



**IN-HABIT - INclusive Health And wellBeing In small and medium size  
ciTies**

# D9.10 Good RRI Practices for Cities

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Authors (names and affiliations)	Maria Mar Delgado-Serrano (UCO), Francesco Di Iacovo (UNIFI), Emils Kilis (BSC), Katarina Melichova (SUA), Melina Granet (UCO), Cristina Rentería Garita (UCO), Catalina Cruz Piedrahita (UCO), Francisco Javier Martínez Carranza (UCO)		



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## EXECUTIVE SUMMARY

Responsible Research and Innovation (RRI) has become an increasingly relevant concept within European Union policy, particularly under the Horizon 2020 programme. RRI aims to align research and innovation with societal needs and values, enhancing the legitimacy, inclusiveness, and social impact of publicly funded research. It encourages stakeholders to anticipate and evaluate the societal consequences of their work and use these reflections to shape research and innovation processes in ways that are ethically acceptable, socially desirable, and sustainable.

The core principles of RRI are *inclusion, anticipation, responsiveness, and reflexivity*, operationalised through six thematic areas: *public engagement, ethics, gender equality, science education, open access, and governance*. These principles call for the active involvement of diverse stakeholders, proactive assessment of future impacts, adaptability to societal needs, and continuous reflection on the ethical and societal implications of research activities.

In the urban context, RRI offers a powerful framework for addressing the complex challenges cities face, such as climate change, social inequality, digital transformation or inclusive health and wellbeing provision. Cities are increasingly seen not just as sites for innovation but as active creators of knowledge and innovation. Urban living labs, citizen science initiatives, and multi-stakeholder platforms are some examples of how cities can be experimental grounds for RRI practices, embedding participation, transparency, and sustainability into urban governance and planning processes.

However, implementing RRI in cities requires more than formal compliance. It demands systemic, place-based approaches that integrate RRI principles into the daily routines of urban governance, planning, and innovation ecosystems. Challenges include existing power structures, institutional fragmentation, and entrenched spatial inequalities, which can limit meaningful participation and transformative impact. Nonetheless, the integration of RRI into EU-funded urban projects opens an opportunity to align technological and scientific advancements with democratic values and societal well-being.

The Horizon 2020 IN-HABIT project has explored the application of RRI principles in four urban contexts. IN-HABIT investigate how to foster Inclusive Health and Wellbeing (IHW) in peripheral small and medium-sized cities (SMSCs) across Europe, specifically in Córdoba (Spain), Riga (Latvia), Lucca (Italy), and Nitra (Slovakia), with Bogotá (Colombia) as a replicator city. The project mobilises undervalued resources (such as culture, food, human-animal bonds, and art) to promote inclusive health and wellbeing using participatory action research approaches.

IN-HABIT has embedded RRI principles throughout its activities. Public engagement is on the core of the actions, involving citizens, policymakers, businesses, and researchers, with a particular focus on vulnerable groups. Ethical standards guide all research processes, while gender, diversity, equity, and inclusion are integrated as cross-cutting topics. The project also promotes science education by training local inhabitants as co-researchers and ensuring

inclusive communication strategies. All research outputs are openly accessible following FAIR principles, and governance is organised through local IN-HUBs that function as inclusive social innovation labs adapted to each city's specific context.

During the 5-year lifetime of the project, IN-HABIT has explored how RRI can be meaningfully embedded into urban research and innovation, identified good practices that can be applied in other cities, and tested them in the four cities. This deliverable provides good RRI practices that can contribute to sustainable, equitable urban futures and strengthen the societal relevance and impact of R&I actions, as well as some examples of how these practices have been implemented.

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# 1. Introduction

The term responsible research and innovation (RRI) has gained increasing relevance in EU policy in the last few years, particularly within the European Commission Horizon 2020 program (EC, 2014). RRI has been positioned as a cross-cutting topic due to its potential to enhance the legitimacy, inclusiveness, and social impact of publicly funded research.

Research and Innovation are key pillars in the strategy of the European Union to create sustainable, inclusive growth and prosperity and address the societal challenges of Europe and the world. According to the proposals of the group of experts created by the EC to define Responsible Research and Innovation (RRI), RRI aims to achieve better alignment of research and innovation with societal needs and to develop them in ways that allow all stakeholders involved in these processes to obtain relevant knowledge on the consequences of the outcomes of their actions and the range of options open to them; to effectively evaluate both outcomes and options in terms of societal needs and moral values and to use these considerations as functional requirements for design and development of new research, products and services (EC, 2013).

Building on these requirements, in a European context, the following points of reference should be reflected in the design of research and innovation processes and products:

1. **Ethical acceptability** which includes compliance with both the EU charter on fundamental rights as well as the safety of products regarding the acceptable risk of products.
2. Orientation towards **societal needs** which includes an orientation towards contributing to achieving objectives of sustainable development (consisting of economic, social as well as environmental aspects) and contributing to achieving normative objectives such as “equality of men and women” or an improvement of the “quality of life” which are also core European objectives expressed in the Treaty on European Union (EC, 2013).

This implies, on the one hand, that RRI is directed at technological advances also fostering the competitiveness of the European economy and its innovation capacities. On the other hand, RRI is directed at providing solutions to the grand challenges that societies face today, such as environmental degradation, climate change, or the ageing of society. Science is the catalyst for advances in economic turmoil, health, information technology, agriculture, and energy, driving the national economy; it deserves to be valued as such (Schaal, 2017). In this way, RRI serves common European values that drive EU policy.

RRI has been conceptualised as collective stewardship of science and innovation to meet the needs and expectations of society and to ensure inclusive, responsible and sustainable development (Stilgoe et al., 2013; Thapa et al., 2019). It addresses this need by emphasising the importance of a shift in the predominant notion of science and innovation “in” society to science and innovation “for and with” society (Owen et al., 2012). It aims to increase people’s

engagement and participation in the research process, providing the framing required to act with a view to ensuring that the technologies are socially acceptable, desirable, and sustainable (Stahl & Wright, 2018). As noted by the European Commission, this will bring a 'better alignment' that will ensure research and innovation include responsibility (EC, 2012).

Following (EC, 2013; Stilgoe et al., 2013; Burget et al, 2017) the initial principles of RRI are:

1. **Inclusion:** RRI promotes the involvement of diverse stakeholders, including the public, in the research and innovation process to ensure that multiple perspectives are considered and to enable the hearing of 'new voices' that may challenge narrow top-down approaches.
2. **Anticipation:** This principle involves foresight and the assessment of potential impacts and implications of research and innovation, allowing for proactive measures to address possible challenges. Anticipation encourages taking a forward view that takes account of opportunities, risks, environmental concerns, etc.
3. **Responsiveness:** RRI requires adaptability and the ability to respond to new information and societal needs, ensuring that research and innovation remain relevant and beneficial. Responsive RRI makes changes as experience is gained and knowledge is built, including taking action to address any unintended consequences.
4. **Reflexivity:** Researchers and innovators are encouraged to reflect on their own roles, assumptions, and the broader implications of their work, fostering a culture of continuous learning and ethical considerations. It encourages putting research into context through the regular posing of questions regarding norms and values.

