"> • a <i>board (human-animal) game</i> rooted in Lucca • an <i>app</i> to valorise/populate both the hum-animal concept as well as the Animal Lines/relational areas
Participatory Educational activities	Implemented across different educational levels (primary, secondary, high school, and university) to co-design, disseminate, and critically reflect on the human-animal concept and its potential implications
Innovative animal-based services	For vulnerable people: <ul style="list-style-type: none"> • <i>Animal Assisted Interventions (AAI)</i> in nursing homes for elderly in Lucca • <i>Pet care service</i>: to support and to break isolation and potential states of anxiety in fragile isolate people with animals (services for both animals and people)
New economic pet-based economic opportunities	Promotion and valorisation of new job opportunities (with B4B) in the: <ul style="list-style-type: none"> • <i>ICT sector</i>: with app providers for a better management of the private pets • <i>AAI business activities</i>: to reinforce and to spread AAI in the society as a private activity for new entrepreneurs (often women) • <i>Tourism pet friendly initiatives</i>: introducing new services and attracting specific target of tourists in a changing society where pets are present in almost half of the families
Citizens pet-based events	In collaboration with the participatory IN-HUB to socialise, enjoy, promote citizens' activism and dialogue towards specific urban events devoted to human-animal interactions, like: <ul style="list-style-type: none"> • gaming activities with pets in relational areas • educational activities with pets in devoted public spaces • game based events with the board game involving citizens and families • reading cycles with children with book based on animals • painting initiatives and comics based on animal life and stories/strips • ecological walks with pets • discovering nature in the city looking at wild animals • taking care of abandoned animals reinforcing voluntary behaviours in the people and among youngsters
Co-planning & participatory initiatives	<ul style="list-style-type: none"> • towards the IN-HUB (public decisional platform) for the co-design and co-deployment activities (to better involve NGOs and citizens in an active representation of their ideas and needs) • co-planning with children to express their needs and ideas

In addition to the tested solutions, further initiatives could be implemented in Lucca and other urban contexts, as presented in chapter 3.7.5.9..

The Lucca experience demonstrates that piloting and testing are **time-consuming processes**, essential for **building awareness** and **converging visions** among a broad range of public and



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private stakeholders, including citizens, businesses, and NGOs. During the initial stages, when the concept is still emerging and not fully consolidated, it is important **to adapt the implementation steps to stakeholder acceptance** and to align solutions with the **evolving awareness** of local actors. Moreover, the **diversity of A-NBS interventions makes the implementation pathways flexible and adaptable, allowing responses to the specific needs, demands, and resources of different urban contexts.** Organising a **cluster of diverse solutions contributes to consolidating the overall hum-animal concept, which can subsequently be transferred and adapted to other settings.** When extended to other areas and stakeholders, the hum-animal approach can build upon existing achievements to expand its scope, accelerate implementation, or deepen its impacts, while remaining responsive to local contexts, needs, and priorities (Figure 8).



Figure 8. Hum-animal approach. (elaboration from the authors)

3.7.3. Focusing specific target/beneficiary groups

The promotion of A-NBS is context-specific, responding to the emerging needs and demands of cities and stakeholders.



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The demand: In Lucca, the hum-animal project, guided by the co-design process facilitated through the IN-HUB platform with local stakeholders, focused on specific target groups, including older adults, vulnerable populations, children and youth, families, people with disabilities, and residents across social, generational, gender, and geographical (city centre vs peripheral neighbourhoods) lines. The initiative also aimed to support innovative business opportunities involving young people and women. The hum-animal concept was co-designed to simultaneously address cross-cutting urban challenges while targeting specific groups through individual pilot interventions.

As highlighted, the **target groups and pilot initiatives emerged organically from the co-design process** and the IN-HUB dialogue, as summarised in Table 6. These initiatives are presented according to participating stakeholders and their primary objectives, reflecting a broader process of collective understanding. It is also evident that **priorities may vary across locations, depending on local needs**, the outcomes of the initial diagnosis, available resources, and the targets and demands identified through participatory activities. Given the wide range of groups that can benefit from human–animal interactions, the provision and structure of services should be integrated and aligned with local needs.

The increasing presence of animals alongside humans is generating new opportunities, demands, and requirements for innovative solutions across multiple domains, including retail establishments, healthcare facilities, public administrative offices, shared urban spaces, and emerging infrastructure.

3.7.4. Involving local stakeholders along the process

Hum-animal urban policies can engage and be supported by a wide range of actors. Typically, primary stakeholders for replication include city administrations, associations closely linked to animal welfare and protection, and relevant economic actors. When considering the diverse components of an integrated hum-animal urban policy, the potential range of actors expands to encompass multiple socio-cultural environments, as illustrated in Table 7.



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Municipalities play a central role in planning for the ongoing evolution of their cities. As the number of animals in urban areas continues to increase, their presence must be increasingly incorporated into political considerations, often in response to citizen demands and expectations.

In the case of Lucca, the focus was on promoting companion animals to support inclusive health and well-being. The stakeholders engaged through various participatory methods and activities are summarised in Table 7.

Table 7. Stakeholders and entry points in the IN-HABIT-Lucca Process. (elaboration from the authors)

Actors involved	Focus	Area of interest
IN-HABIT partners Lucca Municipality, LuccaCrea, Pisa University	Administration, communication, research	All related to the project
Animalist associations Veterinarians and professionals linked to pets	Animal welfare and rights	Environment, public health
Private citizens and informal groups	Facilities and solutions to better manage own pets	Environment, public health
Associations representing vulnerable groups (elders, physical and mental disabilities)	How to meet specific social needs	Social sector
Teachers	Interest on youngsters and education	Education
NGOs providers of services with pets	Attention innovative social/health services with pets	Social and health policies
Tourism guides	Attention to pet-friendly tourism	Economic and tourism
Association and firms working in the tourism sector	Attention to pet-friendly tourism	Economic and tourism
New firms and start-ups	Attention to pet and pet innovative service	Economic and new jobs
Cultural associations	Interest in cultural events	Culture

More broadly, the upscaling process can be conceived and organised in various ways, largely depending on the core objectives and positioning of the stakeholders involved. Table 8 presents a potential list of stakeholders, categorised according to the main topics that may be addressed by an integrated hum-animal policy.



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The focus of a hum-animal policy can be shaped by the composition of participants, their areas of interest, and their capacity to represent these interests. Ensuring representation of diverse and potentially contrasting perspectives can also facilitate the organisation of coexistence strategies for the range of animals present at the city level, helping to identify equilibria and mitigation measures when potential conflicts arise.

Table 8. Potential stakeholders in a hum-animal integrated urban policy. (elaboration from the authors)

Main area of deployment	Potential actors	Area of interest
Food producing animals	Municipality, producers' farms and associations, consumers, and organised consumers' groups, local retailers, animalist associations environmental associations, schools, public canteens, veterinarians, agronomists, nutritional experts, medical doctors	Ethical concern, food print in food consumption, local food chains reorganisation, private economic interest for local firms
Wild animals, ecological corridors and biodiversity promotion at urban level	Municipality, environmentalist associations and groups, biologists, planners, gardeners and related firms, plant producers, private builders	Environment management and promotion, biodiversity promotion, economic interest related to the field
Pet: as companion animals and inclusive animals	Municipality, animalist' associations, citizens, informal groups and pets' associations, pet-sport groups, firms and services related to pet management, pet-friendly tourism, NGOs and associations working in the social-health sectors, Associations representing vulnerable groups (elders, physical and mental disabilities, others vulnerable), Cultural associations, Schools and educators, social/health institutions, Builders, Foundations,	Pet management, leisure, economic interest related to the fields



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The initiation of a process leading to an integrated hum-animal urban policy is typically led by the municipality. At the same time, other actors can also begin to develop specific components that contribute to the broader framework, as illustrated in the following boxes. For example, NGO activism often starts from targeted initiatives but can subsequently advocate politically for the expansion of their actions within a wider hum-animal perspective. Similarly, public institutions may develop specific service areas while seeking to support the broader potential and integration of their primary fields of interest.

<p>NGOs and associations: might operate on a smaller scale, with their operational capacity sometimes dependent on the support received from public municipalities. They typically engage in a dual role, they can:</p> <ul style="list-style-type: none"> • actively support and contribute to the expansion of city plans that have been collaboratively defined within a participatory arena alongside public institutions • attempt to secure support for their own distinct initiatives, with the aim of enlarging their scope, achieving broader public acceptance, and eventually integrating into wider, more comprehensive projects. <p>The process for these organizations can be structured as follows:</p> <ul style="list-style-type: none"> ○ The initial phase involves joint visioning and collaborative design of the starting ideas ○ follows resource acquisition, encompassing financial, human, and material assets ○ An analysis of legal requirements and necessary permits for the proposed activities must be conducted ○ Co-deployment of the initiatives ○ Communication and sharing of the initiatives themselves, along with their key achieved outcomes ○ The final stage involves enlarging partnerships, ideas, and resources to effectively scale up solutions and amplify their benefits. 	<p>Specialized public/private institutions in the social/health sector: can develop specific plans and initiatives to leverage human-animal interaction for specific services and target groups. Examples include AAI in nursing homes for elders, or for people with autism, as well as dedicated programs for children in schools or specific centres. In these cases, the process can be structured as follows:</p> <ul style="list-style-type: none"> • Clear definition of objectives and plans • First draft hypothesis in collaboration with key partners • Public/private selection of people and associations with specific competences (according with the activity to deliver) • Co-design and co-deployment by involving key actors (e.g., teachers, social workers, medical doctors, depending on the service and target) • First analysis and organization of crucial logistic aspects to facilitate effective human-animal interaction and its associated processes (covering logistic from the arrival of animals to the delivery of activities and the final stages of the process).
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A hum-animal integrated policy operates within a hybrid environment, where multiple policy domains intersect and where evidence-based, multidisciplinary dialogue is essential. From this perspective, implementing the hum-animal concept requires a cultural shift and an updated understanding among the public, including policymakers, citizens, NGOs, private businesses, and personnel across relevant institutions. While familiarity with animals and the human–animal bond is increasing, substantial effort is still needed to cultivate a common understanding and a shared vision of the concept.



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Among the audiences involved, **municipal staff** - both **technical** and **political** - represent a key component of the hum-animal process. They are directly engaged across the different areas of interest emerging from the dialogue and play a pivotal role in promoting activities throughout the co-design, co-deployment, and co-management phases. As demonstrated in the Lucca case, and confirmed in other contexts, their involvement is crucial for both the institutionalisation of innovative solutions and the organisation of pilot initiatives.



Figure 9. Progressive co-design process inside the IN-HUB. (elaboration from the authors)

Within the IN-HUB activities, starting from specific entry points, the hum-animal concept was progressively co-designed, embraced by stakeholders, and translated into the first pilot solutions (Figure 9). This same approach can be replicated during upscaling initiatives.

Drawing on the Lucca experience and the co-design, co-deployment, co-management, and co-monitoring (**Co-De-De-Ma-**

Mo) activities, a set of key enabling conditions can be identified, as illustrated in Figure 10. In particular, the finalisation of **1) a political and civic awareness and convergence** around the hum-animal planning perspective are a necessary precondition for the entire process. It allows the establishment of **2) a core group** bringing together technical and political components of the municipality, alongside a stakeholder **participation** hub, and support **3) structured societal dialogue**, capturing emerging needs and demands, negotiating potential conflicts, and fostering convergence across diverse perspectives on human-animal relations (e.g. food production,



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biodiversity enhancement, companion and inclusive animal solutions). The co-design, co-deployment, co-management and co-monitoring activities should adopt a **4) multidimensional focus** connecting social, environmental, and economic dimensions and the related municipal policy areas, taking advantage from **5) innovative cross cutting collaborations**, helping to overcome sectoral silos in governance and policymaking. The activities should ensure a **6) long-term engagement**, to support mindset change, convergence of visions, implementation of innovative solutions, redesign of procedures, mobilisation of public and private resources, and robust monitoring and evaluation processes. **7) Capacity building and skills development** for all involved actors should be embedded throughout the process and considered a core component of solution development and implementation. **8) Sustainability** must be a guiding principle in the implementation of all solutions, encompassing long-term effectiveness and efficiency, environmental and cultural sustainability, coexistence among diverse human and animal components, and the achievement of new urban equilibria.



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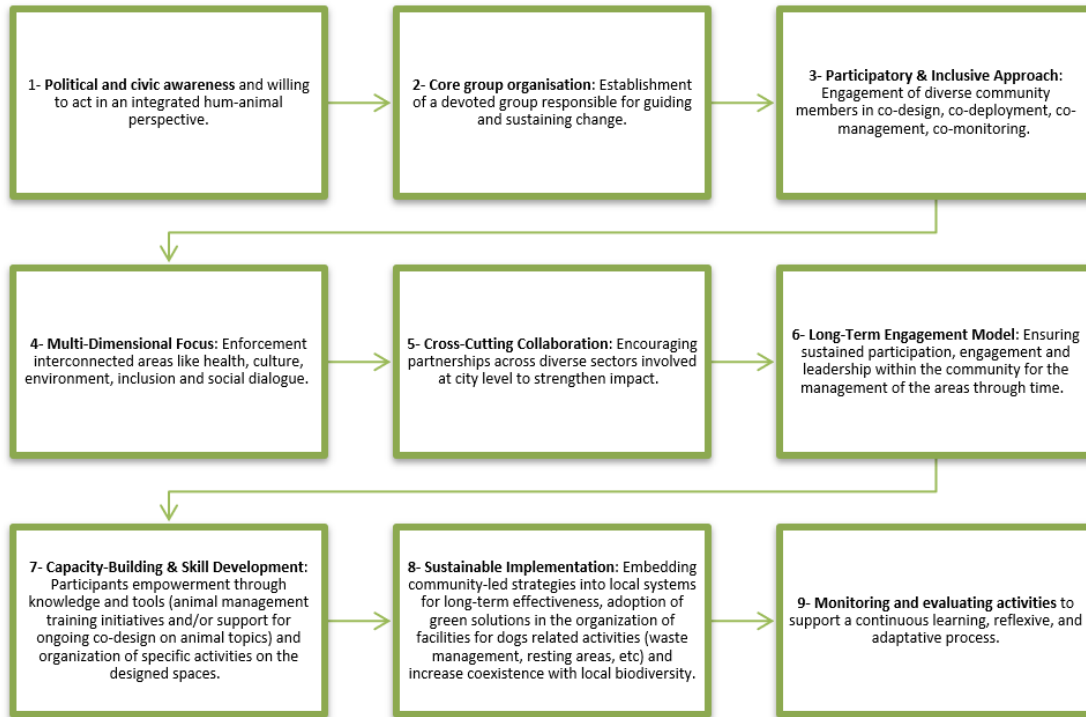


Figure 10. Co-design, co-deployment, co-management, and co-monitoring process in Lucca. (elaboration from the authors)

Over time, in Lucca, a highly motivated core group gradually emerged. This group became key - and replication activities became key- to internalise and actively endorse the overarching vision, progressing along a pathway that continues to require sustained attention, active engagement, and targeted long-term support.

From a city-level perspective, once the hum-animal city concept is formally recognised as a policy priority and internal agreements are reached among the relevant municipal councillors regarding key resources and target beneficiaries, a city can establish a set of organisational structures to support an integrated hum-animal urban policy. These may include:

1. The creation of a dedicated "**pet policy city manager**" position



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2. The establishment of a council, observatory, or **participatory arena**, designed to ensure the active involvement of key stakeholders in a process of transition and transformation. This body would engage stakeholders in co-design, co-deployment, co-management, and co-monitoring/co-evaluation of implemented pilots and actions, following a cyclical "arena, agenda, pilot, reflection" approach
3. The formal drafting of a **Chart of Principles**
4. The precise definition of a **comprehensive human-animal strategy**
5. The development of a dedicated **human-animal city plan and related policies**, including clearly defined actions, timelines, and allocated resources.

The complexity inherent in an integrated hum-animal policy places significant demands on skills, coordination, and mediation capacities, which may not always be fully available at the municipal level. To support this transition, dedicated tools and pathways - such as specialised start-ups, intermediary organisations, or external expertise - are often required. These processes typically extend beyond the timeframe of a single project and necessitate sustained support to both scale up and deepen the implementation of innovative solutions. Such processes may unfold within a single city through multiple applications or expand across cities and territories. Their objectives are multifaceted: to explore new opportunities, engage a broader range of actors, disseminate and consolidate the core hum-animal concept, build political and societal support, and ultimately institutionalise innovative solutions within public administrations, civil society, and the wider governance ecosystem.

3.7.5. The A-NBS solution for a hum-animal policy supporting inclusive health and well-being

Given the high adaptability of the hum-animal city concept across a wide range of contexts, target groups, and policy objectives, the various VIS can be understood as modular components within a repository of solutions. These components can be organised and combined in response to emerging issues and local political and participatory processes, following a progressive and context-sensitive pathway. This section presents the main lessons learned from the Lucca hum-animal case. The solutions developed and tested in Lucca can be considered a foundation for



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further upscaling initiatives in other urban environments. While each solution was designed to address specific target groups, their combined implementation contributes to the consolidation of the broader hum-animal city framework. For the VIS tested in Lucca, detailed descriptions are provided within this chapter and in the annexes. The section then reflects on additional solutions that could be implemented both in Lucca and in other cities, depending on local processes, needs, and governance arrangements.

3.7.5.1 Animal Lines & Relational areas

The “**Animal Lines**” are organised pathways that connect different neighbourhoods within the city, facilitating human–dog walks and interactions. *(In the case of Lucca, these paths link the historic city centre with suburban and peri-urban areas, incorporating the ancient city walls and under-utilised surrounding green spaces, known as the Spalti.)* The “**relational areas**” *(in Lucca, one at the Parco Fluviale del Serchio and another near the former hospital at Campo di Marte)* serve as dedicated hubs for the Animal Lines. These accessible spaces are designed to foster human–animal interactions, and, consequently, to promote social relations and inclusion, particularly among vulnerable populations. The solution encourages mobility, play, and social dialogue for both humans and animals. Attention to coexistence with wild animals is necessary and should be continuously monitored during the organisation, management, and evaluation of these areas. Additional enhancements may include the introduction of green elements and smart waste disposal systems to reduce environmental impact, enhance biodiversity, and support effective waste management. **Three key elements** for upscaling such solutions can be summarised as follows:

1. **Reorganization of public spaces:** Cities typically possess public spaces and pathways that can be adapted to a hum-animal perspective. Mapping and connecting these resources may be simpler than initially expected.
2. **Recognition of specificities and required expertise:** Local conditions play a crucial role in organising public spaces under a hum-animal perspective. Successful implementation requires appropriate professional skills, including veterinary, ethological, biological, and urban planning expertise.
3. **Integration of participatory processes:** Implementing these solutions is not solely a technical exercise; participatory activities are essential to engage stakeholders, ensuring broad civic ownership and active involvement.



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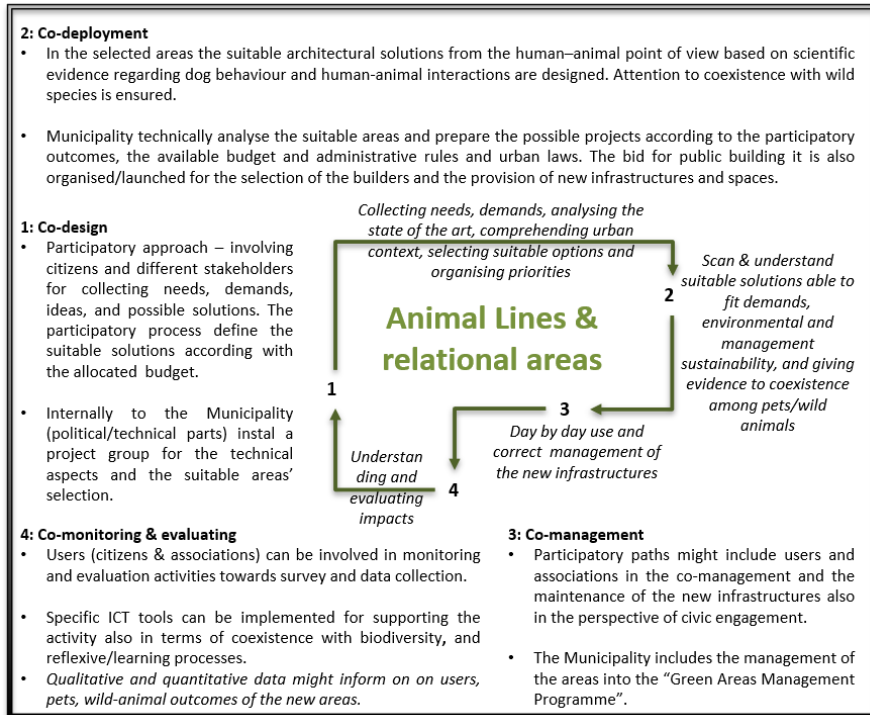


Figure 11. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for Animal Lines and relational areas. (elaboration from the authors)



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3.7.5.2 Animal Assisted Interventions

Companion animals can be successfully valorised through their interaction with various vulnerable groups via Animal Assisted Interventions (AAI). Growing scientific evidence highlights the benefits of these interventions for the fragile people involved. Codified procedures exist for their implementation (*in Lucca the focus was on engaging the expanding population of older adults, in collaboration with nursing homes and care facilities for people with dementia*). At the national level, specific regulations and guidelines provide a framework for implementing AAI. Depending on the target groups and the structure of the local welfare system, a range of institutions can participate in the co-design, co-deployment, co-management and co-monitoring of these interventions. Furthermore, national rules and funding mechanisms can support the implementation and upscaling of AAI initiatives.

In Lucca, following the co-design activities within the IN-HUB, the municipality launched a public call in accordance with existing administrative procedures to engage NGOs. Three NGOs with specific expertise were selected to implement the co-deployment process, in line with the provisions of the national “*co-progettazione*” law. Several meetings were carried out between selected NGOs, Municipality, Pisa University and the social workers from the selected nursing homes. The planning activities included 15 meetings with trained dogs for each of the 6 participant groups, totalling 90 meetings over a 9-month period. Co-deployment was conducted jointly by the NGOs and nursing home professionals, while co-management was led by the NGOs in collaboration with the nursing home staff, taking into account internal routines and space availability. Co-monitoring and evaluation were carried out through dedicated focus groups, complemented by quantitative data collection using specific devices and samples. The initiative produced positive outcomes, including increased proactivity, a heightened sense of anticipation, improved calm, and enhanced social interaction among participants.

The following key elements for upscaling such solutions might be highlighted:

1. **Regulatory compliance:** The introduction of AAI is typically regulated at national level and must fully comply with existing legal and procedural frameworks.
2. **Stakeholder negotiation and resource allocation:** Based on current evidence, the implementation of this type of innovation often requires structured negotiation with health authorities and, in some cases, adjustments to existing budgetary allocations. In this context, broad stakeholder involvement throughout the **Co-de-de-ma-mo** phases is essential to ensure the stabilisation and long-term sustainability of the solution.
3. The **funding mechanisms** can be supported through ordinary social and health budgets at municipal level or through applications to dedicated funding schemes, depending on national regulations. In Italy, municipalities may manage specific infrastructures and services through collaborations with social cooperatives (according with the Italian Law 381/1991). Within this framework, municipalities can define service standards and delivery criteria, including the provision of AAI. In some cases, service providers may autonomously introduce AAI within their existing budgets.



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4. The **cost-effectiveness** of AAI demonstrates a highly favourable profile compared to other ongoing activities. With relatively limited financial investment, they are capable of significantly activating participants' capacities and generating meaningful well-being outcomes.

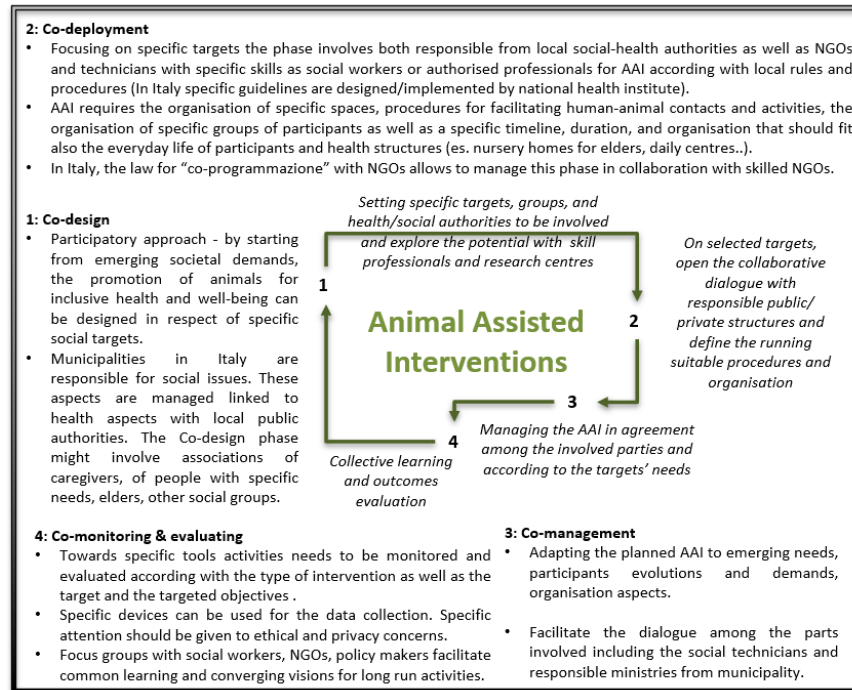


Figure 12. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for AAI. (elaboration from the authors)

3.7.5.3 Pet care services

The Pet Care service introduced within Lucca-IN-HABIT project was designed to support vulnerable pet owners experiencing temporary situations of difficulty in managing their animals. Scientific literature widely recognises that the presence of companion animals in the home generates positive outcomes for pet owners (i.e. emotional support, mental health and social well-being). At the same time, pet ownership entails responsibilities and care duties that must be consistently fulfilled by the owners themselves. When situations of fragility emerge - either temporarily or over longer periods - these responsibilities may become challenging to manage. This can result in increased anxiety for pet owners, delays in accessing



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personal health or social care, potential risks to animal welfare, and, in some cases, a compression of animal rights. The Pet Care service can be introduced as a tool to integrate human and animal needs through the redesign of municipal services, with the direct involvement of NGOs and active citizenship. It supports vulnerable pet owners in managing their companion animals while simultaneously strengthening the local social protection network by providing assistance, informal monitoring, and opportunities for social interaction.

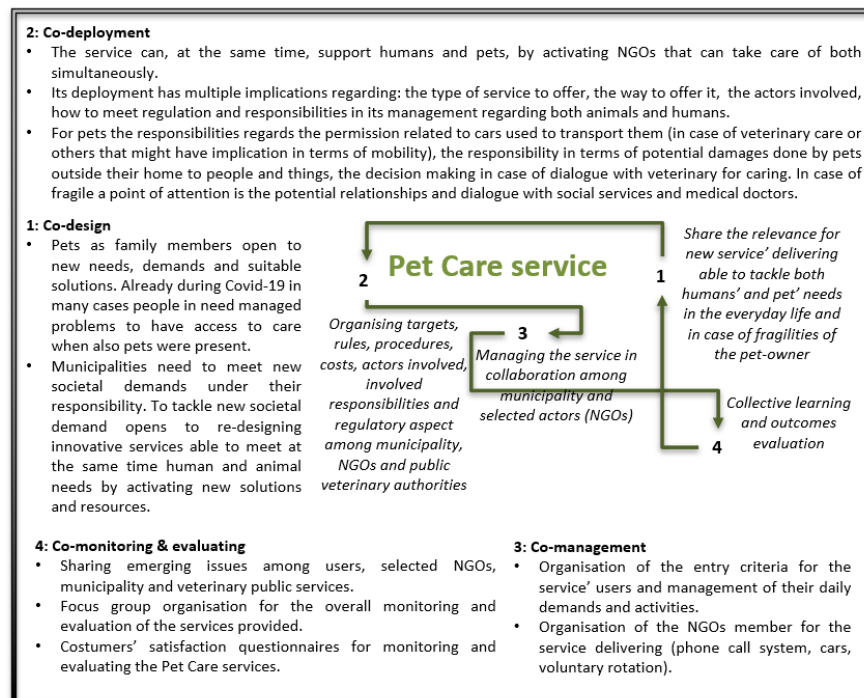


Figure 13. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for Pet Care services. (elaboration from the authors)

The Pet Care service can be organised into three main “macro-categories” of services:

- Domestic services: care for the pet at home, including the provision of necessary supplies
- Outdoor services with the owner: transporting to the vet or walking the dog together with the owner
- Outdoor services without the owner: transporting to the vet or walking the dog without the owner

Two key elements should be considered when upscaling Pet Care services:



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- **Support for vulnerable populations:** These services assist fragile individuals by addressing the care and management of their pets during periods of personal difficulty.
- **Reorganization of social service delivery:** By engaging additional actors, such as NGOs and volunteer groups involved in pet care, these services foster socially inclusive activities, promote dialogue among citizens, and strengthen social protection networks.

3.7.5.4 Education in schools

In **Lucca**, two editions of the pet school educational program were organised. Initial meetings helped present the educational proposals of Pisa University, LuccaCrea, and DFC Spain to school managers and teachers in the Lucca area through the municipality. The first edition began at the end of 2023, with 7 primary schools enrolling. In 5 classes across 3 schools, the full 4-hour program—comprising four one-hour sessions—was delivered, while in 10 classes across 5 schools, a shorter 1-hour version focused mainly on playing the board game was implemented. The second edition launched at the end of 2024 involved 5 primary and 2 secondary schools, totalling 15 classes, with activities organized into 2-hour sessions, including one hour dedicated to the board game. The program emphasized active engagement of young citizens in the co-design of the city, fostering empowerment and their capacity to promote change. A similar initiative was also successfully replicated in Pisa through 3 editions organized by the Ciardelli Association, involving all city schools and achieving notable youth participation and appreciation.

The increasing presence of pets in cities and in the families requires knowledge for their proper care, ensuring their welfare and preventing conflicts between humans, humans and animals, or among animals themselves. Families and children play a central role in daily decisions regarding pets, and their education can significantly improve human-animal relationships at the urban level. In schools, pets and animals can serve as a point of connection among children with different needs, nationalities, and cultural backgrounds. Within families, pets often provide intergenerational contact, linking grandparents and children. Caring for animals can also foster responsibility,

engagement, and active planning in younger members of society. Key actors in school-based pet and animal education typically include municipalities, school administrators, educators, families, young people, and providers of animal-related educational programs.

Two key elements must be considered when upscaling educational activities:

1. **Hum–animal focus:** Activities revolve around the human–animal relationship, promoting responsible pet management in urban settings while emphasizing the role of animals in supporting inclusive health and well-being, the responsibilities tied to pet ownership, and aspects of coexistence.
2. **Active student engagement:** Students are viewed not merely as recipients of knowledge but as active societal participants, encouraged to foster proactive citizenship through specific methods and participatory tools.



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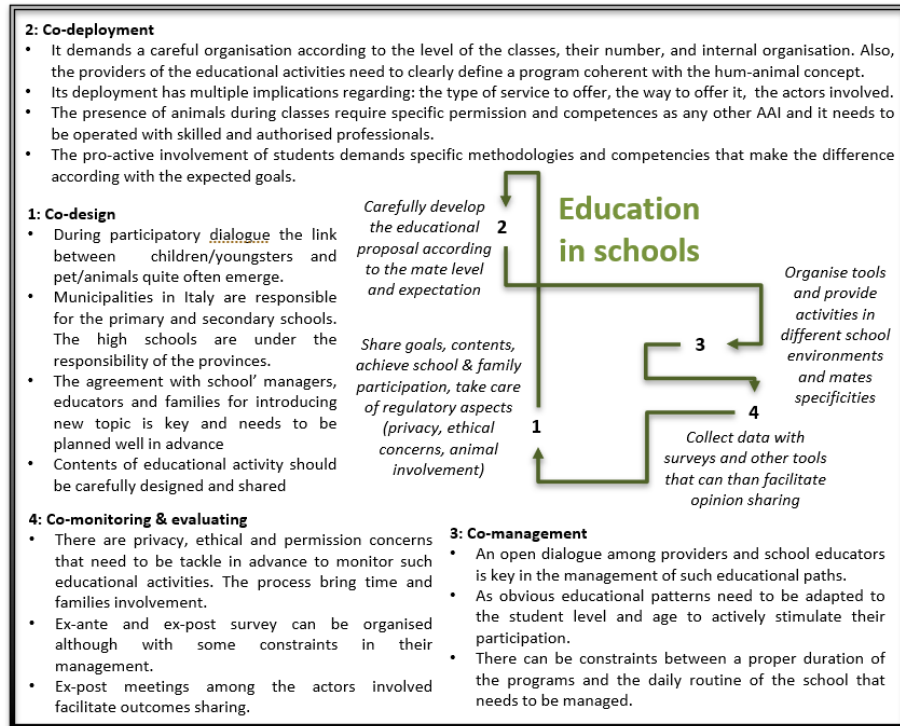


Figure 14. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for educational programs in schools. (elaboration from the authors)

3.7.5.5 Board game “City Pets”

City Pets is a card game centred on the relationship between humans and animals. It is designed to entertain while highlighting the core themes of the IN-HABIT project. The goal is to assign each family a dog card, ensuring that the pet’s needs (such as space, activities, and resources) are met. The illustrated family cards also promote integration and inclusion, representing families of diverse ethnic backgrounds and sexual orientations, reflecting another central focus of the IN-HABIT project.