Each principle demands a particular explanation, but the lines between them are often blurred. These principles are often operationalised through the following thematic elements (EC, 2013):

1. **Public engagement** of all societal actors and their joint participation in the RRI process.
2. **Ethics** aimed at increasing the societal relevance and acceptability of research and innovation outcomes.
3. **Gender equality**, which highlights the need to integrate the gender dimension in the research and innovation context.
4. **Science education** as a means to make change happen through raising awareness and embedding RRI into educational curricula.
5. **Open access** as a means to boost innovation and increase the use of scientific results.
6. **Governance** aiming to develop a framework that integrates the five elements mentioned above.

## 2. Responsible Research and Innovation in Cities

In the last decades, research and innovation have continually been reshaping cities. Conversely, cities are not just recipients of innovation but co-shapers of it (Thapa et al., 2019). RRI can play a transformative role in shaping urban futures. As urbanisation accelerates and the challenges faced by cities grow—from climate change and social inequality to digital transformation and inclusive health and wellbeing provision—the RRI framework offers a timely and interesting paradigm for rethinking how knowledge production, technological development, and policymaking are conducted in urban environments.

RRI goes beyond a framework for ethical scientific conduct, situating cities as spaces for experimentation, governance and citizen engagement. Cities can act as living laboratories where multiple actors, from policymakers and researchers to citizens and private companies, co-produce knowledge and innovation possibilities (Geenhuizen, 2019).

RRI principles call for research and innovation processes to be ethically acceptable, socially desirable, and sustainable, while actively involving stakeholders and anticipating long-term consequences, are especially valuable to address the challenges faced by cities. Cities are uniquely positioned to carry out the principles of RRI because of their closeness to citizens, their practical governance structures and their capacity to experiment with research and innovation in real-world contexts (Panciroli et al., 2020). Its application to urban settings provides an opportunity to align scientific and technological advancements with the values, needs, and aspirations of diverse and changing urban populations.

However, urban environments offer both opportunities and challenges for implementing RRI. Cities provide dynamic spaces for experimentation. Different common practices in research and innovation projects, such as urban living labs, multi-actor platforms or citizen science projects, demonstrate the potential for co-creating knowledge and solutions that are locally relevant and democratically legitimised. This experimental approach in cities aligns with RRI's core principles, such as iterative learning, collaborative engagement, co-creation, and adaptive governance.

Urban and spatial planning are the tools through which cities can institutionalise RRI. They offer the opportunity to craft policies that explicitly use ethical standards and stakeholder inclusion, and design processes that allow diverse voices to shape urban futures. Participatory planning, strategic regional development plans, and integrating sustainability frameworks can help root RRI at the city scale (Thapa 2019). These procedures, when designed with RRI principles, can embed participation, transparency, gender sensitivity, ethics and sustainability in the city planning and decision-making processes.

However, implementing RRI in cities is neither linear nor easy. As several scholars noted, RRI dimensions should not be considered in isolation but rather as interconnected and part of a systemic and place-based approach to inclusive, anticipatory and adaptive policymaking (Panciroli et al., 2020; Thapa et al., 2019). Furthermore, RRI needs to be more than a set of abstract ideals. It needs to be institutionalised within the routines and logics of urban

governance, requiring deep integration into planning instruments, regulatory processes, and innovation ecosystems (Geenhuizen, 2019), creating spaces for dialogue, building capacities for responsiveness and reflexivity among practitioners, giving voices to the traditionally excluded, and establishing transparency and accountability procedures that last beyond individual projects (Owen et al., 2012; Stilgoe et al., 2013). Furthermore, cities are also characterised by already well-established power structures, spatial inequalities, and institutional complexities and fragmentation. These factors can channel but also limit meaningful participation, reducing the transformative impact of RRI efforts.

The integration of RRI into EU-funded projects addressing urban challenges reflects the commitment to align scientific advancement with democratic values. It involves a proactive orientation to responsibility, not only through the avoiding harm principle or mitigating risk strategies but also through anticipating societal needs and fostering inclusive dialogue (Panciroli et al., 2020). Within the urban context, this can be translated into specific practices such as engaging residents in co-design processes, incorporating gender and diversity considerations into planning, ensuring transparency in the use of data and algorithms, and establishing governance mechanisms that allow for accountability and reflexivity. The European Commission explicit emphasis on these dimensions within its research-funding instruments for cities underscores the belief that RRI enhances not only ethical standards but also the scientific excellence, relevance, and uptake of research outcomes.

For EU-funded projects aiming to embed RRI meaningfully in urban settings, formal compliance should not be enough. Creating sustainable, long-term partnerships involving local communities, civil society organisations, and municipal authorities is necessary, as well as putting into practice mechanisms to build trust, create shared ownership, and search for lasting impact. Indeed, the introduction of some aspects related to RRI in the urban operational pathways is already an innovation in many contexts (Jakobsen et al., 2019).

### **3. Responsible Research and Innovation in the IN-HABIT project**

IN-HABIT is a research project funded by the EU Horizon 2020 programme, whose objective is to foster Inclusive Health and Wellbeing (IHW) in peripheral small and medium-sized cities in Europe by using undervalued resources while addressing the needs of vulnerable populations. The project mobilises resources around a core topic (culture, food, human-animal bonds, environment and art) and galvanises them through solutions that integrate cultural, digital, nature-based and social innovations. These innovations are applied in urban public spaces using participatory action approaches based on co-design, co-deployment and co-management.

The project has been implemented in 4 European peripheral SMSCs - Cordoba (Spain), Riga (Latvia), Lucca (Italy) and Nitra (Slovakia) that are testing different visionary and integrated solutions to foster IHW with a focus on gender, diversity, equity and inclusion (GDEI). The city of Bogotá acts as a replicator city.

In the topic description, RRI is described as one of the cross-cutting priorities. Following this request, the project has implemented different actions and strategies that are aligned with the six thematic elements of RRI.

**Public engagement:** IN-HABIT puts people at the centre of its strategy and is based on the participation of representatives of the quadruple helix (citizens, policymakers and urban planners, (social) businesses and researchers). The project is specifically focused on vulnerable collectives and areas and has emphasised the involvement of these groups in all the actions undertaken.

**Ethics:** At the beginning of the project, ethical guidelines were established and approved by the European Commission. All the partners have strictly followed them. These guidelines include the ethical standards in social research methods and procedures to be followed by all the researchers, considering the respect for human participants in our research, the data protection procedures, the informed consent form to be used and the compliance with these standards of the different research methods to be used. The partners committed to fulfilling all legal and ethical regulations at the EU and national levels for the proposed research and to respecting data protection regulations of the individual countries and at the European level.

**Gender equality:** IN-HABIT incorporates gender, diversity, equity and inclusion as a cross-cutting perspective, analysing the inequalities in the access to health and well-being of different collectives. Our inclusive approach to health and wellbeing puts the focus on vulnerable collectives that face socioeconomic inequalities in access to health and wellbeing, including inhabitants' perspectives and specific contextual needs.

**Science education:** IN-HABIT promotes access to science education through different means. We have trained local inhabitants as local activators and co-researchers. We also have developed inclusive communication tools to communicate and disseminate our results to different audiences, adapting them to their specific needs.

**Open access:** All our results are open access and follow FAIR principles (findable, accessible, interoperable and reusable). They are available from our [website](#) and our [Zenodo](#) community.

**Governance:** The governance framework of IN-HABIT is based on the creation in each city of IN-HUBs (Inclusive Hub), a social innovation lab designed to promote inclusive engagement and align the project goals with community needs. The IN-HUBs operate through a governance system based on stakeholder involvement and adapted to the specificities and context of each city.