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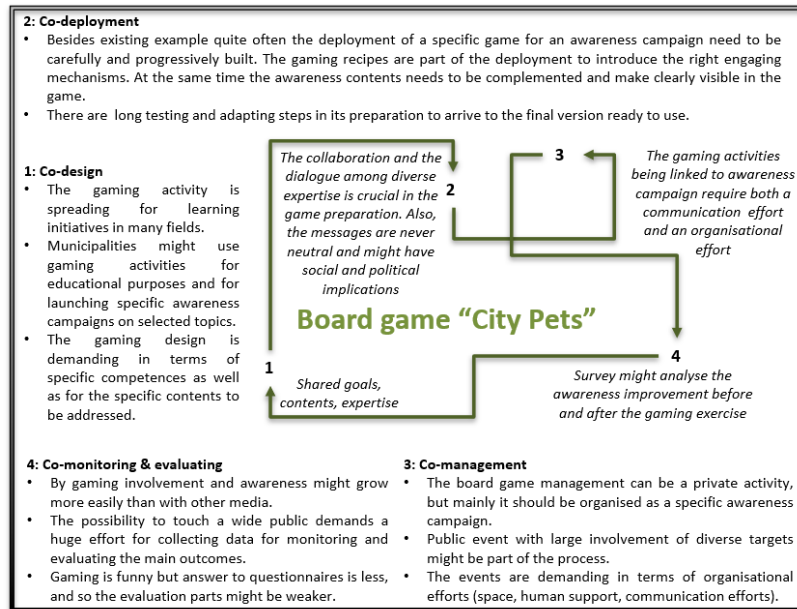


Figure 15. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for the board game. (elaboration from the authors)

The board game was developed as part of Lucca Crea’s activities, in collaboration with experts from the Department of Veterinary Sciences at the University of Pisa, to educate citizens through gaming about animal behaviours and needs. The game involves matching animal behaviours and requirements with available resources for their care. Players use cards to combine family characteristics - considering diverse compositions, social inclusion, and minority representation - with available resources at home (space and people) and in different neighbourhoods of Lucca, while meeting pets’ specific needs. Through the cards, participants are introduced to a variety of family environments, fostering societal dialogue and understanding. The winner is the player who best accommodates the needs of the highest number of families and pets. The game has also been used in public events to engage citizens with the human-animal concept and is designed for international use.



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In Lucca the co-design of the game was carried out by gaming experts selected by LuccaCrea, with support from animal behaviour specialists at Pisa University. A beta test was conducted with UNIPI students to gauge interest and identify critical points. A second test took place during the Verde Mura event, followed by a third test during the IN-HABIT City Visit in Lucca and across two consecutive editions of Lucca Comics and Games. The final version was developed by LuccaCrea and distributed at local events such as Lucca Comics and Games and Verde Mura. It was also integrated into the school educational program in Lucca, culminating in 2 editions of a final “City Pets” event with participating schoolchildren.

Beyond its focus on human-animal relationships, two key elements are crucial for upscaling the board game activities:

1. **Adaptability:** The game can be implemented directly in other cities or adapted to reflect the specific characteristics and needs of different urban environments.
2. **Expertly designed educational content:** The educational aspects should be carefully developed by experts in both game design and human-animal interactions.

3.7.5.6 IN-HABIT data platform: smart monitoring of urban well-being

The creation and deployment of a sensor network and data platform were aimed at monitoring and assessing the impact on health and well-being in specific urban areas. The IN-HABIT project is particularly distinctive for its tailored integration of sensors that track the solutions implemented across the four cities - such as weather conditions, air quality, pedestrian flows, attendance in human-animal hard VIS, and rainfall - within a single, comprehensive platform. In the hum-animal city case, both the use of new infrastructures and biodiversity were monitored. Infrastructure use was assessed by capturing mobile phone cell data in relational areas, with the support of GrayHats, while biodiversity was monitored through dedicated sensors detecting the presence of birds and insects, with the support of LEKO.

In Lucca, particular attention was paid to tailoring the platform to the human-animal concept. The platform primarily focused on two dimensions: the frequency of citizen use in relational areas and biodiversity within these environments. The structure and organization of the data platform were carefully discussed and analysed among the involved companies, the Municipality of Lucca, and UNIPI to address a wide range of requirements, including technical specifications, energy supply, logistics, data availability and use, GDPR compliance, public space intervention and protection regulations, and the responsibilities of all parties involved. This coordination and negotiation process was time intensive. Additionally, operating within public green spaces introduced environmental variables that affected data collection. Seasonal changes in weather and vegetation - particularly tree growth in spring - reduced the efficiency of solar-powered sensors due to shading. As a result, a fine-tuning phase and specific data management procedures were defined and implemented.

Key Components of the overall IN-HABIT platform include:

1. **Tailored Sensor Network:** A total of 122 devices (including sensors, gateways, and routers) were installed in close coordination with the four city partners to address specific local needs. This high level of customization enabled the monitoring of diverse environmental and social factors, such as the



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role of courtyards in climate resilience in Córdoba, human–animal interactions in Lucca, the development of a multifunctional food hub in Riga, and the creation of a cycling corridor in Nitra.

2. **Collaborative Development and Adaptation:** The solution emerged from close collaboration among multiple stakeholders, including IN-HABIT partners, GrayHats, and local city teams, ensuring that the sensor network is both technically robust and responsive to local needs. In addressing unforeseen challenges, such as extreme weather conditions, GrayHats developed custom sensors, demonstrating flexibility and adaptability. In parallel, LEKO introduced a dedicated system with specific sensors to monitor biodiversity in relational areas, particularly to assess interactions between activities and the presence of animal baths.
3. **Real-time and Longitudinal Data Monitoring:** The platform provides a comprehensive dashboard that visualizes data in real time alongside historical datasets, enabling cities to make informed decisions. By integrating geolocation data and presenting information in an accessible format, the platform enhances cities' capacity to monitor trends and respond to environmental and urban challenges.
4. **Platform for Cross-City Insights:** Beyond its initial research and monitoring functions, the platform serves as a valuable tool for cross-city collaboration. It supports the integration of data from additional sources, enabling more holistic analyses of urban issues. This feature significantly enhances the platform's value, extending its applicability to future urban development and planning initiatives.

Key elements for upscaling the platform include:

1. **Alignment of technical and hum–animal aspects:** Ensuring that the platform's technical configuration effectively supports the objectives of the hum–animal initiative, enabling a deeper understanding of coexistence challenges and dynamics.
2. **Data management:** Implementing robust data management procedures to ensure that collected data are reliable, usable, and informative for decision-making.
3. **Understanding coexistence dynamics:** in some contexts, the presence of wild and companion animals may generate potential conflicts or competition in urban environments. Cities host densely overlapping functions and activities that require careful harmonization, including interactions between companion and wild animals, as highlighted in the Lucca case. The data platform can support the assessment of such interactions and help identify and evaluate potential mitigation solutions.



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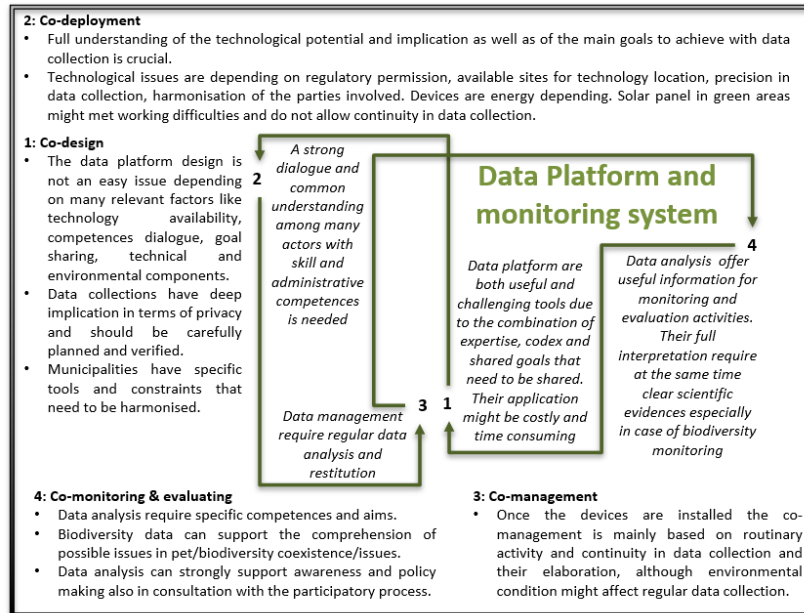


Figure 16. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for the data platform. (elaboration from the authors)

3.7.5.7 Pet friendly tourism

Pet-friendly initiatives go beyond merely permitting pets in the city. They enhance the quality of life for pet owners by supporting better management of their animals during tourism, helping to reduce stress and anxiety for both pets and owners in situations of temporary separation.

At the same time, pet-friendly initiatives create new economic opportunities by fostering specialized services and activities, while opening access to new tourism markets. Tourism with animals tends to be slower-paced, allowing visitors to engage more deeply with urban offerings and stay longer in HORECA establishments that provide well-designed pet-friendly services. These initiatives impact multiple sectors, contributing to a coherent city-wide narrative where tourists can enjoy a clear, structured experience - from welcoming accommodations and museums to pet-specific services and activities, such as “six-step” walking routes. The process is gradual, progressively involving an increasing number of urban actors and sectors. Delivering a high-quality pet-friendly experience requires strong expertise and coordination across stakeholders. At the same time, the rising presence of pets in urban areas calls for careful management to mitigate potential negative impacts on waste, the environment, and biodiversity.



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Lucca and pet-friendly tourism

The co-design phase involving multiple stakeholders highlighted the need for a comprehensive map clearly identifying pet-friendly services and locations throughout the city. This outcome led to a dedicated co-deployment meeting with representatives from the tourism sector. A questionnaire was jointly developed and distributed to monitor the availability of pet-friendly services in Lucca. Several coordination meetings were held with key project partners, including the Municipality, LuccaCrea, and BOT, to organize the service map and define its graphic layout. In parallel, existing pet-welcoming facilities were collected through web-based research, and the Municipality formally consulted the local public veterinary health service to gather additional relevant data. Information on accommodations recognized as pet-friendly and eligible for inclusion in the map was also compiled. The finalized map includes pet-oriented businesses such as veterinarians and veterinary clinics, as well as lodging and dining facilities. To offer a comprehensive service for tourists visiting Lucca with their animals, the map also highlights IN-HABIT relational areas, drinking fountains, rest areas, other pet-friendly commercial activities, and key points of interest. Potential routes for the Animal Lines were identified and represented using different colours. In parallel, targeted training activities and dedicated operational manuals were developed to support both public and private stakeholders in advancing pet-friendly tourism initiatives.

Key elements for upscaling pet-friendly activities at the city or territorial level include:

1. **Acknowledging complexity:** Recognize the inherent complexity of the topic and ensure the involvement of high-level professional expertise to guide the implementation of solutions.
2. **Providing strong socio-educational and participatory support** that engages a broad spectrum of relevant actors and stakeholders.
3. **Mitigation of potential negative impacts:** Prioritize addressing possible adverse effects, such as waste management, noise, and biodiversity constraints, through mitigation measures and compensatory strategies, including alternative routes and educational or informational initiatives.



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Figure 17. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for the Pet-friendly tourism. (elaboration from the authors)

3.7.5.8 Pet related events

Pets and animals are an integral part of our culture and daily life. The human-animal concept enables a wide range of events, from art, literature, theatre, and games to environmental and specialized initiatives, engaging both target audiences and the broader community. Scientific and cultural events can also focus on animals or pets, while sports and para-sporting activities may feature animals as central participants. Leisure activities can revolve around observation, interaction, and shared experiences with animals. Organizing events that include animals can be highly engaging, offering opportunities for play, sensory experiences, social interaction, and learning. These initiatives can attract a diverse audience, including children, families, older adults, and vulnerable groups. City-wide events can promote social engagement, enjoyment, and citizen participation around the human-animal concept while fostering dialogue on human-animal interactions in urban environments. Examples of activities include book-reading sessions for children with animal-centered narratives, guided ecological walks, animal training sessions, and Animal Assisted Activities (AAA). Additional initiatives can focus on relational areas to facilitate interactions with animals and provide opportunities for citizens to engage with animal handlers, promoting societal dialogue through animal mediation.



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Key elements for upscaling hum-animal events at city or territorial level include:

1. **Maintaining focus on the hum-animal concept** while promoting wide participation across diverse population groups.
2. **Co-designing initiatives with existing networks,** leveraging their expertise and networks to enhance impact and reach.

In **Lucca**, the organization of hum-animal events was a complex, and long-term process involving multiple actors at the city level, within the project partnership, and among local stakeholders. The process relied on ongoing dialogue with the Municipality and LuccaCrea, an organization specializing in event management, including the internationally recognized Lucca Comics. The city's dense weekly event calendar could either support hum-animal initiatives - when integrated with existing events such as Murabilia, a plant exhibition on the ancient walls - or create challenges due to competition for public attention and resources. Specific actors were engaged depending on the type of event:

- A book-reading session on animals was organized in collaboration with AGORA NGO, which manages the municipal library.
- NGOs supporting vulnerable students during summer activities contributed to board game initiatives.
- Frequenters of relational areas and animal lovers participated in events discussing pets, their management, and their role in urban life.
- A seminar on animal-themed comic strips reflected on artistic processes and the role of animals in creative expression.

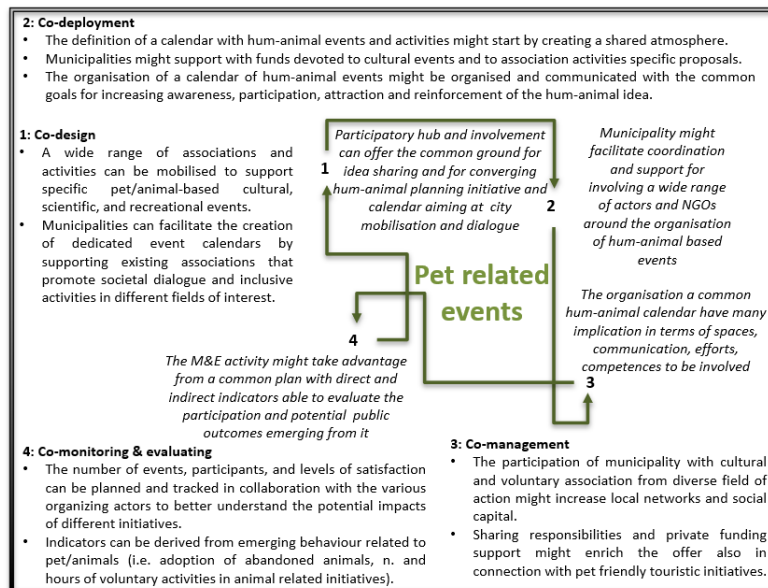


Figure 18. Co-design, Co-deployment, Co-management, Co-monitoring process carried out in Lucca for the pet related events. (elaboration from the authors)



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3.7.5.9 Additional potential initiative to implement in a hum-animal perspective for IHW

In the Lucca case, some potential VIS were discussed and tested through local consultations. Figure 19 below presents additional potential activities that could be integrated.

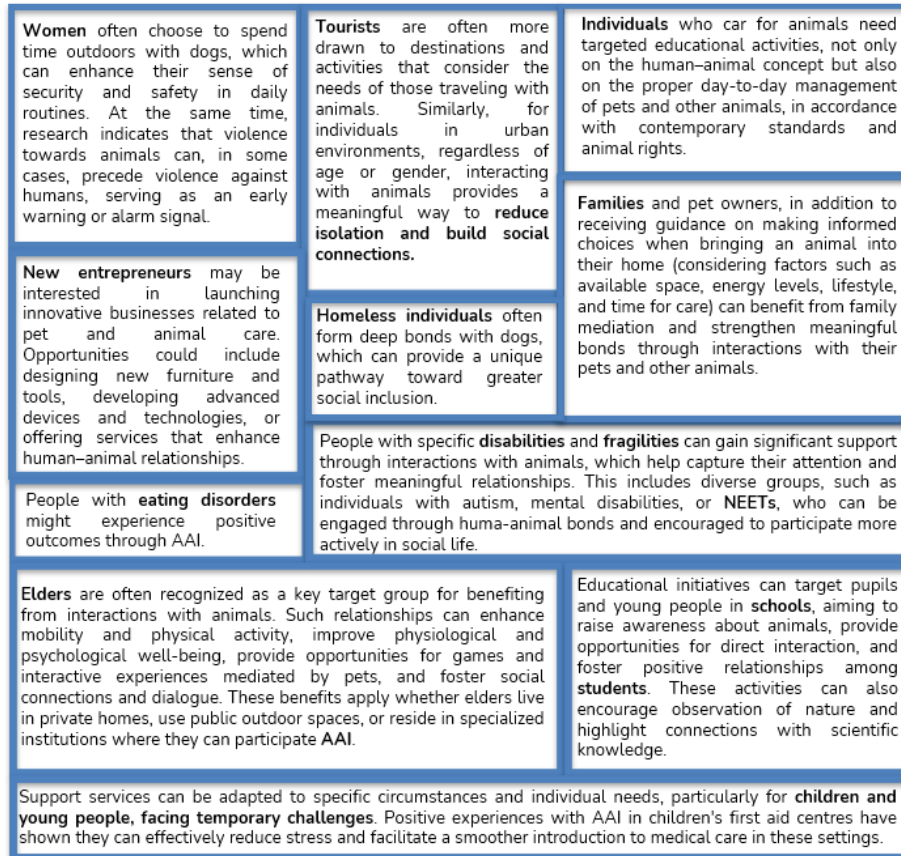


Figure 19. Target groups and potential promotion of A-NBS. (elaboration from the authors)

A list of the potential VIS to supporting IHW is also presented in table 9.