## 4. Good Practices of Responsible Research and Innovation in Cities

The implementation of RRI principles across the four cities over the five-year duration of the project, along with the critical reflections of project partners on the opportunities and challenges encountered during this process, has permitted the formulation of the following set of good practices for each of the principles and dimensions. We have also included examples of the practices developed throughout the project. These practices may serve as valuable guidance for other cities, as well as for researchers and innovators aiming to put RRI into practice in urban contexts.

While some of the practices are relevant to multiple principles or dimensions, we have classified each under the one we considered most appropriate.

### 4.1. Inclusion

#### 4.1.1. Inclusive Engagement

The good practices proposed for inclusive engagement are:

- Create diverse and inclusive public-private-people partnerships (PPPPs) including representatives of the citizens and society, the policy sector, the business sector, and the research sector, ensuring the representation of traditionally underrepresented citizens and collectives, and aiming to foster the interaction between private, public and societal sectors in the urban R&I actions.
- Promote participation through open communication campaigns and calls to invite citizens and different sectors to be part of the partnerships, specifically targeting those sectors and collectives more influenced or impacted by the R&I actions.
- Create engagement opportunities for different actors in the urban R&I actions to build trust in the process.
- Use inclusive engagement tools and methods in these PPPPs adapted to the skills of the participants. For instance, 'Design for All' approaches for the technologies to disseminate R&I actions to help all people through, e.g. simple, accessible and usable interfaces and controls.
- Boost equal access to participate in urban R&I actions that ensure the "right to the city" of the most vulnerable groups.
- Create adhesion protocols that are inclusive and flexible but require commitment.

### Examples of Inclusive Engagement in the IN-HABIT Project

The project created the IN-HUBs, which are social innovation labs designed to promote **inclusive engagement** and align project goals with community needs. The IN-HUBs gather representatives of the four key sectors: residents, whose lived experiences and knowledge guide interventions; the public sector, which offers organisational and administrative support; the private sector, which contributes resources and facilitates implementation; and the research and education sector, which provides technical guidance and financial support. A special emphasis has been taken to include vulnerable collectives in the R&I actions, such as those living in stigmatised neighbourhoods, the elderly, the migrants, the homeless or people with disabilities.

The IN-HUBs were established in each city by means of public open calls, with the aim of creating a stable but enlarging platform among all the main local stakeholders (institutions, SMEs, CSOs, educational and cultural centres, social and health services, schools, neighbourhood committees, common citizens, etc.) in relation to the specific R&I topics. Participation was open and any stakeholder interested could join the actions.

The IN-HUBs used inclusive and participatory tools and methods to promote a culture of engagement and mindset change among different stakeholders such as policymakers, business leaders, social entrepreneurs, grassroots organisations, vulnerable collectives, and especially youngsters and women. We have put into practice behavioural games to elicit preferences and find solutions for collective problems and used different tools to devise entry points for inclusive and sustainable citizen engagement. Specific tools were also co-designed and put in place for youngster to include them in co-planning initiatives. The dynamic process of the urban IN-HUBs stimulated an ongoing process of participation among residents also in a freeway and environment, by creating and reinforcing new networks, dialogue and initiatives.

The engagement of all these collectives and the use of these types of tools also foster the creation of new approaches, a deeper and meaningful dialogue as well as a sense of community and ownership of the R&I actions.

#### 4.1.2. Inclusive Governance

The good practices proposed for inclusive governance are:

- Implement an inclusive polycentric governance model of the PPPPS that permits different levels of engagement and responsibility of the members, according to their capacities and interests.
- Set up mechanisms for the adequate working of PPPPs as true spaces of participation and decision making, avoiding them from just being places to receive information.
- Ensure that the voices of participants are heard and that their opinions can influence the R&I actions.

- Create different sub-committees responsible for specific tasks and engage the relevant collectives and individuals in them.

### Examples of Inclusive Governance in the IN-HABIT Project

Every city created an IN-HUB that was adapted to their needs and local specificities and defined its governance rules. However, all of them are built on a polycentric governance model based on the different involvement and responsibilities of the stakeholders and include representatives of the four helixes. The IN-HUBs were responsible for identifying R&I needs and proposing solutions. Different stakeholders (businesses, institutions, and municipal bodies) contribute knowledge and resources for co-design and co-implementation of R&I actions.

Rather than serving solely as a physical space, the IN-HUBs function as both a meeting point and an organisational governance structure that promotes collaboration. This approach enables residents to actively shape interventions while keeping decision-making grounded in local needs and perspectives.

A manifesto of adhesion was created, and those interested endorsed it. The manifesto permitted different levels of commitment depending on the interest of the participants.

The IN-HUBs organised periodic meetings with all or part of the members to make decisions, assess the deployment of the actions and propose changes when needed.

A special emphasis was put on including the most vulnerable collectives. For instance, in the case of Cordoba, citizens and representatives of a vulnerable neighbourhood, representatives of people with disabilities or other problems, or ethnic minorities were targeted. Similarly, in the case of Nitra, ethnic minorities, economic migrants and refugees were one of the most vulnerable communities involved.

### 4.1.3. Inclusive Ethics

The good practices proposed for inclusive ethics are:

- Elaborate informed consent forms in accessible language explaining the objectives and outcomes of the R&I actions and the rights of the participants. These forms also contain information on data protection measures, especially for personal data.
- Elaborate on a GDPR (General Data Protection Regulation) protocol that ensures personal data protection.
- Ensure integrity and ethical handling in the use of participants' data.
- Create protocols to anonymise personal data.
- Store information on secure servers that protect for leakages and hacking.
- Consider the cultural and ethnic differences of the participants in the urban R&I actions, respecting the norms, values and cultural specificities of diverse collectives.

### Examples of Inclusive Ethics in the IN-HABIT Project

Membership in the IN-HUB is based on the manifesto of adhesion that clearly explains the objectives of the research and the rights of members and is signed by all the members. This document is written using inclusive and accessible language to facilitate the comprehension of all the participants.

The University of Cordoba, the project coordinator, created a secure environment, based on its secure servers, to store the project data. Researchers used protected digital devices and ensured that all the data derived from the project was curated correctly and safely stored. All the personal data is anonymised, and only non-sensitive data is displayed.

The research methods promoted inclusion and were adapted to the specific needs of different collectives.

Researchers are committed to not using the data for uses other than those for which it was collected and destroying it after its use.

The project has solid protocols to warrant the integrity of data and promote transparency and accountability.

#### 4.1.4. Inclusive Gender Equality

The good practices proposed for inclusive gender equality are:

- Ensure Gender, Diversity, Equity and Inclusion (GDEI) approaches among stakeholders and community participants in the PPPPs.
- Elaborate GDEI protocols that ensure the inclusion and fair representation of different collectives, especially the most vulnerable and often neglected in the urban R&I actions.
- Address GDEI imbalances when designing urban R&I actions.
- Develop GDEI impact assessments of the R&I actions.
- Use gender-inclusive methods that do not overlook gender differences in R&I urban actions and address the traditional women's invisibility in urban planning and R&I approaches.
- Use inclusive and non-stereotypical language in research outputs, dissemination materials, and public communications of the urban R&I actions.

### Examples of Inclusive Gender Equality in the IN-HABIT Project

IN-HABIT has a strong focus on GDEI perspectives in all its actions. Most of the VIS undertaken by the project specifically target fragile or vulnerable collectives, be they women,

children, the elderly, ethnic minorities or those with mental health or lifestyle-related health conditions and aim to unlock the full potential of these collectives.

Our target strategy has been focused on attracting these groups and addressing gender and diversity imbalances in the representativeness of groups in the IN-HUBs, and to involve them in the R&I actions developed.

We developed Gender Landscapes in each city that look at how places are experienced differently by different people and aim to make cities fairer and healthier for everyone. They included in the analysis the following three pillars: 1) *Institutions*: Focuses on how local governments and organisations support gender and diversity. It looks at laws, policies, money, and involvement from key people. 2) *Lived Experiences*: Explores how people experience the city differently depending on gender and other factors. It helps to understand local problems, like access to services or safety and 3) *Health and Well-being*: Maps out areas of the city where health and well-being are better or worse. This shows if some groups are more affected than others and help plan better solutions.

#### 4.1.5. Inclusive Science Education

The good practices proposed for inclusive science education are:

- Use inclusive tools to boost science literacy, especially in vulnerable communities to create community and informal learning environments. These strategies collectively enhance commitment and understanding, making science education more inclusive and effective.
- Create R&I community projects focused on local issues, such as specific environmental or social problems and involve traditionally excluded groups in their execution.
- Use the local citizens' knowledge and create opportunities to share and develop knowledge collectively rather than individually to create a sense of belonging and ownership of the R&I actions.
- Give opportunities to get involved in the urban R&I actions to representatives of the communities or sectors affected or influenced by them.
- Involve school children and youngsters in some of the R&I actions, engaging them in real-world scientific inquiries and adapting the work methods to their specific needs. This approach not only trains future generations in science education but can be an interesting tool to reach families.
- Use inclusive and culturally relevant communication tools, such as infographics, visuals, videos, and podcasts, and adopt culturally relevant methods to showcase the actions and the outcomes to deliver results to audiences with limited literacy skills, limited digital skills or low access to digital devices.
- Identify the social networks most used by society and use them to disseminate goals and outcomes.

### Examples of Inclusive Science Education in IN-HABIT

IN-HABIT appointed the so-called local activators in each city and trained them as local co-researchers to ensure that the vulnerable collectives were part of the R&I actions, especially those done at the local level. That contributed to increasing the skills and competencies of the workforce, empowering these local community representatives, and contributing to the legacy of R&I actions beyond the duration of the project lifetime.

The project created social media accounts on the main social networks in every city and periodically disseminated outcomes, events, activities, and so on. We also used podcasts to reach different audiences.

In the case of Cordoba, where we worked in a vulnerable neighbourhood with limited literacy skills among many inhabitants, we adapted the working methods to train them and empower them to participate in R&I actions. We drafted monthly newsletters with limited text and many pictures and a monthly radio programme on a local radio station, where the inhabitants also communicated their experiences, to disseminate the R&I actions and outcomes.

In the Lucca case, the co-design activities strongly empowered residents to actively participate in decision-making. These activities also involved specific groups already working to address the needs of people with disabilities and the elderly. Project workshops were used to capture the voices of older adults and they were gathered in a dedicated book. Additionally, the contributions of students in the co-design process were recognised and valued.

In Riga, many “soft” interventions had an explicit educational component. Thematically, they covered a broad range of topics, including healthy lifestyles and environmentally friendly practices. In most cases, events were organised in collaboration with specialised NGOs. The aim of many of these events was to contribute to the health and wellbeing of the participants by improving their literacy and empowering them to make informed decisions.

In Nitra, inclusive science education was advanced through a diverse range of participatory and educational activities that connected scientific knowledge with community engagement. Formats such as participatory phytosociological surveys during BioBlitz events, community garden volunteer events with schoolchildren from vulnerable backgrounds, their parents, teachers and researchers, allowed those with minimal contact with R&I practice to actively engage in ecological data collection and environmental learning. Local inhabitants, students of landscape architecture and horticulture, and volunteers were involved in the co-design and co-deployment of nature-based solutions, acquiring practical skills in planting native meadows, tree care, and sustainable landscape management. The process was supported by local universities, NGOs, and professionals, who delivered workshops and training sessions that merged traditional ecological knowledge with scientific methods.

#### 4.1.6. Inclusive Open Access

The good practices proposed for inclusive open access are:

- Create open and inclusive platforms to make R&I results open and accessible to different audiences.
- Promote open access to all the datasets, resources and outcomes derived from public-funded R&I actions developed in the cities but also establish clear protocols to protect research outcomes through patents or non-disclosure till publications are made by researchers.
- Devolve outcomes and receive feedback from the different participants in the R&I activities.
- Promote transparency and accountability in all stages of the R&I actions and for all the city collectives involved in R&I actions
- Promote open and evolving participation opportunities

#### Examples of Inclusive Open Access in the IN-HABIT Project

All the project results are open access, and we have created inclusive dissemination procedures to communicate and disseminate outputs, such as videos, infographics or other visuals, to make accessible the results of scientific publications and other actions in every city.

The main results are translated into the four local languages.

The R&I strategy of the project is based on co-design, co-deployment, co-management and co-assessment. As part of this strategy, we continuously provide feedback on the results of the actions to those involved in the project.

Guidelines of the tools and methods developed by the project are available and can be used or replicated by other cities or collectives interested in doing so.

The project website includes sections dedicated to different audiences, including one specific site for each city to disseminate results in the local language.

We have created an IN-HABIT community in Zenodo where we publish all our research outcomes. Zenodo is a general-purpose, open-source research repository developed by the European Commission CERN and OpenAIRE initiatives, allowing researchers to share and preserve various research outputs, including datasets, software, publications, and more. Zenodo is based on FAIR principles. Furthermore, Zenodo assigns a DOI to each uploaded item for easy citation and discoverability.

All our events, activities and outcomes are publicised on social networks and open to all those interested. The participation in scientific events facilitated the distribution of the knowledge created to larger audiences.

## 4.2. Anticipation

### 4.2.1. Anticipatory Engagement

The good practices proposed for anticipatory engagement are:

- Anticipate the difficulties to participate in different citizens and collectives and adapt the methods, tools, timing and location of the R&I actions to their needs.
- Create opportunities to work together with the different collectives during the whole R&I process, but especially at the design stage, in order to better align both the process and its outcomes in the city with the values, needs and expectations of society.
- Promote awareness of the importance of being engaged in urban R&I actions using tools adapted to involve the different collectives in forward-looking activities.

#### Examples of Anticipatory Engagement in IN-HABIT

The IN-HABIT project has been based on flexible, forward-looking R&I actions. Before deploying any action, a diagnosis of the limitations to foster IHW was made with the target collectives, and the VIS were developed according to the detected needs.

In each city, stakeholders and non-specialists were actively involved in the process of designing indicators of Inclusive Health and Wellbeing (IHW). They played a key role in shaping the narrative around what health and wellbeing mean to them, as well as how they understood the impact of the project.

The working methods have been based on co-creation and co-design activities in the IN-HUBs. These working methods aim to develop strategies and mechanisms to avoid social isolation, nurturing and empowering citizens to plan and create attractive, appealing and desirable environments that promote IHW.

The activation in each city of existing resources towards social innovation paths was part of the anticipation process, making possible a different understanding of local resources (animals, food, green resources, social dialogue) in increasing IHW

All the interested actors were represented in the IN-HUBs, including the traditionally excluded, and their opinions were listened to and considered before deploying the VIS.