Table 9. Potential A-NBS to be tested. (elaboration from the authors)

Social initiatives	<ul style="list-style-type: none"> animal as facilitators: for people with autism, to reduce bullying, to better integrate different youngsters, to engage Neets, in public hospitals/residences/nursing homes
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specific targets	<ul style="list-style-type: none"> homeless individuals with pets' initiatives to reduce isolation, to better provide services fitting to both, to use pets to reintroduce - if it is the case- in the society people living alone and to offer them job opportunities related to pet management engagement of people with disabilities in sport activities with pets
Economic initiatives	<ul style="list-style-type: none"> reinforcing the animal-based services provision (kindergarten for pet management, services for tourist with pets to better handle them integrating on the visits or providing support along the touristic experience, educational and training activities for a better experience/management with animals) design of tools and equipment related to a better use of public spaces devoted to human-animal interaction a better architectural understanding of the new needs for public spaces as well as for private demands related to the presence of animals
Engagements / participatory initiatives	with different target groups in the cities including elders, minority groups, intergenerational dialogue
Public spaces re-design	<ul style="list-style-type: none"> in the perspective of a socially perceived hum-animal interaction access to public structures and services with animals in due spaces with clear procedures and rules public transportations designed also for animals specific spaces for accessing specific areas (is the case of beaches but it can be also for walking paths, also in mountainous areas) with carefully informative supports.

3.7.5.10 Integrating all animal components in a hum-animal urban policy

The IN-HABIT project in Lucca focused on human–animal bonds as a framework for innovative solutions promoting inclusive health and well-being, particularly for vulnerable populations. As this report demonstrates, cities can adopt a broader hum–animal perspective by considering all aspects of human–animal interactions at the urban level. This includes relationships with food-producing animals as well as the management of wild animals and urban fauna. From a One Health–One Welfare perspective, all these components contribute to more sustainable and vibrant cities. However, coexistence challenges must be carefully understood, assessed for impact, and mitigated wherever possible. This approach also extends to promoting responsible and ethical consumption of animal products and sustainable production practices, which involve not only scientific considerations but also ethical, cultural, and religious dimensions. Urban food policies are often the primary arena where these issues are addressed.

Regarding wild animals, their role in urban ecosystems is often underestimated. Cities need to facilitate the presence and well-being of wild and small fauna and create opportunities for positive human–animal interactions while managing potential conflicts. During the IN-HABIT project, these topics were addressed both educationally (through events that enabled citizens to observe local wildlife) and strategically, through circular interventions designed to enhance coexistence. For example, plans were developed for pathways enriched with plants fed by organic compost derived from pet waste, using smart disposal systems, although implementation was not completed within the project timeframe. This example



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illustrates the broad possibilities and considerations a hum–animal urban policy entails. By integrating animals into urban planning from a “more-than-human” perspective, cities can create environments that support the quality of life for both human and non-human residents.

3.8 Costs and funding in upscaling a hum-animal policy

Given that the hum–animal city concept encompasses numerous dedicated solutions and policies, its upscaling offers significant flexibility and adaptability to specific cities, territories, or contexts. Consequently, it may require diverse financial resources, which can be sourced from existing municipal policies and funding streams.

As an integrated urban policy, the hum–animal approach involves direct engagement of municipalities. At the same time, advocacy efforts can be organized from the bottom up by actors most directly affected by and invested in a hum–animal policy, as illustrated in Chapter 3.7.

In the first case, the level of activation (the number and intensity of solutions implemented) reflects the awareness and degree of political will, typically built on municipal consensus.

From this perspective, the funding process follows distinct decision-making patterns, as illustrated in Figure 20.

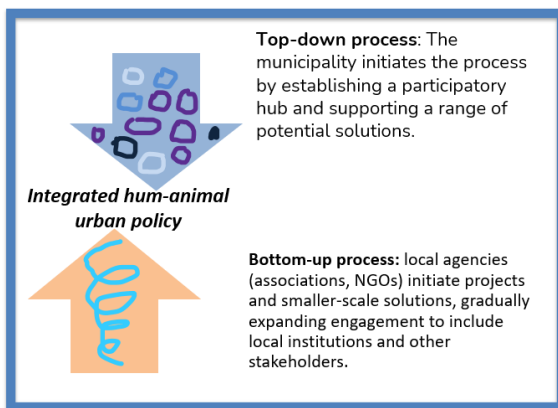


Figure 20. Top-down and Bottom-up approach in progressing a hum-animal policy. (elaboration from the authors)

The development of an integrated human–animal urban policy can be seen as the outcome of an organized, stepwise process (Figure 21), including: 1) Awareness raising, 2) Political willingness, 3) Technical feasibility, 4) Coordination among municipal intervention areas, 5) Solution selection through participatory dialogue, 6) Budget estimation and allocation of funds, 7) Project implementation, 8) Monitoring and impact evaluation.



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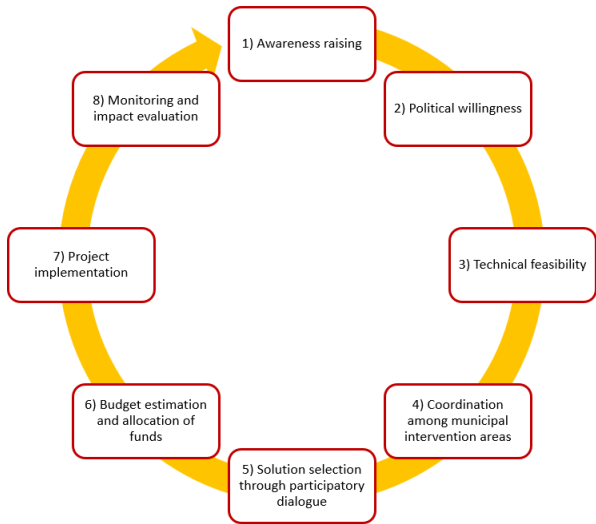


Figure 21. Main steps in progressing a hum-animal integrated urban policy. (elaboration from the authors)

In the second case, the process depends on the willingness and influence of bottom-up associations, as well as their capacity to collaborate and co-evolve with other public and private actors. In such bottom-up approaches, the number and scale of initiatives are initially limited but can expand gradually as actors increase their ability to achieve greater impact at the city level.

Pet/animal-policy manager		Participatory HUB	
Relational areas Animal Lines Urban farms Ecological corridors and biodiversity Coexistence, Waste management	Events and cultural initiatives for diverse target groups and with local NGOs and associations	Qualification of existing animal/pet economic activities, support for start-up	
Environment policies	Cultural policies	Economic & tourism	
Urban planning, Transport			
Communication & data management (platform)			
Participatory policies			
Social policies	Health policies	Education policies	
AAA for various vulnerable groups, implemented in collaboration with local NGOs and associations	AAT for various vulnerable groups, implemented in collaboration with local NGOs and associations	Educational activities for different groups of students and citizens, focusing on human-animal relationships	
Chart of principles	Strategy plan	Activity plan	

Figure 22. A-NBS and policies in a hum-animal integrated urban policy. (elaboration from the authors)

In both cases, the hum-animal integrated policy should be understood as an innovative perspective for addressing the presence of animals in cities, rather than as a set of new and separate investments to be introduced alongside existing policies (Figure 22). These preliminary considerations are particularly relevant from a funding perspective, as they directly affect the level of implementation of the different A-NBS solutions.



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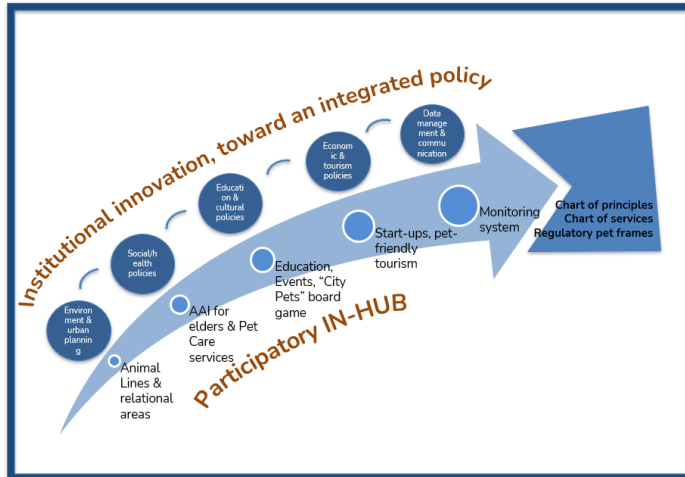


Figure 23. Solutions and policies organised in the Lucca IN-HABIT project. (elaboration from the authors)

A-NBS solutions can be linked to a range of sectoral policies (environment, social, health, education, urban planning and transport, economic development, tourism) and can be implemented through the reallocation and more targeted use of existing budgetary resources. The links between policies and solutions within the Lucca IN-HABIT project are summarised in Figure 23. While the IN-HABIT project has been funded through EU resources, the upscaling of solutions in other cities and contexts will need to rely on alternative

funding sources. In the case of IN-HABIT, the upscaling of individual solutions was achieved by mobilising existing resources managed by ordinary health and social services in the Pisa area, as well as by leveraging university resources and facilities for educational activities with schools. Table 10 provides a broad estimate of the implementation of A-NBS solutions at the urban level, organised by policy area and potential external funding sources. These estimates vary significantly across cities, regions and countries and should therefore be considered as indicative of potential costs rather than as fixed values.

Table 10. A-NBS, costs for unit, potential policies, external resource and actors involved. (elaboration from the authors)

A-NBS	A-NBS	Unit	Potential costs for unit €	Interested urban policies	Potential external sources	Actors to mobilise
Animal based infrastructures	Relational areas	sqm	20 €	Environment, urban planning	Regeneration nature, urban regeneration plans	Private builders, local sponsor green & pet related



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	Animal Lines	ml	120-150 €	Environment, urban planning	Regeneration nature, urban regeneration plans	Private builders, local sponsor green & pet related
	Ecological corridors	ml	60/100 €	Environment, urban planning	Regeneration nature, urban regeneration plans	Private builders, local sponsor green & pet related
	Urban farm	each	450000	Environment, urban planning	Regeneration nature, urban regeneration plans	Private builders, local sponsor green & pet related
	Small homes for insects and birds	each	15	Environment, urban planning	Regeneration nature, urban regeneration plans	Private builders, local sponsor green & pet related
Animal Assisted Interventions	Diverse targets (elders, autism, etc)	person	10	Social/Health policies	ESF, National devoted funds for elders, disabilities and fragile	Voluntary associations, NGOs
Pet Care service	At home intervention	call	20	Social/Health policies	ESF, National devoted funds for elders, disabilities and fragile	Voluntary associations, NGOs
Educational activities		hour/ children	3	Education & culture	Ministry for education, specific projects,	NGOs, Associations, research centre
Events	Meeting, food, activities	person	10	Education & culture	Potential sponsors	Voluntary associations, NGOs
Waste management	Innovative recycling solutions	each	500	Environment	Potential sponsors	Potential sponsors
Communication and data management	Platform	unit	10.000	Transversal		potential sponsors
	Media management	yearly	40000	Transversal		Voluntary associations, NGOs
	Data analysis			Transversal	Citizen science	Voluntary associations, NGOs
Pet-policy manager	Participatory and planning activities	Person / year	80000	Transversal		



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The potential cost of a hum–animal integrated urban policy can be broadly estimated between € 250k and € 800/1,000k, depending on the number, typology and intensity of A-NBS implemented at city level.

In principle, these costs should not be fully considered as additional to ordinary municipal expenditure, but rather as a reorientation of existing resources towards a more-than-human perspective and the systematic integration of A-NBS into standard policy approaches. In addition, dedicated investments and funding streams may be activated depending on the field of intervention, including urban regeneration and nature restoration programmes, ERDF funding, and, in specific cases, rural development policies (CAP second pillar) supporting green regeneration and ecosystem services. Further resources may also derive from regional and national ESF funds addressing social and health-related A-NBS.

The organisation of a hum–animal integrated urban policy can be structured as a progressive process. To support this process, a **readiness tool is presented below** to assess a city’s capacity to design and implement integrated hum–animal urban policies. Readiness is evaluated across transversal governance dimensions and analysed in relation to three forms of animal presence in cities: food-producing animals, urban wildlife and companion animals. A second stage of implementation support is also envisaged.

At an initial stage, key baseline information is required to inform the development of a human–animal integrated policy. This includes: **(a)** the number of registered pets; **(b)** biodiversity inventories; **(c)** the presence of establishments for food-producing animals; **(d)** the availability and spatial distribution of green areas; **(e)** socio-demographic characteristics of the population (age structure, social groups, minorities, social vulnerabilities); **(f)** average income levels; **(g)** socio-economic conditions across neighbourhoods; and **(h)** the availability and quality of pet-related services. All these data are relevant to support informed decision-making from the early stages of the hum–animal integration process. Table 11 provides a framework to support internal analysis at city level.



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Table 11. Readiness level for hum-animal integrated urban planning and implementation stages. (elaboration from the authors)

Governance dimension	Food-producing animals	Urban wildlife	Companion animals	Readiness level / notes
<i>Indicate Low* medium** high*** level</i>				
Starting analysis				
Data availability				
Already existing isolated solutions				
Strategic framing & political recognition				
Knowledge, evidence & technical capacity				
Governance arrangements & coordination				
Policy instruments and service delivery				
Monitoring, learning & upscaling capacity				
Implementation	data/info for policy implementation			Notes
Data collection for integrated info				
Stakeholder mapping in the 3 areas				
Participatory IN-HUB installation				
Institutional governance organisation				
Solutions to be implemented stage 1				
Solutions to be implemented stage 2				
Solutions to be implemented stage 3				
Solutions to be implemented stage 4				
Monitoring solution				

In the box below, the upscaling process developed in the case of Lucca is also presented for further details.



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Upscaling the hum-animal concept externally to Lucca city: activities from the Dept. of Veterinary Science, Pisa University

To upscale the hum-animal city concept and the potential role of the A-NBS beyond Lucca, four main approaches were adopted:

Upscaling individual solutions tested in Lucca in other contexts

Individual hum-animal VIS can be upscaled independently to expand their reach, increase participant involvement, and amplify expected outcomes. This approach allowed for a gradual transition from novel initiatives to established, routine practices, ensuring long-term consolidation. To address the initial difficulties of immediately upscaling the entire hum-animal city concept, targeted efforts were made to directly expand single solutions, including: **a) School educational activities:** continued and replicated across multiple classes in the Pisa area over the past 5 years, **b) AAI:** implemented in 5 nursing homes for elderly, in collaboration with local health institutions in the Pisa area supporting replication, **c) Prison-based Initiatives:** collaborations established in the Pisa penitentiary, leveraging existing projects and involving an NGO active in Lucca's AAI initiatives that also works formally with the DVS on other objectives. All initiatives required formal agreements and focused on practical implementation while raising awareness of the human-animal city concept.

Disseminating the concept and the Lucca case study through conferences scientific publications, and events

Pisa University pursues research, teaching, and the "third mission" activities under an Open and Responsible Research and Innovation framework, as follows: **1) Strengthening Educational hum-animal initiatives:** extended over the last 5 years to university degree courses and master's classes (across 2 different MS'programs), including 2 degree-level theses, 2 PhD theses, and around 15 group reports. Courses included co-design activities and pilot testing in Pisa. **2) Scientific dissemination:** research articles and conference presentations promoted the hum-animal concept and A-NBS idea to a wider scientific public nationally and internationally. **3) Public engagement:** events such as the "Bright Night" ("la notte dei ricercatori") in Pisa, showcased IN-HABIT, using an interactive board game to involve citizens, particularly younger audiences, across 4 editions. **4) Policy briefs and manuals** developed to inform decision-makers on the concept and its implementation.

Establishing connections with other institutions

The upscaling process for the hum-animal city concept included contacts with: **a) Single municipalities:** both in Italy (Pisa, Pesaro, Massa Carrara, Rome, small municipalities in the Marche Region) and abroad, **b) Associations of municipalities:** e.g. ANCI (Associazione Nazionale Comuni Italiani) in Tuscany and Italy, **c) Policymakers** at national and regional levels: President of the Tuscany Council, Vice President of the Italian Senate Health Commission. These interactions revealed strong interest in the hum-animal city concept, with differences according to city size (Rome quite different from Lucca). Most found the idea of a hum-animal city unexpected, yet intriguing in terms of perspectives and reasonable as implementation. Main challenges identified were the availability of dedicated budgets for testing the concept, as direct project funding for upscaling outside Lucca was not possible, except for collaborations with sister cities in Bogotá.

Engaging relevant national associations, private enterprises, foundations and specific local initiatives

To explore partnerships and potential upscaling, the project engaged with: **a) Regional and national NGOs** relevant for the topic (Legambiente Lombardia and Legambiente Italy), **b) Foundations and private investors** interested in the idea (Fondazione Capellino and Almonatura, active in pet and sustainability), **c) Construction companies** involved in urban regeneration projects, **d) Technological Hubs** devoted to the pet-economy (an agreement has been signed with Polo Tecnologico di Navacchio, SS Sanna University to enhance research and innovation on hum-animal topics, **e) Local areas and pilot initiatives** (such as LAG Montagnappennino and urban farm initiatives in Naples implementing AAI).