### 4.2.2. Anticipatory Governance

The good practices proposed for anticipatory governance are:

- Implement anticipatory governance mechanisms that make clear the role of citizens in R&I processes and the expected outcomes, enabling opportunities to be identified or problems to be overcome during the research process.

- Build mechanisms to anticipate the risks and impacts of R&I actions, with a specific emphasis on the unexpected ones and address them.
- Create a culture of anticipation when approaching urban R&I actions, for instance, using scenario-building methods or foresight methods to anticipate potential impacts.
- Shift the governance methods from information and consultation actions to full engagement and involvement of citizens to anticipate R&I needs.
- Promote a high level of social awareness to anticipate the outcomes and impacts of R&I actions in the city.

### Examples of Anticipatory Governance in the IN-HABIT Project

The IN-HUBs structure and organisation promoted anticipatory governance actions and identification of the risks and impacts. We also worked to create trust in the potentialities of R&I actions.

We co-created an impact assessment framework of inclusive health and wellbeing, including top-down and bottom-up indicators, identifying with local stakeholders the expected impacts and foreseeing the risks.

The different IN-HABIT outcomes, tools and methods were selected, anticipating their potential positive and negative impacts in order to potentiate the benefits and minimise the problems. The in-depth analysis of the context in each of the city pilots and the continuous discussion in the IN-HUBs on the ways to develop the R&I actions helped to foresee them.

The use of specific facilitation methods during the meetings supported both active participation and the implementation of forecasting and backcasting activities. These methods helped foster a shared understanding of key challenges and guided discussions on how to anticipate and manage change in ways that minimise risks for all.

Strong attention was given to social mediation at the local level to support the growth of awareness and social demand. This was achieved by working within the framework of local norms, obligations, and the resources provided by the project, while also helping to prevent potential tensions among local stakeholders and public bodies. This approach helped maintain a constructive dynamic and coherence throughout the project's processes.

### 4.2.3. Anticipatory Ethics

The good practices proposed for anticipatory ethics are:

- Ensure decision-making information used to anticipate decisions is well-grounded, reflecting the expected policy, technological, social and cultural outcomes of the R&I actions in the city.
- Implement mechanisms to ensure that R&I actions contribute to and address the needs of the most vulnerable citizens.
- Promote honesty and integrity in all the urban R&I actions.

- Anticipate both potential expected and unexpected risks or negative impact on the wellbeing or privacy of citizens or participants in the actions.
- Foresee in the R&I actions the cultural or ethnic differences among the citizens or participants and understand the importance of the context and the already established norms and values.

### Examples of Anticipatory Ethics in IN-HABIT

The IN-HABIT's ethical approach considered anticipation in all its actions, taking special sensitivity to the potential impacts on vulnerable individuals and collectives. Results, including learnt lessons and methods, have been displayed following our ethical guidelines (D9.3). All the actions have preserved honesty and research integrity and boosted social justice, delivering outcomes for vulnerable groups and anticipating their R&I needs, e.g., working in vulnerable neighbourhoods and including collectives such as migrants, the elderly, and homeless people in our actions.

The specific needs of the different vulnerable groups were taken into very high consideration according to their potential to express and to communicate their point of view and offer their voice with different –direct and indirect- methods. Special care was taken to ensure that different perspectives were respected and integrated into the design and implementation of solutions. Indeed, in Riga, monitoring activities were reorganised when it was noticed that some groups (e.g. the elderly) had been excluded. This was done to ensure that their view is also present and represented in accounts of what has been achieved (and not achieved).

#### 4.2.4. Anticipatory Gender Equality

The good practices proposed for anticipatory gender equality are:

- Anticipate the needs of different collectives using a gender, equity, diversity and inclusion perspective to understand the main differences affecting participation and engagement in urban planning and actions.
- Identify issues that require gender sensitivity approaches when launching the R&I process.
- Create structures and frameworks that address gender imbalances in research investment and prioritisation at the city level.
- Promote gender balance and leadership positions in the composition of urban R&I teams, encouraging women involvement in the city R&I process.
- Track the gender composition of teams, leadership, authorship, and participation in urban R&I activities and adopt measures when imbalances or bias are detected.

### Example of Anticipatory Gender Equality in the IN-HABIT Project

GDEI, as mentioned, is one of the key drivers of the IN-HABIT project. We recognised that women and people with diverse gender identities and expressions remain amongst the most vulnerable groups in cities, as well as crucial in making the cities liveable and mitigating the effect of environmental stressors on the most vulnerable, hence they have had a key role in our R&I actions.

Women are widely represented in the IN-HUBs, and their opinions and needs are listened to in the co-design and co-creation actions. The Project Coordinator and several Work Package leaders are women, and women investigators are well-represented in the R&I teams of the four cities.

All our research procedures and methods seek to redress gender imbalances. We envisaged issues such as the gender-specific division of labour, the differences in care-giving roles and responsibilities, the different uses of urban spaces according to gender, the women's role as community leaders, and their potential as initiators of neighbourhood networks when developing our R&I actions. We also anticipated the potential gender bias in the R&I actions and the gender differences in access and necessities of IHW.

We have adapted an online entrepreneur coaching method to address the specific needs of women with limited (digital) literacy skills in a vulnerable neighbourhood, at the same time specific focus was given to the expression of their potential in desired area of interests. As in the case of Lucca, women seem to be particularly focused on enhancing the human-animal bonds from many perspectives (socially inclusive, social dialogue engagement, economic development), opening an interesting perspective from this point of view.

#### 4.2.5. Anticipatory Science Education

The good practices proposed for anticipatory science education are:

- Equip city planners and managers with the necessary skills to conduct or supervise R&I actions, as well as the ability to present outcomes in a way that facilitates urban decision-making.
- Strengthen the competencies of local individuals and communities to envisage future R&I needs and the impact of R&I actions.
- Enable the workforce to leverage knowledge, skills and competencies, providing continuous development opportunities of all interest groups and stakeholders at the city level.
- Encourage people to engage in R&I actions and to achieve high and recognised standards at the city level.
- Promote STEM skills and competencies among women and girls at the city level.

- Anticipate the science education needs of vulnerable collectives and implement actions to address them.

### Examples of Anticipatory Science Education in the IN-HABIT Project

The IN-HABIT research processes anticipate the needs of individuals and different interests in our R&I actions. We have put into practice different methods to increase the scientific skills and education of the groups of vulnerable collectives we are working with.

The different IN-HABIT outcomes, tools and methods were selected, anticipating their potential positive and negative impacts in order to potentiate the benefits and minimise the problems. The in-depth analysis of the context in each of the city pilots and the continuous discussion in the IN-HUBs on the ways to develop the R&I actions helped to foresee them. Following that, the local co-researchers were trained in different research methods, as already mentioned, which increased their skills.

### 4.2.6. Anticipatory Open Access

The good practices proposed for anticipatory open access are:

- Foster open knowledge sharing and transparency to anticipate outcomes, risks and impacts of urban R&I actions.
- Promote open dissemination and communication activities that anticipate and timely address real problems, taking into account of 'state of the art' technologies, management or service frameworks when developing R&I actions.
- Anticipate and promote open methods to solve tensions, conflicts and dilemmas that might emerge during the R&I processes and actions.