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Annex 1: Regulatory approaches in some EU cities

Zurich	Vienna	Barcelona	Amsterdam	Brussels
<p>Dog Policies (Updated for 2025)</p> <ul style="list-style-type: none"> • Mandatory Training: All new dog owners in the Canton of Zurich must complete a theory course and practical lessons in a recognized dog school. • Age-Based Requirements: Specific training (puppy, young dog, regular) is mandated for dogs based on age, with minimal training needed for older dogs. • Leash & Control: Dogs must be controlled on a leash in busy areas, and owners must manage them to prevent conflicts and ensure they don't disturb others. • Waste: Owners must clean up dog faeces in all situations. <p>Cat Policies (General Swiss/Zurich Rules)</p> <ul style="list-style-type: none"> • Social Needs: Cats need daily human contact or visual contact with other cats if kept alone. 	<p>Animal policy requires dogs in public to be on a leash or muzzled, especially "listed breeds" (like Pit Bulls, Rottweilers, Mastiffs) which need both in all public spaces, while all dogs need muzzles on public transport and in crowded areas; proper waste disposal is mandatory, and fines exist for non-compliance, plus there's a dog tax, microchipping, and specific rules for certain parks and buildings.</p> <p>General Rules for Dogs</p> <ul style="list-style-type: none"> • Leash/Muzzle: All dogs must be on a leash or muzzled in public; designated dog parks are an exception for off-leash. • Public Transport: Muzzle and leash required, plus a half-price ticket for the dog (smaller dogs in carriers are exceptions). • Waste: Owners must clean up after their dogs or face fines. • Licensing: A dog license (Hundeführerschein) and annual dog tax are required. • Microchipping: All dogs, cats, and ferrets must be microchipped. <p>Specific Dog Breeds (Listed Breeds)</p> <ul style="list-style-type: none"> • Certain breeds (e.g., Bull Terriers, Pit Bulls, Rottweilers, Mastiffs, etc.) and their mixes must wear a muzzle and be on a leash in all public places. • Off-leash is only permitted in fenced dog areas (Hundezone). <p>Parks & Buildings</p> <ul style="list-style-type: none"> • Prohibited Areas: Dogs are often banned from museums, 	<p>Barcelona Nature Plan 2021-2030. The city aims for widespread access to dog-friendly areas, balancing pet recreation with public coexistence.</p> <p>Policies for Pet Dogs</p> <ul style="list-style-type: none"> • Shared Use Zones (ZUCs): Designated streets, squares, and parks where dogs can be off-leash during specific morning/afternoon hours, with clear signage. • Leash Requirements: Dogs must be leashed in all other public spaces unless in specific dog parks or ZUCs. • Dog-Friendly Spaces: Includes dedicated dog recreation areas and, seasonally, a specific dog beach (Llevant Beach). • Responsible Ownership: Campaigns encourage owners to clean up after pets, use water to wash away urine, and follow transport rules. 	<p>Pet Ownership & Welfare (National & City)</p> <ul style="list-style-type: none"> • Housing & Care: Owners must provide suitable housing, food, water, and veterinary care, with rules against breeding animals with genetic issues, notes the Government of the Netherlands. • Sales: Pets can't be sold to minors under 16, and live animals can't be displayed in shop windows. • Breeding Limits: Female dogs have a limit of one litter per year; female cats, two litters in 12 months or three in 24 months, according to Government of the Netherlands. • Dog Waste: Owners must carry bags for cleanup and face fines for not picking up after their dogs. <p>Rules for Dogs in Amsterdam</p> <ul style="list-style-type: none"> • Leash Laws: Dogs must be on a leash in most public spaces; look for "losloopgebied" signs for off-leash areas. • Public Transport: Small 	<p>The City of Brussels was awarded the label by meeting the following criteria:</p> <ul style="list-style-type: none"> • A municipal officer for animal welfare • An animal welfare expert within the police: External site Brussels Capital Ixelles police zone • Creation of dog areas: dog toilets and dog areas • Management of stray cats: found animals • Granting of a sterilisation premium for domestic cats: bonus for the sterilisation of cats and dogs • Management of lost, wandering or abandoned animals (24 hours a day, 7 days a week): found animals • Information and awareness-raising on animal welfare: animal welfare



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<ul style="list-style-type: none"> ● Living Space: Requires adequate space, resting spots, scratching posts, and one litter box per cat. ● Prohibitions: Breeding with wild animals and permanent confinement in cages is forbidden. 	<p>theatres, and many general parks and green spaces.</p> <ul style="list-style-type: none"> ● Designated Areas: Vienna has special, fenced-in dog zones (Hundezonen) where off-leash is allowed. <p>Cat Rules</p> <ul style="list-style-type: none"> ● Leashing cats is generally outlawed; free-ranging cats must be neutered and micro-chipped/registered. <p>Animal Welfare</p> <ul style="list-style-type: none"> ● There are laws against cruelty, neglect, and improper care, with specific rules for keeping certain wild animals. 	<ul style="list-style-type: none"> ● Adoption promotion: Active campaigns promote adopting abandoned animals from shelters. 	<p>dogs travel free; larger dogs need a "dog card," says Lamsterdam.</p> <ul style="list-style-type: none"> ● Shopping: Many stores are dog-friendly, but supermarkets generally prohibit them. ● Tax: There's no dog tax in Amsterdam, notes. <p>Bringing pets-</p> <ul style="list-style-type: none"> ● Requirements: An EU pet passport, micro-chip, and valid rabies vaccination (at least 21 days old) are mandatory, details ● Airline Rules: Varies by airline; some allows small pets under seats in economy on some flights, with weight/size restrictions. 	<ul style="list-style-type: none"> ● Municipal website: animal welfare ● Pets allowed in certain areas: dog-friendly network ● Ban on fireworks ● Organisation of animal welfare events: animal welfare day ● Distribution of vet vouchers or other forms of support: animal welfare bonuses ● Dog training: dog training bonus ● A respectful pigeon management policy: pigeons
<p>General Animal Welfare (Swiss Law)</p> <ul style="list-style-type: none"> ● Dignity & Protection: The law prohibits causing pain, suffering, or violating the dignity of any animal. ● Ethical Breeding: Breeders must obtain healthy animals and ensure humane conditions. ● Pet Travel: Specific rules for bringing pets into Switzerland (mi- 	<p>Vienna's urban animal policy integrates national animal welfare laws with innovative urban planning, viewing animals as integral to city life, not just problems, by managing human-wildlife conflict through green spaces, corridors, and community engagement, while leveraging biodiversity strategies to make the city more sustainable and resilient, as seen in its proactive approach to wildlife like foxes, deer, and birds thriving in its planned green infrastructure.</p> <p>Key Aspects of Vienna's Approach:</p> <ul style="list-style-type: none"> ● Proactive Planning & Green Infrastructure: Vienna's extensive green spaces, parks, and the Danube's natural areas act 	<p>Wildlife Management & Biodiversity</p> <ul style="list-style-type: none"> ● Barcelona Nature Plan 2030: A master plan to increase green infrastructure, conserve biodiversity, and improve climate adaptation, creating habitats for urban flora and fauna. ● Feral Cat Control: Uses the "capture, sterilize, return" (TNR) method to manage cat populations ethically. 	<p>City' initiatives</p> <ul style="list-style-type: none"> ● Green Spaces: The city creates more off-leash areas and promotes city farms. ● Wildlife: Measures are in place to protect local wildlife and increase biodiversity. 	



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<p>crochips, vaccinations, pet passports) apply.</p>	<p>as habitats and corridors for wildlife, supporting species like wild boar, deer, foxes, and birds within the city.</p> <ul style="list-style-type: none"> • Animals as Solutions: Policies recognize animals' roles in urban ecosystems, potentially aiding climate change mitigation and overall urban sustainability, linking to broader biodiversity goals (see EU Green Deal and EU biodiversity strategy). • Conflict Management: Focuses on minimizing human-animal conflict (HAC) through community education, non-lethal deterrents, and designing urban spaces with natural buffers, ensuring safe coexistence. • National Framework: Governed by Austria's Animal Welfare Act (2004) and Biodiversity Strategy (2020+), ensuring a legal foundation against unnecessary suffering and promoting biodiversity conservation. • Research & Innovation: Academic groups in Vienna study urban wildlife and policy, exploring new methods like augmented reality for monitoring and management, and analyzing the city's biodiversity footprint. 	<ul style="list-style-type: none"> • Biodiversity Observatory: Works on action plans for species like bats, birds, reptiles, and invertebrates. 		
<p>Other Considerations</p> <ul style="list-style-type: none"> • Rental Properties: Finding dog-friendly apartments can be challenging; offering a larger deposit might help. <p>Workplaces: Most workplaces in Zurich do not allow dogs.</p>	<p>Policy in Action:</p> <ul style="list-style-type: none"> • Urban Greening: Cities like Vienna develop Urban Greening Plans to boost biodiversity, with commitments under initiatives like the Green City Accord to monitor vegetation and nature. • Wildlife Presence: Foxes (around 4,000), deer, wild boar, 	<p>Policy in Action: Enforcement & Goals</p> <ul style="list-style-type: none"> • Fines: Anti-social behaviour like abandoning pets or failing to clean up can result in fines. • Coexistence: Policies aim for 95% of residents to 	<p>Policy in Action: City plan Animal Agenda for 2024 - 2026</p> <ul style="list-style-type: none"> • The main chapters in the agenda consider aspects related to companion animals management, biodiversity maintenance and enhancement, 	



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	kestrels, and even beavers co-exist and thrive due to the city's integrated natural planning.	have a dog-friendly space within a 10-minute walk and promote harmonious living between people and animal	food concerns regarding animal products consumption	
	<ul style="list-style-type: none"> • Sustainable City Goals: Animals are considered within Sustainable Development Goals (SDGs), particularly SDG 11 (Sustainable Cities) and SDG 15 (Life on Land). 			



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Annex 2: Upscaling Hum-animal concept and solution a short guideline



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Upscaling the hum-animal concept and solution: A guideline for smart cities

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Summary

1. Introduction
2. The state-of-the-art animal policies
3. Research on Human-Animal Relationships
4. The hum-animal concept
5. The hum-animal solutions
6. Le expected institutional implication
7. The political proposals
8. The hum-animal solutions piloted in Lucca



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Introduction

Societies are changing, as are their sensitivities, available resources, and needs. To meet emerging demands innovative solutions and useful responses are required. The human-animal relationships is at the centre of a new cultural interest, both nationally and internationally. The new interest looks mainly to immaterial and relational bonds among humans and animals. In Italy, the number of pets today exceeds the number of residents, while the pet economy itself generates interesting economic and employment opportunities. Research provides growing evidence of the positive impacts of interactions with animals on the physical and psychological well-being of people, particularly those who are vulnerable. The new knowledge opens new perspectives for thinking about useful responses to social and relational needs in the society. Italian society has among the longest life expectancies in the world, while the boomer curve has entered the 60-year threshold. At European level aging is also strong evidence with growing trends. Social demands, even among young populations, are growing, partly because of the pandemic covid-19. For the sustainability of future welfare models the organisation of inclusive and proactive well-being solutions for the population and prevent any fragility is becoming crucial. In this context, adopting innovative solutions capable of producing public goods, such as health, interpersonal relationships, well-being, and social inclusion, by activating simple and readily available resources, such as those of animals, can assume strategic importance. Policies that promote interaction between people and animals (**animal-nature-based solutions**) receive attention and support from broad segments of society. The EU-INHABIT research project, on solutions for smart cities, piloted the creation in Lucca of the first city with an integrated people-animal policy. Aim was of generating effective responses for the inclusive well-being of its inhabitants, with attention to, but not limited to, vulnerable groups. Enhancing interaction between people and animals can represent a useful solution for inclusive well-being in society, to be achieved through the design of organized and integrated policies on the topic at the national, regional, and urban scales.

The State of the Art in Animal Policies

The interaction between animals and people can be divided into three broad categories—animals living freely in the wild, livestock, and companion animals—which are diverse in their scope with distinct functions and relevance. Without delving into regulatory details, current policies in these three areas operate primarily in the following fields: 1) environmental, for the protection and management of land, natural resources, and biodiversity; 2) agricultural, with a strong focus on animal welfare and health (with growing coordination between agricultural and veterinary prevention policies); 3) health—for the prevention of the spread of zoonoses and risks to people. The management of companion animals is entrusted to private individuals, in compliance with regulations



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regarding the proper management of animals and public health, usually administered at the urban level by prevention services and the municipal police. The concept of **human-animal relationships**, the **A-NBS**, introduces a **new idea**.

Research on Human-Animal Relationships

Scientific literature has long highlighted the **benefits** for humans derived from contact/observation and living together with animals (Borrelli et al., 2022). These include the growing demand for contact with nature, the mutually beneficial and dynamic bond influenced by behaviours considered essential for the health and well-being of both parties, which concern the emotional, psychological, and physical aspects arising from relationships between people, animals, and the environment. Evidence of **positive impacts** is found across various life stages and conditions (elderly, children with disabilities, individuals living alone, the homeless, and prisoners). Studies highlight improvements in: **physical health**, due to increased movement among people at various stages of the life cycle, with improvements in blood pressure and cardiovascular function, including in post-surgery recovery; **nervous system** and **stress reduction**; **Reducing feelings of isolation and loneliness** and increasing social relationships, thanks to the attachment and facilitation of relationships established between people through the mediation of animals in various contexts and situations; growth of **children and adolescents**, where a sense of **autonomy** and **independence**, **self-awareness** and **self-esteem**, a sense of **responsibility**, and **relationships** with others are increased.

The hum-animal concept

Scientific evidence demonstrates the potential of innovative solutions and approaches that leverage the positive impacts that animals and their relationships with people provide in terms of inclusion, reduction of loneliness and fragility, social dialogue, and well-being. An innovative human-animal (hum-animal) policy, already tested in urban settings by the EU-INHABIT project, enhances A-NBS in different contexts and for different social groups, expanding the availability of public goods that are beneficial for community prosperity. Human-animal innovation operates in a new public context, involving areas and policies that operate in society to support education, training, social and health policies, and the environment, without neglecting the related economic aspects.

The hum-animal proposal finds operational and organizational translations across policies at various institutional levels—national, regional, and city levels. The idea of **A-NBS** is already linked, for some solutions, to national guidelines (Ministry of Health, 2015) on **animal-assisted activities and interventions** in various contexts (from social-healthcare facilities to social farms pursuant to Law 141/2015). These interventions are not recognized in the Essential Levels of Assistance (LEA), still designated as one-off, albeit qualified, initiatives. A broader and more innovative vision embraces the



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positive interaction between animals and people and A-NBS as a regeneration tool aimed at increasing the quality of life and inclusive well-being of people, both vulnerable and less so, within a framework of transversal and integrated openness across multiple policies. Thinking in terms of integrated animal-human policies implies adopting the new concept in the vision of policymakers and society to promote, in a simple and consensual manner, useful, effective, and efficient solutions, within the reach of national action and the various institutional levels of government.

Hum-animal Solutions

Human-animal innovation finds operational expression in a variety of specific solutions, whose values lies in being integrated within a comprehensive and coherent framework. When considering animals in cities, three main categories are typically addressed: food-producing animals, urban wildlife, and companion animals. In the case of Lucca's **hum-animal smart city**, the urban transformation plan focused primarily on companion animals, given their direct interactions with citizens and the potential to foster social inclusion, education, and well-being. The implemented actions included: 1) the creation of targeted **public spaces** to enhance safe, healthy interactions between people and animals, and to facilitate exchanges between people who keep animals or who can enhance their relationships in these areas (**relational areas** to facilitate the free and safe movement of animals; **Animal Lines**, accessible to six-legged friends, with different lengths and difficulties related to the needs of people and animals); 2) development of a **board game** (City Pets) to educate children and families and a plan of educational activities with schools of various levels, incorporating co-design tools and active citizenship training for children; 3) organizing themed **events**: reading cycles with children and families, relational events, play activities, and opportunities to discover animal abilities (including service activities, from discovering and rescuing people, to Animal Assisted Activities for vulnerable individuals, and training service animals for those with visual or motor impairments or diabetes); 4) **Animal Assisted Interventions** in nursing homes for elders and homes for people with various types of disabilities; 5) innovative **Pet Care services** for vulnerable individuals with pets to reduce anxiety and prevent delays in accessing care by facilitating the care of animals in times of difficulty and, at the same time, activating a social network through animal care; 6) an urban **pet services charter** covering all available resources – private and public – for better and more appropriate animal care and management; 7) **socialization and inclusion initiatives in prisons** through pets; 8) initiatives to support **new youth entrepreneurship** in the pet economy; 9) **Enhancement of municipal facilities**—kennels and catteries—to promote volunteering and active interaction with citizens' pets, including for NEETs.

Active policies also address the management of owned animals in **workplaces** and **public places**, on **transportation**, in the use of **museum** facilities and services, in **accessing retail** and service outlets,



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and in **tourism facilities (pet friendly tourism)**. Actions to support the **homeless** and **foster employment inclusion** through pets are also being implemented, as well as attention to safety and the **reduction of gender-based violence**. The diversity of A-NBS and their flexibility to adapt to different contexts and targets allows for the reorganization and regeneration of public spaces in cities and regions of various sizes. This responds to growing social demands (including proper pet management) by developing co-therapeutic actions and dynamic, inclusive spaces that encourage dialogue, physical activity, and play, all at a low cost.

Potential Institutional Applications

People-animal policies may be implemented at various institutional levels. At the national level, through initiatives recognizing the usefulness of the relationship (moving beyond the idea of animals as luxury goods, including in terms of taxation and drug policies); through **pilot projects** in various policy areas (justice, education, family, disability and social issues, health, economics, urban regeneration, and the environment); through the recognition of social and health-related benefits and essential environmental standards (LEAs) for urban and territorial planning and regeneration. At the regional level, through the implementation of incentive policies for urban and territorial planning and regeneration. At city level, through the adoption of **integrated hum-animal plans** and the introduction of **integrated urban policy managers** capable of activating and organizing resources across the territory, including through participatory processes and innovative financing.

Policy Proposals

The proposal for an integrated people-animal policy implies a logical shift from more conventional approaches to innovative hum-animal based management. This shift cannot be overlooked by policymakers and policymakers, both because of the consensus the topic generates in the society, and the general benefits a hum-animal integrated policy ensures in providing **public goods** and **community prosperity**, especially in a time of growing social needs and declining public resources. The advantages of adopting an integrated hum-animal policy arise both from the widespread presence of animals/pets in society and the associated demands, and from the low costs required to mobilize them for public use—including by expanding the scope of existing policies and resources (for example, the creation of targeted public spaces does not shift the budget of urban regeneration policies implemented by the cities, but rather alters their meaning; awarding a contract to the third sector for residential services for the elderly with AAA qualifies the action, but only partially affects the costs, and the examples could continue). Furthermore, they derive from the positive outcomes for people highlighted in the scientific literature. An innovative and mature policy proposal creates the conditions for enhancing interactions between humans and animals in various contexts and for



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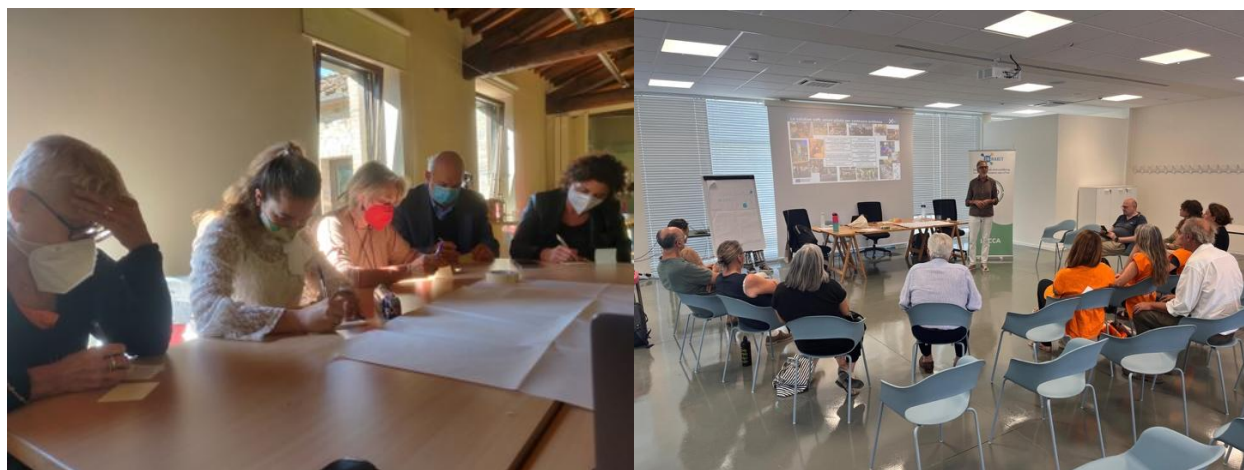
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different purposes through: a) communication and institutional affirmation of the new concept; b) the design of coherent interventions and policies; c) the promotion of actions aimed at disseminating and scaling solutions at the urban, regional, and national scales; d) discussion of the topic within institutional forums (parliamentary committees, the State-Regions Conference, inter-parliamentary groups); e) involvement of cities and regions in launching pilot projects; f) active participation and the creation of local partnerships, activating collective intelligence in innovation and human transformation processes.

The INHABIT project has thus opened a unique European innovation space in Italy, which it is up to political intelligence to adapt and scale nationwide, ensuring innovation and contributing to the prosperity of communities and individuals.

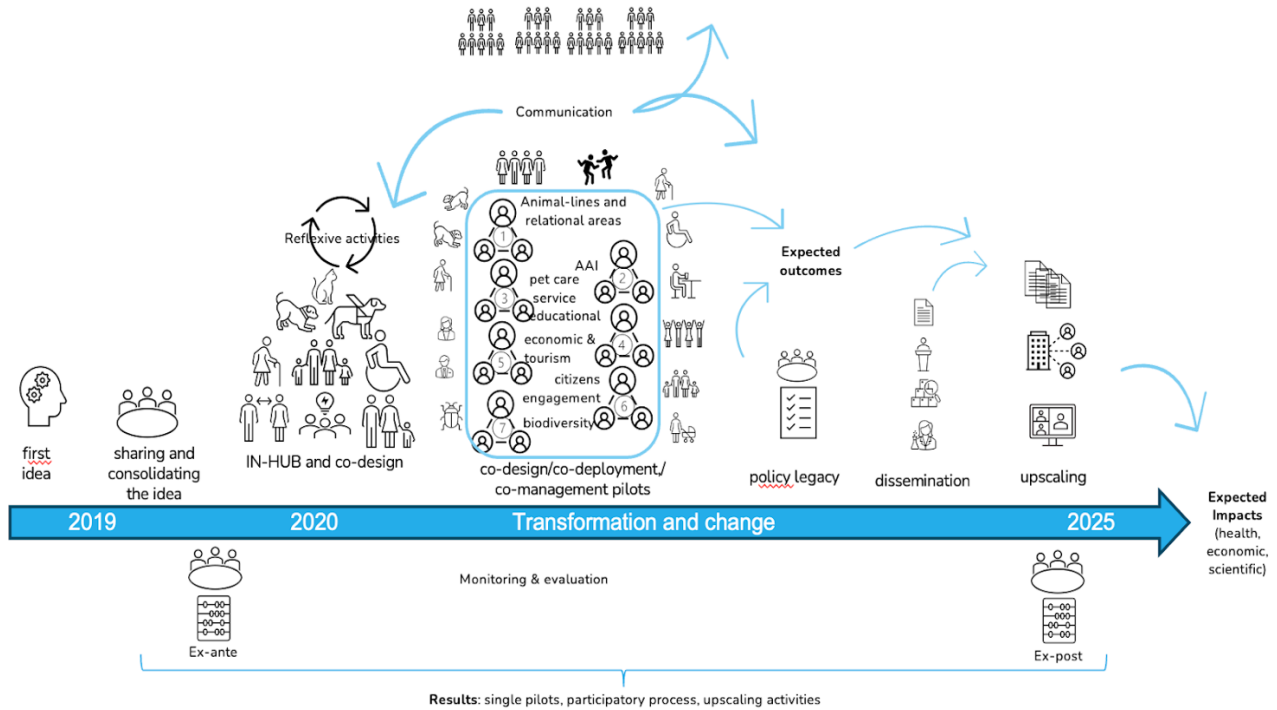
The Hum-animal solutions tested in Lucca

In the following pages the solution piloted in Lucca are described, presenting the challenges they face, their main results, the beneficiary groups involved and the relevant stakeholders for their organisation. Also, the key elements, the impacts, the enabling and blocking factors are presented as well as the main lesson learned.



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Urban hum-animal city planning

Description

IN-HABIT in Lucca introduced the concept of a hum-animal integrated urban policy. The concept looks to human-animal bond in the perspective of the promotion of innovative public good based on Animal Nature Based Solutions. An integrated hum-animal urban policy links diverse sectors -like environment, public building, education, social and health, economic, tourism policies- into an integrated dimension able to valorise human-animal bonds in a new perspective, by enhancing inclusive health and well-being for the citizens with specific attention to the vulnerable ones. A hum-animal city valorise Animal-Nature Based Solutions for elders and people with fragilities, by introducing Animal Assisted Interventions, therapies, and activities for fragile people in public health institutions. It takes into consideration the potential of animals in educational activities, in engaging citizens with specific events and activities, in reorganising public spaces in the hum-animal perspective, enhancing inclusive health and well-being for citizens (by changing daily routine linked to pets' management, increasing their mobility and possibility of gaming, enhancing societal dialogue among diverse social strata via their pet's engagement). Introducing innovative social services able to link hum-animal needs (e.g. for fragile isolated people handling pets, to reengage homelessness running pets).

Challenges

Cities are undergoing profound societal, environmental, and economic changes. At the same time, public funding is becoming scarcer, reducing the traditional provision of redistributive policies, while societal demands are increasing both in volume and in the need for innovative and personalized services. This growing need for public goods calls for the mobilization of creative and unconventional resources. Concurrently, societal attention to nature and animal life is rising, reflected in the increasing number of pets within households. Pets are increasingly regarded as family members, introducing a new perspective on human-animal relationships. Social innovation and participatory approaches can support a transformative process, generating public goods by leveraging these human-animal bonds. In this context, human-animal interactions represent a valuable resource that can be mobilized to meet emerging societal demands.



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Results

In Lucca, the establishment of an IN-HUB as a participatory process facilitated the co-design and co-implementation of activities centred on the hum-animal city concept. The active involvement of the municipality was crucial in supporting the initiative, in collaboration with the University of Pisa and Lucca Crea. An initial assessment, combined with the gradual engagement of numerous public and private stakeholders - from both the economic sector and NGOs - as well as citizens, fostered the emergence of new ideas and solutions. The organisation of pilot initiatives listed in this annex provided opportunities to test and evaluate their outcomes and expected impacts, reinforcing the feasibility of the hum-animal city concept. The pilot solutions and the hum-animal city concept are closely interrelated, forming a progressive and transformative pathway. Lucca municipality, is supporting the sustainability of the project with its own budget after the end of the project confirming the interest and the positive outcomes achieved also from a political perspective.

Beneficiary groups

Vulnerable groups like elders, people with disabilities, youngsters, homelessness, all people from different ages and social strata, citizens but also people coming from different neighbourhoods and villages. Women are pretty involved in the new idea, Youngsters entering in hum-animal economic initiatives, Tourists moving with pets.

Relevant stakeholders

Associations operating in different areas of interest: environment, animal friendly, education, social sector, related to fragile groups of individuals, citizens handling pets and not only, economic firm operating directly (vets, educators, retailers, etc) and indirectly (hotels, restaurants, shops, museums) in the sector, public authorities operating in the different policy areas.

Key elements

1. **Reorganization of policy participatory processes:** to mobilize ideas and resources - including human ones - and to introduce new concepts, solutions, and perspectives related to the hum-animal city approach
2. **Open attention to innovative paths from the side of the public authorities:** an integrated policy requires mediation across sectors, competencies, and resources, and is facilitated by a proactive attitude from both political and technical branches of public institutions beyond the municipality, including social and health authorities, schools, and others
3. **Innovative governance:** establishing dedicated spaces for discussion and appointing an urban pet policy manager can support the overall process, mediate the social innovation pathway, and coordinate the organization of diverse pilot initiatives.

Impact

The Lucca case introduced the concept of the hum-animal city and translated it into concrete and operational solutions. These include new services (for vulnerable individuals),

Enabling factors

Raising awareness about urban pets/animal management, ensuring municipal support for the process, and establishing a dedicated arena (IN-HUB) for professionally mediated

Blocking factors

Political scepticism about the potential political benefits of the hum-animal concept in front of the citizens, lack of internal organisation and dialogue within the administration and



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opportunities (educational, economic) and practical everyday measures (for people handling animals). Collectively, these solutions contribute to enhancing inclusive health and well-being for the wider community, as also illustrated by the individual examples presented in this manual.

participatory activities are key components. Equally important is fostering convergence among the diverse stakeholders involved, as well as across the various municipal departments, both at the political and technical levels.

with stakeholders, as well as shortcomings in the communication and management of participatory processes. Rigid allocation of public funds. Political instability that emerged throughout the transformative process.

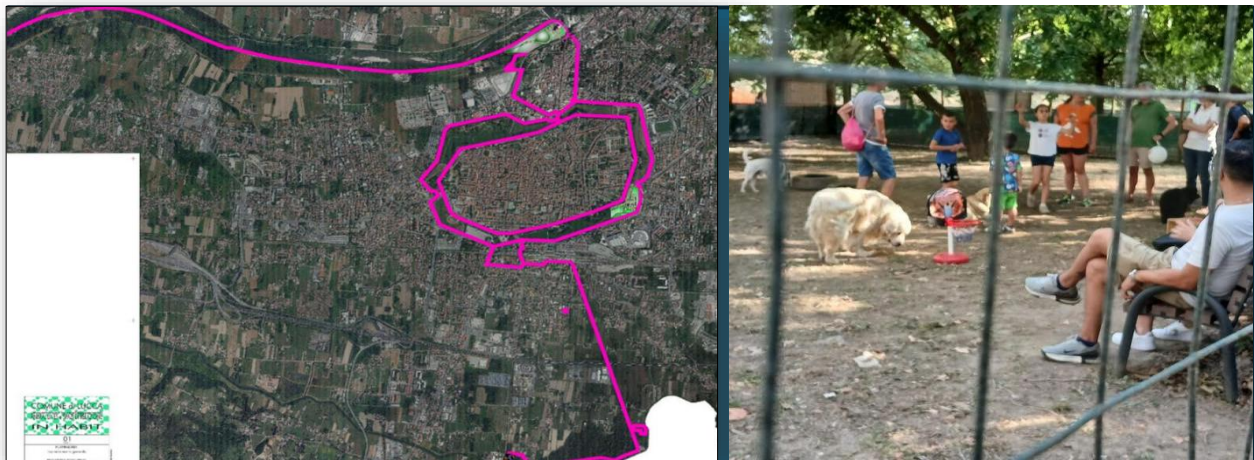
Lessons learned

- The introduction of innovative concepts such as the hum-animal city, the animal-NBS, and an integrated hum-animal city policy is far from straightforward. It requires extensive negotiation, facilitation, and support, and is highly time-consuming in the initial stages.
- Establishing a strong connection between the broad human-animal concept and the implementation of tangible animal-NBS is essential to foster shared understanding and to provide clear political evidence of the transformative process.
- The generation of rewards—such as enhanced reputation, strengthened identity, pride, trust, and perceived utility—among stakeholders, A-NBS beneficiaries, and political actors is crucial for sustaining momentum and producing positive evidence of the transformative pathway.



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Animal Lines and hum-animal relational areas

Description

These spaces are designed to strengthen human-animal bonds, promote social interaction among people, enhance daily routines, and increase opportunities for physical activity, play, and personal time. They can be organised through the “Animal Lines” - paths linking the city centre with suburban and peri-urban areas, including existing routes and under-utilised surrounding green spaces - and “Relational Areas” - large spaces accessible to people and their pets, connected to the Animal Lines. Relational areas are open to all and specifically designed to accommodate pets, ensuring their safe and unrestricted mobility. Both types of spaces aim to foster human-animal relationships, thereby promoting social cohesion, inclusion, and well-being for citizens, including vulnerable groups.

Challenges

Urban areas are hosting an increasing number of pets, while household sizes are decreasing and pet management is becoming an integral part of daily life. Dogs, in particular, play a significant role in facilitating human-human interactions outside the home, while also improving the daily routines of their owners both indoors and outdoors. However, city planning often does not account for the growing presence of pets and their associated needs. The development of Animal Lines and relational areas addresses these emerging demands by providing well-designed open spaces for pet management. These spaces help prevent negative interactions between pets and people, as well as among pets of different sizes, by offering dedicated areas that ensure safe and harmonious cohabitation.

Results

In the Lucca case, 15km of Animal Lines and two large relational areas have been implemented in the city. Each relational area includes separate spaces for small and large dogs, equipped with specific play structures and designated zones for rest and interaction among dog owners. The Animal Lines feature resting areas and water stations for pets, and are designed with varying levels of difficulty (from short walks to longer routes) catering both to different dog types and to human capabilities, including time availability, mobility (from young to elderly), and energy or willingness to exercise. An app facilitates gamification in the use of the Animal Lines, while a digital platform monitors the frequency of areas usage. Data indicate that these areas are highly frequented by people of diverse ages, social backgrounds, and from different neighborhoods within the city. Users report changes in their daily routines as a result of using these spaces, highlighting the importance of managing and playing with their pets,



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engaging in physical activity, enjoying personal space, and establishing new social connections. In one of the relational areas, a WhatsApp group of approximately 80 members has been created, helping residents coordinate activities, meet for both leisure and safety, and maintain dialogue. Overall, social interaction among pet owners has improved, extending even beyond the immediate areas. A local community of pet handlers has been established, which is now able to engage in constructive dialogue with the municipality regarding area management.

Beneficiary groups

All people from different ages and social strata, citizens but also people coming from different neighbourhoods and villages. Tourists moving with pets (a larger and well specific target) make use of the area and of the Animal Lines increasing attendance to the city. Areas are organised for people with physical disabilities. In the areas also Animal Assisted Interventions for people with different fragilities can be organised.

Relevant stakeholders

Pet owners of various ages and social backgrounds, local environmental and animal associations, social groups associations (e.g. elders, people with disabilities), municipality, public health authorities involved in animal management and hygiene.