### Examples of Anticipatory Open Access in the IN-HABIT Project

All IN-HABIT results are based on open-access approaches. Open access to our scientific publications and collected data ensured that we did not 'invent the wheel' and that our results contribute to research and accelerate innovations in the four cities.

Our inclusive, open and transparent communication tools made them accessible to a wide range of stakeholders, from local ones to policy and scientific communities

Throughout the project—especially at its key milestones—ongoing difficulties and tensions were openly acknowledged. This transparency helped to foster greater engagement among the involved actors and ensured a shared understanding of both achievements and potential bottlenecks that needed to be addressed.

## 4.3. Responsiveness

### 4.3.1. Responsive Engagement

The good practices proposed for responsive engagement are:

- Foster citizen ownership of urban issues and possible solutions to urban problems that require R&I inputs to ensure commitment and long-term involvement of citizens.
- Use participatory methods based on primary information to engage citizens in responsive urban R&I actions.
- Ensure that participation is open to new members when new urban problems or R&I avenues emerge.
- Schedule regular meetings to follow up on the evolution of the urban R&I actions and propose changes when needed.
- Apply flexible approaches to outcomes and methods to facilitate changes when circumstances require it.

#### Examples of Responsive Engagement in the IN-HABIT Project

The working method of the IN-HUB was oriented towards responsiveness. Citizen ownership and commitment are key principles of this method.

IN-HABIT used a mixture of standard quantitative and qualitative methods combined with behavioural games to ensure both participation and sustainable engagement of all the stakeholders in the co-creation and co-ownership of public spaces.

The IN-HUBs functioned as both a meeting point and an organisational structure that promotes collaboration. They were designed to remain open and adaptable, responding to shifting priorities, evolving participation, and changing community dynamics.

The places where solutions were deployed were co-decided by relevant stakeholders (including those from vulnerable collectives), who looked at the different possibilities, choices, and opportunities and aimed to mitigate divides and differences.

In the four cities involved in the project, evolving circumstances and emerging situations created a need for adaptation and reorganisation beyond the initially established paths. Negotiation among diverse stakeholders was a key part of the participatory action research process. Throughout this process, it became increasingly important to clarify the project's distinctive features and how research actions were organised through dialogue with local public and private stakeholders, as well as residents.

The processes of change and transition rely on adaptability to the possible paths that local stakeholders can and are willing to pursue, especially when compared to the project's initial aims and expectations. This dynamic is an integral part of our action research approach, where local IN-HUBs are able to articulate priorities and directions that may differ from the

original plans but better align with the participants own visions and political perspectives. From this standpoint, the IN-HABIT project demonstrated responsiveness at key pivotal moments across the four cities, striving to maintain the research objectives while also adapting them to the possibilities that emerged through participatory actions.

### 4.3.2. Responsive Governance

The good practices proposed for responsive governance are:

- Promote an adaptive and responsive governance model that facilitates continuous adjustments and embeds the changes in the context
- Involve and empower different sectors and citizens to actively shape their cities, participating in the urban R&I processes.
- Implement benchmarking practices to identify and implement effective solutions at the city level.
- Valorise the knowledge and involvement of participants, offering incentives for participation in R&I actions, but avoiding participation just to obtain the incentives.
- Create a culture of continuous monitoring and learning that permits responding to new urban challenges and addressing unintended problems or tasks.

#### Examples of Responsive Governance in the IN-HABIT Project

The IN-HABIT project encouraged, in every city and along the different steps of the project, responsible steering of the R&I actions, including representatives of the four sectors and of the traditionally underrepresented. The IN-HUBs opened options for citizens to take the responsibility to become city-makers and city-shapers in the co-creation of IN-HABIT public spaces and urban development opportunities.

The IN-HUB members are involved in key decisions linked to the project development in every city regarding the co-design, co-deployment and co-management of the public spaces and related VIS, with some members taking an active role in the management and monitoring of the spaces.

Throughout the process, the dialogue among researchers, public institutions, and residents was able to continuously adapt the solutions to the emerging constraints and opportunities, beyond the project processes, so as to adapt the process toward an open and continuous dialogue. For instance, in Nitra, this open and adaptive dialogue was particularly evident in the engagement of Ukrainian refugees. Initially not foreseen as a core target group, their growing presence in the city prompted researchers and local stakeholders to adjust the focus to include their needs and perspectives. This led to the integration of Ukrainian participants in the IN-HUB and project activities, where language support and informal peer facilitators were introduced. These adjustments, made through ongoing communication between the researchers, municipal actors, civic sector organisations and the refugee community, allowed the interventions to remain inclusive and responsive to emerging demographic realities.

The inclusion of new stakeholders in the project actions led to changes and implications emerging, which were codified and shared in public events to better understand the implications and possibly open the debate on issues regarding changes in norms, values, and partnerships to be developed accordingly.

The inclusion of new stakeholders in the project actions led to changes that were collated and shared in public events to better understand the implications and open the debate on issues regarding changes in norms, values, and partnership to be developed accordingly.

### 4.3.3. Responsive Ethics

The good practices proposed for responsive ethics are:

- Establish responsive procedures for informed decision-making in different collectives that boost adaptability and continuous learning to respond to new urban challenges through R&I actions.
- Report all outcomes (including negative ones), the information on its funding, the supporting methodologies and the lessons learned from R&I actions honestly.
- Promote transparency and accountability of the R&I actions and continuous adaptations on the roles and assumptions of the participants as the situation or the actions change or evolve.
- Safeguard the collection, storage, or usage of personal data, making clear that personal data will not be used for purposes other than those for which it was collected.
- Ensure that R&I actions are designed to minimise harm to society.
- Preserve freedom and equity in the R&I processes.

#### Examples of Responsive Ethics in the IN-HABIT Project

IN-HABIT ethical guidelines promote responsive ethics. All our R&I actions, either developed by the researchers and members of the project or by hiring external experts, have been developed by professionals with high-level skills and capabilities in the topics addressed in order to promote responsive results and develop responsive skills among the participants.

The project working methods boost informed and balanced decisions based on the analysis of previous results and their use in future actions of the project.

The norms, values, and cultural specificities of the collectives we have worked with have been fully recognised and respected in the actions we have undertaken, creating friendly environments that continuously adapt to new situations and respond to new challenges.

Results were gathered, analysed and shared in public seminars and meetings to present the main outcomes in a clear and honest way and to collectively learnt lessons in a joint process of knowledge creation.

Specific attention was given to GDPR to preserve and maintain the citizens' rights throughout the research process.

#### 4.3.4. Responsive Gender Equality

The good practices proposed for responsive gender equality are:

- Provide training for researchers and staff on gender equality, unconscious bias, and inclusive research practices to promote responsiveness at the city level.
- Develop and regularly update urban Gender Equality Plans aligned with national and European strategies and ensure that they include responsive approaches.
- Actively promote women's voices in urban R&I initiatives.
- Organise talks or panels with successful female scientists and innovators to promote gender-responsive R&I approaches to urban problems.
- Elaborate gender landscapes

##### Examples of Responsive Gender Equality in the IN-HABIT Project

The IN-HABIT project has included different communities and put into practice approaches to value GDEI in the R&I actions developed, most of which are addressed to counteract imbalances among people from vulnerable collectives.

IN-HABIT is delivering sound evidence to channel gender, diversity, and intersectionality needs in urban planning, assessing the integrated effects and intersectionality of the R&I actions, and monitoring and assessing impacts on groups with multiple diversity factors (i.e. women or children with a migration background).