Key elements

1. **Reorganization of public spaces:** Cities contain public spaces that can be reimagined and adapted through a hum-animal perspective. Understanding and connecting these spaces may be more feasible than initially expected.
2. **Recognition of contextual specificities and expertise:** Local contextual factors play a key role in the reorganization of public spaces from a human-animal perspective. These must be addressed through appropriate professional skills and interdisciplinary expertise.
3. **Integration of participatory processes:** Implementation is not merely a technical task; it benefits greatly from participatory approaches that give voice to stakeholders, fostering wider engagement, shared responsibility, and long-term ownership.

Impact

The main impacts concern the creation of dedicated spaces that enable better, less conflictual, and more inclusive pet management, as well as the development of city restorative practices that enhance green/blue public areas. These initiatives improve neighbourhood relations, mobility, sensory and play experiences, and inclusivity within the city, while also fostering social dialogue, community building, and innovative partnerships. Such impacts can be easily up-scaled in other cities and contexts, enlarging their overall benefits.

Enabling factors

Increased awareness of urban pet and animal management, identification of existing public spaces and resources that can be adapted to new functions, and the adoption of specific expertise in human-animal behavioural dynamics. Societal sensitivity toward the topic, together with the reorganisation and availability of public funds to support the necessary investments, also play a crucial role. Moreover, there is a growing societal attention to animal-related issues, which further facilitates these transformative processes.

Blocking factors

They largely correspond to the absence or opposite of the enabling conditions. In addition, local planning frameworks, regulatory constraints, and resource availability are key elements that may limit the development of new public infrastructures. Approaches focused solely on pet-related interventions—without embracing an innovative hum-animal perspective—also represent a barrier. Finally, the persistent underestimation and limited societal understanding of the potential of human-animal bonds further hinder transformative progress.



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Lessons learned

- At the outset, the introduction of the hum–animal city concept in Lucca was both straightforward and challenging. On one hand, a growing societal attention toward animals helped facilitate the development of innovative solutions in this direction. The processes of co-design, co-deployment, and co-management progressed relatively smoothly, despite certain administrative constraints. On the other hand, political hesitation arose due to the perceived lack of immediate political rewards associated with the topic, which was not initially considered a strategic priority. Conversely, feedback collected from citizens through direct use of the spaces and interviews was overwhelmingly positive, particularly concerning the new opportunities for spontaneous human–human interactions, the adoption of new daily routines, enhanced personal mobility, and the emergence of community-based initiatives aimed at co-management and active dialogue with the local administration.



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Animal Assisted Interventions (AAI)

Description

Animal Assisted Interventions involve the use of animals to promote human health and well-being. In many countries, including Italy, such interventions are regulated by national guidelines and are delivered by skilled professionals working with trained animals. AAI can take place in a variety of settings and provide innovative animal-based services tailored to diverse populations, particularly vulnerable individuals. They are typically classified into animal assisted activities, education and therapies, depending on the type and intensity of the intervention. AAIs may involve different species, including dogs, cats, donkeys, horses, and rabbits. In Italy, there is a public registry of professionals authorized to provide these interventions.

Challenges

Contemporary society is witnessing a paradigm shift from reactive care toward proactive management of social and health challenges, aimed at enhancing the capabilities and societal participation of vulnerable people. Public budget reductions further underscore the need for cost-effective, proactive solutions that promote self-sufficiency and facilitate daily life for those facing fragilities. This shift requires transformative approaches within public health institutions to introduce innovation despite financial constraints. Implementing such solutions demands substantial organizational restructuring and attitude changes among stakeholders, balancing fiscal limitations with emerging societal needs and the availability of innovative services.

Results

In the Lucca case, from the earliest co-design phases, the primary target groups for the IN-HABIT project were the elderly, alongside younger participants. AAI were conducted with elderly residents of two nursing homes, including individuals living with diverse fragilities, including dementia and physical disabilities. A total budget of €26,000 was allocated for these activities. The AAIs were implemented through the collaborative efforts of social professionals from the two institutions and the formal engagement of professionals from three NGOs specializing in AAI, in accordance with the Italian Guidelines on AAI (Min. Health, 2015). NGOs were actively involved in co-programming activities following relevant Italian legislation. The interventions took place from September 2023 to June 2024 (10 months, approximately 250 days). Each of the three NGOs worked with two groups of elderly



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participants (six groups in total), with each group comprising 10–14 individuals, for a total of 80 participants. Each group attended a one-hour dog-based educational session every two weeks, totaling 15 sessions per group (90 sessions across the project). Due to consent limitations, 30 out of 80 participants were monitored. The results demonstrated significant **benefits on participants' well-being**, with improvements in their **quality of life** observed in **mobility, psychological state, and social aspects**. Animals acted as catalysts, encouraging elders to participate in activities they would typically avoid due to physical limitations or lack of interest. **Physiotherapists reported improvements in manual dexterity** through dog-related tasks, such as throwing a ball, brushing the dog, or cutting paper for storybooks. **Lasting positive impacts** were observed, including **anticipation for the animals' return and enhanced memory recall in participants** with better cognitive function, such as remembering activity days, groups, and dog names. **Calmness** and sustained attention increased progressively with each session, driven by the desire to engage with the dog. Social benefits were equally notable, fostering **improved interactions** among residents, as well as between residents and educators or staff. The project facilitated **dialogue among residents** who previously had limited contact, **including across genders**. **Emotionally**, the activities **deeply engaged participants**, including those typically unresponsive, who **expressed interest through body language and emotional responses**. Group conflicts, often present in the residential context, were notably reduced during AAI sessions due to the presence of the dogs and participants' desire to engage. While such conflicts were not eliminated entirely on other days, their intensity was reduced. Even residents who interacted minimally with the dogs still experienced benefits through observation of others' interactions.

Beneficiary groups

AAI can benefit a wide range of groups, including the elderly, individuals with dementia, people with autism, homeless individuals, retained people, among others.

Relevant stakeholders

Municipalities, public health authorities, NGOs (social Cooperatives A & B), associations representing vulnerable groups, research centres, and the general public.

Key elements

1. **Participatory & Inclusive Approach:** engagement of stakeholders in decision-making and co -planning activities
2. **Cross-Cutting Collaboration:** Encouraging partnerships across sectors to strengthen impact.
3. **Capacity-Building & Skill Development:** Participants' empowerment through the improvement of their well-being and quality of life.

Impact

AAIs demonstrate significant potential impacts on vulnerable populations, acting as catalysts to activate residual capabilities in a highly active, spontaneous, and flexible manner. They also enable institutions to renew their practices by introducing new professional roles, fostering pride among staff, and generating motivation through observable results.

Enabling factors

Open and innovative attitudes within health institutions and among professionals, the engagement of municipalities, the availability of specialized AAI-trained personnel. The availability of dedicated budget allocations to support the implementation of new AAI initiatives.

Blocking factors

Budget constraints, entrenched institutional routines, and a shortage of skilled professionals might obstacle the innovation process. Additionally, limited recognition of AAI from a health/care perspective can slow acceptance at both scientific and institutional/policy levels.



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Lessons learned

- AAI, within the hum-animal perspective, provide clear evidence of the potential of human-animal bonds, particularly for vulnerable populations. All stakeholders involved - including participants, professionals, policy-makers, families caring for people with fragilities, NGOs, and citizens - benefited positively from the outcomes. From this perspective, AAI can be considered win-win solutions when properly implemented. However, initiating these interventions without dedicated resources may encounter challenges related to institutional and planning arrangements from the outset.
- The cost-effectiveness of AAI is particularly notable. For instance, sessions involving groups of 6/8 participants cost approximately 325 € for session, or roughly and 4€ per person per session, highlighting their efficiency in delivering meaningful benefits at relatively low cost.



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Pet Care services

Description

The Pet Care service is an innovative initiative provided by the municipality in formal agreement with NGOs, aimed at supporting vulnerable individuals who experience (also temporary) difficulties in managing their pets. The service seeks to assist both people and their animals, strengthening social networks and promoting societal dialogue beyond formal health institutions. Operated 24/7 via telephone by local NGOs, the service offers three types of support: **Domestic services** (caring for the pet at home, purchasing basic necessities); **Outdoor services with the owner** (accompanying the owner to the vet or walking the dog together); **Outdoor services without the owner** (transporting the pet to the vet or walking the dog independently).

Challenges

Handling pets at home often provides vulnerable individuals with companionship, reduced feelings of loneliness, enhanced daily routines, increased mobility, and positive emotional experiences. However, pet management can become challenging in certain circumstances of fragility, particularly for those living alone, with few relatives, or limited social networks. Even otherwise healthy individuals may face temporary difficulties in caring for their pets. In such cases, a vicious cycle can emerge, where personal fragility, anxiety over pet care, and delayed access to health services compound each other, creating additional challenges.

Results

In the Lucca case, from the outset, the concept of reshaping public services from a hum-animal perspective was integrated into the co-design process. The Pet Care service embodies this idea by combining support for both humans and their pets. Launched in June 2024 following a co-planning phase with two local NGOs, the service represents an innovative partnership among public institutions, NGOs, and vulnerable citizens, involving animal-focused associations to extend the local social protection network, particularly for the most fragile individuals.



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During its first year of operation, the service received 100 calls—20 managed by one NGO and 80 by the other. Of these, 24 met the eligibility criteria and proceeded to service delivery. Requests were predominantly from elderly individuals, though not exclusively. In all cases, support was provided *repeatedly over time*, reflecting the ongoing nature of beneficiaries' needs, with approximately 14 hours of assistance per individual, sometimes split into two daily sessions and, in other cases, delivered in a single session. This highlights both the **sustained demand for assistance** and the intensive nature of care required, underscoring the importance of continuity. Approximately 25% of interventions were conducted outdoors with the owner present, while the majority took place either indoors or outdoors without the owner. For elderly participants, anxiety often stemmed from concerns about their pets' well-being; the service effectively alleviated these concerns, providing a sense of security. Qualitative monitoring revealed **positive impacts on both beneficiaries and volunteers**. NGO staff reported that **the service fostered strong mutual bonds**: volunteers developed **emotional connections** not only with the animals but also **with the people** they supported, creating **meaningful and lasting relationships**. Volunteers emphasized the **profound gratitude** expressed by beneficiaries, who regarded the service as **timely and highly valuable**. Based on these positive outcomes, including feedback from citizens who had not directly used the service, the municipality has decided to institutionalize and continue the PetCare program.

Beneficiary groups

Vulnerable individuals who require temporary assistance in managing their pets.

Relevant stakeholders

Municipalities, public health authorities, NGOs (social Cooperatives A & B), associations representing vulnerable groups, research centres, and the general public

Key elements

1. **Innovative human-animal solutions** to support the quality of life for fragile people and to support them in managing their animals at home and outside
2. **Participatory & Inclusive Approach**: Engagement of diverse community members in decision-making and action planning.

Cross-Cutting Collaboration: Encouraging partnerships across sectors to strengthen impact.

Impact

Two key elements:
Support for vulnerable populations: the service assisted fragile individuals by addressing the care and management of their pets during periods of personal difficulty. This not only produced

Enabling factors

Open and innovative attitudes toward a human-animal perspective among the municipality and participating NGOs.
 Organisational efforts by volunteer groups within the

Blocking factors

Slow recognition and understanding of emerging hum-animal demands, needs, and potential. Sectorization of service provision and operational focus within NGOs,



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very positive outcomes for the individuals involved but also became a valuable source of social support for vulnerable groups; **Reorganization of social service delivery:** the service promoted a new approach to social services by engaging additional actors (such as NGOs and volunteer groups connected to pet care) in socially inclusive activities. This approach fosters dialogue between citizens and vulnerable individuals, enhances social inclusion, and strengthen social protection networks.

NGOs to implement innovative service solutions, including resources such as authorised vehicles and 24-hour phone support. Availability of a dedicated budget to support Pet Care services.

limiting flexibility and integration.

Lessons learned

- The primary effort focused on creating a shared vision among stakeholders regarding the potential of a hybrid service designed to support both humans and their pets in situations of fragility. The COVID-19 experience highlighted the need for solutions to assist individuals managing pets during recovery, as well as for those caring for pets while hospitalized and living alone.
- This innovative service also brings to light individual vulnerabilities, facilitating the organization of targeted support services and reducing the likelihood of critical situations, both from a health and social perspective.
- The organization of innovative services can be implemented relatively quickly and efficiently at the city level, generating substantial benefits for vulnerable members of the local population. Moreover, such services expand the social protection network by engaging new groups and NGOs in the support of fragile individuals.



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Educational activities in schools and board game

Description

Educational activities were implemented over a two-year period in schools in Lucca (primary, secondary, and high schools), as well as within degree courses at the University of Pisa. The activities were co-designed by the municipality's educational department in collaboration with school administrations. Activities were delivered across different classes, either with or without the presence of animals, depending on the specific requests. In cases where animals were involved, the sessions were organized as Animal Assisted Activities (AAA) conducted by certified professionals and trained animals. The educational methodology was designed to be engaging and age-appropriate, adapting content to students' cognitive levels and learning capacities. Each program consisted of four hours of activity (four one-hour sessions). In ten classes across five schools, a condensed one-hour version was implemented, primarily focused on playing a specially designed educational board game. Evaluation tests were administered to assess the educational impact of the activities.

Challenges

Children and young people are showing an increasing interest in animal life and companion animals. Educational activities targeting these groups can play a crucial role in fostering awareness, knowledge, and responsible behaviour toward pets. Moreover, such initiatives can stimulate active and participatory citizenship from an early age by involving students in co-design and engagement processes within the school context. At the university level, new professional skills related to animal management and welfare can also be developed. There is a growing opportunity to cultivate innovative competencies within the human-animal perspective, preparing future professionals to respond to emerging societal needs and demands.

Results



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Across two editions, approximately 250 students participated in the educational activities, with pre- and post-intervention questionnaires collected from about half of them. Upscaling initiatives were also implemented in the Pisa area in collaboration with a local NGO. Students showed a high level of engagement throughout the activities, both because of their intrinsic sensitivity to the topic and the participatory methodologies employed with the support of DFC. All participants, including those requiring specific educational support, were easily involved. The before-and-after analysis of the questionnaires revealed an increased awareness of the topic, as well as a deeper understanding of animal management and respect for animals. The participatory activities further highlighted three key elements: a) the ability of children and young people to co-design innovative hum-animal solutions; b) the strong intergenerational relational link - especially evident in children - connecting animals to their grandparents; c) the development of collaborative attitudes among peers, relatives, friends, and local institutions to address innovative solutions in a participatory manner. High school students particularly appreciated the group work and participatory co-design activities, which led to their active involvement in a dedicated educational event. In primary schools, the use of the educational board game proved effective in encouraging learning through play about pet management both at home and in the urban environment. At the university level, students took part in a specific course on Planning the Hum-animal City and Relationships organised by the University of Pisa. The topic also inspired several PhD theses, degree dissertations, and group projects. Furthermore, master's students were introduced to the hum-animal perspective, showing significant interest and engagement.

Beneficiary groups

Students from different levels and classes (primary, secondary, and high schools). Indirectly, their families and relative. University students from the University of Pisa were also involved.

Relevant stakeholders

Municipalities, school administrations and teachers, children and young people together with their families, NGOs and professionals working in the educational sector, and - indirectly – citizens who benefit from the broader social awareness fostered by the initiative.

Key elements

1. **Focus on hum-animal interaction and promotion of A-NBS** in the city design by the way of educational processes
2. **Cross-Cutting Collaboration:** Encouraging partnerships across sectors to strengthen impact.
3. **Capacity-Building, Skill Development and active citizenship:** Participants' empowerment through knowledge and tools supportive for a pro-active transformative approach, engaging new generation in active citizenship.

Impact

More than 250 students participated in the educational activities in Lucca, in addition to those engaged in upscaling activities and university-level

Enabling factors

The availability of skilled professionals played a crucial role in facilitating the educational activities, supported by the growing

Blocking factors

Co-planning activities were initially quite problematic to be organised due to differences in project timelines, municipality engagement and school



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courses. Data from the questionnaires revealed that the educational process effectively enhanced students' understanding of animal needs and respect for them. Significant improvements were observed in various areas of canine knowledge and management, such as awareness of dog welfare and practical knowledge of dogs' daily needs. Furthermore, the programme strengthened students' **understanding** of the characteristics that **make a city "pet-friendly"**. After the activities, more children recognised the importance of elements such as accessible water sources for dogs, appropriate waste bins, cleaning practices, public spaces accessible to dogs, and the presence of veterinary clinics.

awareness among stakeholders of the relevance of the hum-animal education approach. In Lucca, human resources were provided directly by the project, eliminating the need for additional funding - both for local activities and the Pisa upscaling initiatives. Moreover, the direct involvement of the University of Pisa in developing innovative solutions encouraged the active participation of university students and their contribution to co-design initiatives.

scheduling. Internal school constraints - linked to national programmes, privacy regulations, parental consent, timetabling, and varying levels of engagement among teachers and administrators - also required careful management. However, once activities began, few blocking factors emerged beyond logistical and scheduling issues.

Lessons learned

- Students can be readily engaged in innovative educational initiatives when animals are the focus, including classes with children who have specific needs.
- Children and young people are capable of generating innovative ideas and hum-animal solutions, gaining hands-on experience in active citizenship.
- Engagement of educational institutions must be carefully planned well in advance, taking into account existing school routines and the need to coordinate with multiple stakeholders to design an appropriate programme.
- Gaming activities can effectively support learning and enhance student engagement in the subject matter.



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Economic innovative initiatives

Description

At the city level, there is growing potential to support economic activities related to pets and pet management, as well as innovative services connected to the promotion of A-NBS. The economic outcomes of the pet economy may include both the enhancement of existing businesses - allowing them to better respond to emerging societal demands and increased attention to animals - and the development of entirely new business ideas. The pet economy encompasses a wide range of activities, engaging people with diverse levels of skills and expertise, from basic competencies to highly specialized knowledge. Notably, many new entrepreneurs in this sector are women, highlighting the potential of the pet economy to support inclusion and gender balance within the economic landscape. Additionally, focus groups and training activities have been organized to promote pet-friendly tourism, targeting existing businesses. (These initiatives often involve firms incubated by the project or companies supporting the IN-HABIT project through their expertise in specific economic areas.)

Challenges

The number of pets is rapidly increasing, and their role within the family life is becoming increasingly significant. Animals are now widely considered integral members of the family, driving changes in attitudes, expectations, and demand for innovative services and solutions. Globally, the pet economy is experiencing strong growth, with projections indicating substantial economic potential across multiple sectors. Currently, the largest market share is held by pet food, followed by tools and devices related to pet management and engagement. At the same time, there is growing demand for services and solutions that support the well-being of pets while strengthening their relationships with humans.



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Results

To foster economic activities related to animal and pet management, specific support for young entrepreneurs was provided by B4B, a company specializing in start-up incubation and business plan development. Approximately 20 new entrepreneurs were incubated and supported, including some of the brands previously mentioned. Notably, 75% of the participants were women, reflecting the sector’s potential to promote gender inclusion. The initiatives covered a wide range of services and ideas, from digital solutions to tourism-related projects and innovative services for and with animals. Entrepreneurs were guided through mentoring, development, and consolidation of their business ideas, helping them capture emerging opportunities in the growing pet economy while addressing societal demands related to pet management. Both women and young professionals demonstrated strong interest in this expanding sector. Additionally, a dedicated focus group was held with managers of hotels and other tourism-related structures. Training activities were co-designed in response to the identified needs of these managers, including three targeted webinars. Two manuals were also developed for public and private actors to support the tourism sector and facilitate wider adoption of pet-friendly practices.

Beneficiary groups

Primarily young and middle-aged women and men developing innovative business ideas within the pet economy. Additionally, existing tourism businesses interested in obtaining pet-friendly tourism qualifications.

Relevant stakeholders

Existing firms operating in the pet economy, chambers of commerce, municipalities, business incubators, tourism sector companies, and retailers.

Key elements

1. **Reinforcing competences and business ideas:** to support the organisation of new and sustainable businesses related to the pet-economy
2. **Training and start-up support:** organization of specific training initiatives and financial fund supporting the new entrepreneurial ideas

Impact

Support was provided to 20 new entrepreneurs, some of whom have already launched and successfully consolidated their business ideas within the pet economy. Webinars targeting the tourism sector were attended by local entrepreneurs, enhancing awareness and capacity in pet-friendly tourism initiatives.

Enabling factors

Presence of an active, innovative economic environment that encourages business initiatives. Effective communication strategies and strong professional skills for mentoring and incubating new ideas. Establishment of specific platforms and agreements to support the development of pet-economy initiatives.

Blocking factors

A non-active economic environment or limited local support for innovative initiatives. Difficulties in organizing platforms for entrepreneurship support. Limited understanding of the potential of the pet economy among stakeholders.



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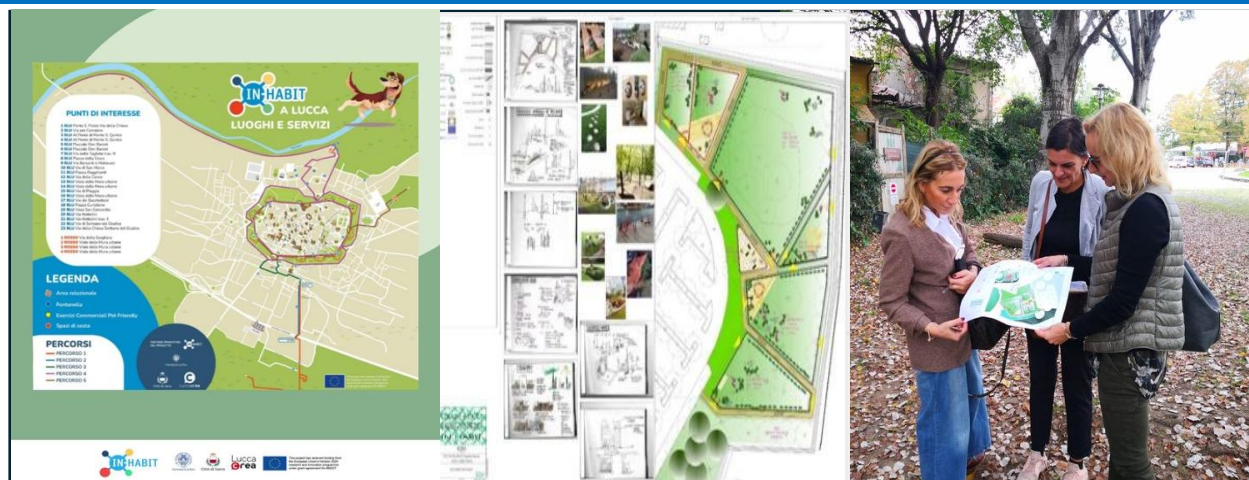
Lessons learned

- There is growing potential for new products, tools, and services that address societal demand for innovative solutions in pet management and related services.
- The pet economy offers a wide spectrum of employment opportunities, ranging from volunteer work to the inclusion of vulnerable individuals in jobs (e.g., in public shelters for abandoned animals) and extending to innovative ventures requiring specialized skills.
- Creating an environment that provides support, training, and financial resources for new entrepreneurs can foster and catalyze the development of a local economic ecosystem centered on the pet economy.



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Hum-animal Chart of services

Description

The chart presents the 15 km of Animal Lines, and the 2 relational areas organised in Lucca, along with the results of a census of existing pet-based activities and services in Lucca. This document serves as a practical reference, illustrating the key features of a hum-animal city and providing a framework that can be adapted and implemented in other contexts.

Challenges

Effectively communicating the hum-animal city concept is essential to ensure broad understanding and engagement. This includes citizens, beneficiaries, and tourists who visit the city with their pets.

Results

A Hum-animal Guide was developed for the city of Lucca to assist citizens and tourists in understanding and making use of the city's hum-animal facilities and services. The guide also includes information on municipal regulations and policies regarding the management of animals within the city, providing clear guidance for responsible pet ownership and engagement with urban animal spaces.

Beneficiary groups

All people from different ages and social backgrounds, citizens but also people from different neighbourhoods and villages. Tourists travelling with pets.

Relevant stakeholders

Pet handlers of different ages and social backgrounds, economic operators and public service providers, and a network of professionals involved in animal care and management (veterinarians, dog educators, pet shops, boarding facilities, hotels and B&B, kindergarten for pets).



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Key elements

1. **Communication and supportive tools:** the chart presented in hard copy is also available in Lucca's social media
2. **Networking with local private stakeholders:** to present their activity and to populate the chart

Impact

The chart provides a clear overview of the hum-animal concept and its practical application at the city level, highlighting the services and infrastructure available.

Enabling factors

Proactive engagement by the municipality and private stakeholders.
Strong communication efforts to ensure accessibility and understanding.

Blocking factors

No significant obstacles were reported, aside from the need to ensure collaboration for producing an easily usable reference tool.

Lessons learned

- The hum-animal city concept requires dedicated communication tools, such as charts and guides, to effectively present services and infrastructure to citizens and visitors.
- Proactive engagement by public administration is essential to support, coordinate, and strengthen activities organized at the city level under the hum-animal framework.



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City engagement on hum-animal events

Description

An urban restorative approach linked to the hum-animal concept can be strengthened through the organization of targeted events, enhancing the inclusiveness and playability of the city. Such events create opportunities to engage diverse groups, including children, young people, families, and pet handlers, while promoting awareness of human-animal interactions. In the Lucca case, events included a variety of initiatives, such as: Reading sessions on animals for children, Hum-animal board game activities designed for children and families, Activities in the relational areas facilitated by dog-educators, Creative workshops (e.g. streps creator meetings), Informal, accessible events for sharing results and discussing hum-animal initiatives with citizens, Demonstrations with specially trained dogs (e.g. mantrailing, guide dogs for visually impaired individuals), “Six feet walks” in the nature, Installation of specific spaces for the hum-animal idea in running events and other public gatherings. These activities not only foster engagement and community building but also reinforce the visibility and practical application of the hum-animal city concept.

Challenges

Citizen dialogue can be enhanced through the organization of targeted initiatives and events where people can easily meet, interact, play, and participate in shared activities. Such gatherings facilitate societal dialogue, foster new connections among individuals from different neighborhoods and villages, and strengthen social cohesion within the community.



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Results

In Lucca, several hum-animal based events were organised in both public infrastructures (Real Collegio, Piazza Coperta) and in the two relational areas. City Visit also served as opportunity to introduce and present open activities and events. Citizens responded positively to the public initiatives, and in events emphasizing dialogue, participants actively contributed by raising issues, suggesting potential solutions, and proposing new initiatives.

Beneficiary groups

All citizens from different ages and social backgrounds, citizens but also people coming from different neighbourhoods and villages. Occasional tourists present in the area.

Relevant stakeholders

Municipality. Local NGOs operating in different areas of interest (culture, social, environmental, pet related, social groups, etc.). Researchers and professionals with specific links to animals.

Key elements

1. **Networking with local NGOs, and centres:** to innovate and introduce from diverse perspective meetings and event hum-animal based.
2. **Use of public spaces and communication:** to support an easy and public access to the events
3. **Events facilitators:** to support the smooth and appropriate management of the events

Impact

Events provide opportunities to engage citizens, share information, and collect ideas, fostering continuity and gradual acceptance of the hum-animal concept. They allow participants to enjoy public spaces, meet others, discuss topics, and present proposals, often in the presence of local politicians, enhancing civic dialogue and visibility.

Enabling factors

The organisation of the events is demanding in terms of organisational aspects from the co-design to the co-deployment and co-management. Adequate availability of resources, which may require limited financial investment. Strong communication strategies and the use of existing networks support successful engagement.

Blocking factors

Limited local experience or networking capabilities can hinder the organization and visibility of events. Poor organizational capacity can prevent events from effectively showcasing new initiatives and engaging the public. Insufficient communication may reduce public participation and diminish the impact of the initiatives.

Lessons learned

- The organisation of public events is demanding and benefits greatly from strong networking, communication skills, and effective use of media.
- Simple and enjoyable events tend to attract high participation and engagement.
- Citizens are more likely to attend events with cultural content when the activities are presented in a friendly, engaging, and accessible manner.



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Hum-animal Game board

Description

To promote better human–animal interactions, LuccaCrea developed a board game based on the geography of Lucca, incorporating local places and names. The game introduces players to responsible pet management, taking into account the type of pets, family composition, and available city resources. It also highlights external services that can support households in managing multiple pets, providing an engaging and educational tool for families and children.

Challenges

Gaming initiatives are often highly effective in educating the public about civic initiatives and solutions. In Lucca, the gaming approach was previously tested to raise awareness on topics such as waste management and water conservation. For the hum-animal concept, the board game was specifically developed to support understanding and engagement, facilitating a broad comprehension of the concept and its practical implications for citizens and families.

Results

The board game City Pets was co-designed, co-deployed, and disseminated by LuccaCrea in collaboration with the University of Pisa. LuccaCrea contributed expertise in comics and game design, while the University of Pisa provided scientific content and conducted testing on different versions to ensure accuracy and effectiveness before finalization. Professional game developers were also involved to enhance appeal and ensure reliable game mechanics. The game has been widely used both in classrooms during educational activities and at public events organized in Lucca. Additionally, upscaling initiatives in the Pisa area allowed children and young people to engage with the game, extending its educational impact beyond the city.

Beneficiary groups

Mainly children, young people and families during educational activities and during specific events.

Relevant stakeholders

LuccaCrea, developers of games, University of Pisa for the scientific contents, Lucca municipality for the organisation of the related events.



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Key elements

1. **Competences in games development:** specific expertise in gamification of specific issue and topics is crucial for the organisation of a good, attractive and playable game.
2. **Deep linkage between the game and the topic to be addressed:** gaming as part of an educational activity demand for a good understanding of the topic and its scientific contents to be translated into the gaming activities. The gaming mechanism should, at the same time, engage participants and address specific cultural points that should be solicited by the game itself.

Impact

The game had a positive impact on participants. It reinforced local identity and trust by being rooted in Lucca's architectural and cultural context. Moreover, students were involved in co-design and testing, linking educational activities to university courses and promoting the gamification of the hum-animal concept.

Enabling factors

Local experience and expertise in game development provided by LuccaCrea were crucial for effectively translating the hum-animal concept into the City Pets board game.

Blocking factors

A lack of dialogue between game developers and the scientific partners could reduce the game's effectiveness in achieving its intended educational and engagement outcomes.

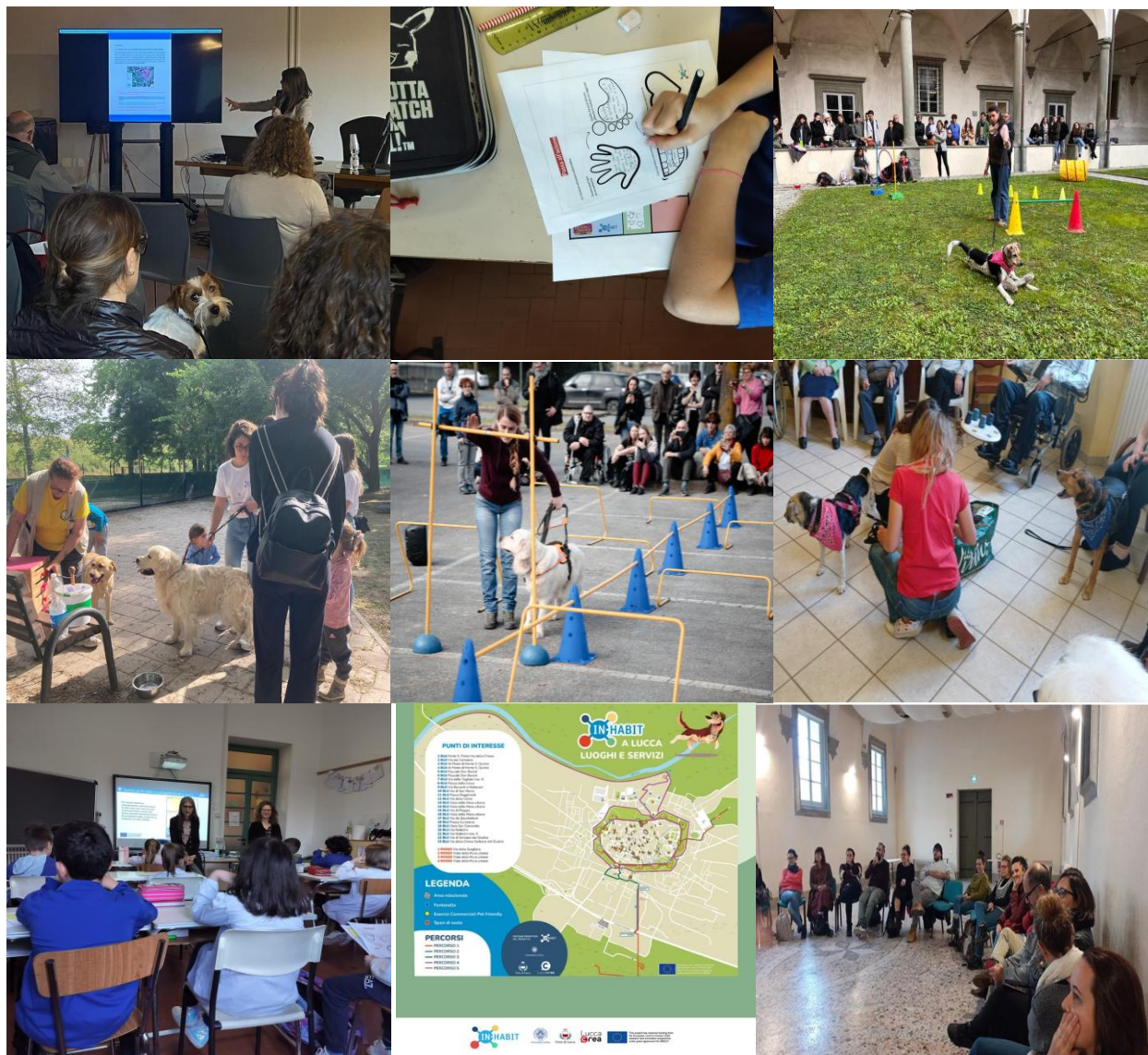
Lessons learned

- Gaming is an increasingly effective tool for engaging diverse audiences in educational activities related to public and civic interests.
- Gaming can be easily adapted for a wide range of participants, producing positive outcomes in education, awareness, and community engagement.



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