The *gender landscapes* in each city have developed an integrated understanding of inclusion, gender equality and sustainable urban development, enhancing responsive answers adapted to the different gender demands. They promote reflections on the adoption of holistic approaches that include GEDI issues, not just in terms of planning and use of public space but also in terms of key public services such as housing, transport and mobility, labour market participation and entrepreneurship and also the various levels of governance and representation and participation, enhancing reflections on the different gender demands.

#### 4.3.5. Responsive Science Education

The good practices proposed for responsive science education are:

- Encourage the use of inter-, trans-, and multi-disciplinary approaches in the urban R&I actions to valorise different knowledges and perceptions of the urban reality.
- Share knowledge responsively, tailored to the needs of different citizens and collectives.
- Use adapted digital tools and integrate argument-based and interdisciplinary approaches to enhance science education among vulnerable collectives.
- Promote a responsive sharing of knowledge adapted to the needs of different citizens and collectives.

- Communicate the results of the urban R&I actions and share their benefits with the participants to increase their skills.
- Cultivate a culture of learning through continuous monitoring and responsiveness to new urban challenges.

### Examples of Responsive Science Education in the IN-HABIT Project

The local co-researchers trained in the IN-HABIT methods increased their responsiveness capacities.

Sharing scientific and local knowledge has been a key element of the IN-HUBs working methods, increasing the capacities of all the participants, both researchers and other stakeholders. Transdisciplinary knowledge approaches have been encouraged to valorise local knowledge and match it with scientific approaches, promoting responsive science education.

Adaptability, response to new problems and challenges, willingness to address unintended problems, such as the COVID pandemic, and the use of previous experiences to co-create, co-deploy and co-manage the project VIS have been guiding principles of the project that boost science education among all the participants.

We use dissemination and communication tools adapted to different needs to promote debates, adaptation to changes and decisions regarding the development of the project actions.

The project has co-created a comprehensive indicator framework with local citizens to measure IHW in each city. These multi-metric indicator frameworks have been co-formulated in each city with local stakeholders in order to ensure that indicators are reliable, realistic, and stereotype-free and take into account the social, cultural, and geographical differences among sub-target groups and groups with multiple diversity factors. The co-creation process has permitted an increase in the scientific education of the local stakeholders participating in the actions. The changes have been monitored during the project's lifetime and hopefully will continue beyond. These indicators are used to measure the impact of the R&I actions and to reflect and provide responsive answers to the necessary changes.

### 4.3.6. Responsive Open Access

The good practices proposed for responsive open access are:

- Provide wider access to and create procedures to open a share of research outcomes and both the positive and the negative impacts of urban R&I actions.
- Establish mechanisms for monitoring and data collection at the city level with a level of granularity that permits decision-making and comparability, and facilitates open access to all the collectives to this data.

- Provide open datasets and store data in open repositories such as Zenodo, using FAIR principles, promoting responsive use of the R&I outcomes.
- Share open information on the social and economic returns of R&I actions and accommodate the urban R&I processes to new needs.

#### Examples of Responsive Open Access in the IN-HABIT Project

IN-HABIT has launched several online consultations, and the IN-HUBs have continuously acted as open spaces to assess changes and adapt to changing situations, being responsive to the cities and citizens demands.

IN-HABIT open access platform is built over FIWARE components for data acquisition and interconnectivity of layers that guarantees an open, robust and compliant data protection regulation, ensuring cybersecurity and contributing to the interoperability among different communication standards. It will operate in the long term, securing open and consistent data about the impacts of IN-HABIT solutions.

The platform (accessible via the web) will be easily connected to other city or regional data management systems and will bring together decision-makers, operators, and citizens, sharing results and boosting collaboration.

## 4.4. Reflexivity

### 4.4.1. Reflexive Engagement

The good practices proposed for reflexive engagement are:

- Promote awareness of the key urban issues that require inclusive reflexivity and responses in R&I actions at the city level, using communication and dissemination tools, discussion forums, open debates, etc.
- Engage citizens and ask their opinion on the urban R&I actions to align them with their perceptions, making citizens reflect on their (evolving) needs, choosing together the topics where the communities identify their most required R&I needs and ensuring that outcomes reflect their priorities.
- Ensure that participation is open to new members when the reflections unlock new avenues for urban R&I actions.

#### Examples of Reflexive Engagement in the IN-HABIT Project

The working method of the IN-HUB was oriented towards reflexivity. Researchers and innovators were strongly committed to reflect along the development of the project actions to avoid the creation of conflicts or divides.

The IN-HUBs included representatives of the project target collectives and promote reflections on the inclusive health and wellbeing emerging needs in every city. This approach enabled participants to reflect and to actively shape interventions while keeping decision-making grounded in local needs and perspectives. This locally grounded local reflections and the local knowledge were valorised in the co-creation and co-deployment actions in every city.

The IN-HUBs aim to create a durable community of practice able to exist beyond the lifetime of the project and continue the reflexive engagement of its member to address new urban problems and activities.

#### 4.4.2. Reflexive Governance

The good practices proposed for reflexive governance are:

- Implement reflexive governance mechanisms at the city level that make clear the role of R&I processes and the expected outcomes.
- Measure and analyse the impact of the urban R&I actions and reflect on how positive impacts can be increased and negative ones minimised.
- Promote self-critical and self-conscious reflection in the steering of urban R&I processes.
- Establish benchmarking procedures to reflect and identify future R&I actions at the city level.
- Be sensitive to the role of mental blindspots and biases that hamper the articulation of innovative solutions and possible ways forward.

#### Examples of Reflexive Governance in the IN-HABIT Project

The IN-HUBs are designed to remain open and reflexive, responding to shifting priorities, evolving participation, and changing community dynamics.

The evolution of the project, the different problems that need to be overcome (including COVID pandemic, changes in the local government, different problems affecting to the vulnerable collectives we work with, etc) created reflection processes to decide the best solutions to be developed.

The IN-HUBs in each city were organised to reflect on how to foster new transition management approaches based on social and institutional innovations and new governance models and to develop new business models and financial mechanisms based on the concept of polycentric governance to co-create actions that boost IHW.

### 4.4.3. Reflexive Ethics

The good practices proposed for reflexive ethics are:

- Develop reflexive procedures for informed decision-making in different city collectives that boost reflection and continuous learning to respond to new urban challenges.
- Ensure that the funding information, the supporting methodologies, the outcomes (including negative ones) and the lessons learned from R&I actions are reported honestly.
- Warrant that R&I actions at the city level are developed and supervised by people with the necessary skills and knowledge.
- Promote reflexivity to rethink and reconsider the underpinning norms and values in the urban R&I actions.

#### Examples of Reflexive Ethics in the IN-HABIT Project

IN-HABIT ethical guidelines promote reflexive ethics. All our R&I actions, either developed by the researchers and members of the project or hiring external experts, have been developed by professionals with high-level skills and capabilities in the topics addressed in order to promote reflexive results and promote a culture of reflexivity in the participants.

Results were organized and shared in public seminars and meeting to share the main outcome in a clear and honest way and to collectively learnt lessons in a collective process of knowledge creation and reflection.

Researchers and innovators paid very high attention to the ethical concerns, validating the research methods with specific ethical committees and rules, and reflecting on the impact of the actions.

### 4.4.4. Reflexive Gender Equality

The good practices proposed for reflexive gender equality are:

- Create spaces to critically reflect on how their assumptions, methods, and institutional cultures might reinforce gender biases and how biases linked to culture, beliefs and personal experiences might be tackled.
- Encourage reflections on how R&I actions benefit different genders equitably.
- Provide training on gender equality, unconscious bias, and inclusive research practices to promote reflexivity.
- Hosts talks or panels with successful female scientists and innovators to promote gender-reflexive R&I approaches.

### Examples of Reflexive Gender Equality in the IN-HABIT Project

IN-HABIT approaches to GDEI have prompted reflections on the differences in access to health and wellbeing due to gender and diversity and these results have been considered in the different R&I actions developed. We not only addressed these factors separately but also the intersectionality implications.

We developed specific training actions on GDEI for researchers, local activators, and other community members.

The project appointed a GDEI manager.

We have elaborated a *Gender, Diversity, Equity and Inclusion Handbook for Cities*, available on the project website with different tools and methods to implement these aspects in urban contexts.

Most of the lead researchers in the different beneficiaries are women and they participate in different actions to increase the reflexive skills on GDEI actions.

### 4.4.5. Reflexive Science Education

The good practices proposed for reflexive science education are:

- Promote reflexive share of knowledge between different collectives.
- Develop actions that promote creativity and adaptation to face new challenges.
- Create mentorship programs and highlight diverse gender role models in STEM and R&I leadership in urban actions and develop responsive science skills such as adaptability and assessment tools among the participants.

### Examples of Reflexive Science Education in the IN-HABIT Project

The local co-researchers are trained in methods to increase the reflection capacities of the workforce.

The project has co-created a comprehensive indicator framework with local citizens to measure IHW in each city, based on a reflection on their needs. These multi-metric indicator frameworks have been co-formulated in each city with local stakeholders reflecting on the usefulness of the indicators to take into account the social, cultural, and geographical differences among sub-target groups and groups with multiple diversity factors. The co-creation process has permitted an increase in the scientific education of the local stakeholders participating in the actions. The changes have been monitored during the project's lifetime and hopefully will continue beyond. These indicators are used to measure the impact of the R&I actions and to reflect on the necessary changes.

We have elaborated a *Gender, Diversity, Equity and Inclusion Handbook for Cities*, available on the project website with different tools and methods to implement these aspects in urban contexts.

#### 4.4.6. Reflexive Open Access

The good practices proposed for reflexive open access are:

- Organise open online consultations to reflect on the R&I actions that affect society.
- Use previous outcomes, reflect on their utility, and do not reinvent the wheel every time that urban R&I actions are planned.
- Deliver replication and upscaling guidelines on the development and outcomes of urban R&I actions, based on reflections on what worked well and what did not and the reasons behind.

#### Examples of Reflexive Open Access in the IN-HABIT Project

IN-HABIT has launched several online consultations, and the IN-HUBs have continuously acted as open spaces of reflection to the cities and citizens demands.

IN-HABIT open access platform is built over FIWARE components for data acquisition and interconnectivity of layers that guarantees an open, robust and compliant data protection regulation, ensuring cybersecurity and contributing to the interoperability among different communication standards. It will operate in the long-term, securing open and consistent data about the impacts of IN-HABIT visionary and integrated solutions. The results will be used to better understand the IHW needs of every city and to reflect on how to address them.



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# Annex 1 – Good Practices of RRI in Cities

	INCLUSION	ANTICIPATION	RESPONSIVENESS	REFLEXIVITY
ENGAGEMENT	<ul style="list-style-type: none"> <li>• Create diverse and inclusive public-private-people partnerships (PPPPs) ensuring the representation of traditionally excluded citizens and collectives</li> <li>• Promote participation through open communication campaigns and calls.</li> <li>• Create engagement opportunities to local representatives.</li> <li>• Use inclusive engagement tools and methods in urban R&amp;I actions (e.g., "Design for all").</li> <li>• Boost equal access of vulnerable groups in urban R&amp;I actions.</li> <li>• Develop inclusive and flexible adhesion protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• Anticipate the difficulties to participate of different citizens and collectives and adapt the methods, tools, timing, location to their needs.</li> <li>• Create collaboration opportunities between collectives throughout the R&amp;I process.</li> <li>• Promote awareness of the importance to engage in urban R&amp;I actions.</li> </ul>	<ul style="list-style-type: none"> <li>• Foster citizen ownership of urban issues and solutions, and long-term involvement.</li> <li>• Use participatory methods based on primary information to engage citizens in responsive R&amp;I urban actions.</li> <li>• Keep participation open to new members as challenges evolve.</li> <li>• Schedule regular meetings to monitor progress and make adjustments.</li> <li>• Apply flexible methods and adapt them when necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• Promote reflexivity in key urban issues to engage citizens in R&amp;I actions through communication tools, forums, and debates</li> <li>• Engage citizens to align urban R&amp;I actions with their perceptions and evolving needs, ensuring outcomes reflect their priorities.</li> <li>• Keep participation open to new members when reflections lead to new urban R&amp;I opportunities.</li> </ul>
GOVERNANCE	<ul style="list-style-type: none"> <li>• Implement inclusive polycentric governance model of the PPPPs.</li> <li>• Set up mechanisms that make PPPPs true space for participation and decision making</li> <li>• Ensure different participants' voices can influence decisions</li> <li>• Establish sub-committees for specific tasks.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement anticipation governance mechanisms to clarify participants' roles in R&amp;I processes.</li> <li>• Identify potential risks and impacts of R&amp;I actions.</li> <li>• Foster a culture of anticipation when approaching urban R&amp;I projects (e.g., scenario building methods).</li> <li>• Shift governance methods from information and consultation actions to full participation.</li> <li>• Promote citizen awareness to anticipate the outcomes of urban R&amp;I processes.</li> </ul>	<ul style="list-style-type: none"> <li>• Promote adaptive and responsive governance models of urban R&amp;I actions that allows for ongoing adjustments and integration of changes.</li> <li>• Involve and empower different sectors and citizens to actively shape their cities participating in R&amp;I processes.</li> <li>• Implement benchmarking practices to identify and apply effective city-level solutions.</li> <li>• Recognise and value participant contributions without overusing incentives.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement reflexive governance mechanisms at the city level to clarify R&amp;I roles and expected outcomes.</li> <li>• Measure and analyse the impact of urban R&amp;I actions, aiming to maximise positive impacts and minimise negatives.</li> <li>• Encourage self-critical reflection in steering urban R&amp;I processes.</li> <li>• Use benchmarking procedures to reflect in future urban R&amp;I actions.</li> <li>• Be aware of mental blind spots and biases that hinder innovative solutions and progress.</li> </ul>
ETHICS	<ul style="list-style-type: none"> <li>• Use inclusive informed consent forms</li> <li>• Develop a GDPR compliant protocol to ensure data protection</li> <li>• Ensure integrity and ethical handling of participants' data.</li> <li>• Create data anonymisation protocols</li> <li>• Store data securely</li> <li>• Respect the norms, values, and cultural specifics of diverse collectives.</li> <li>• Consider cultural or ethnic differences among participants.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure decision-making information is well-grounded reflecting expected policy, technological, social and cultural outcomes.</li> <li>• Implement mechanisms to ensure R&amp;I actions contribute to social justice.</li> <li>• Promote honesty and integrity in the urban R&amp;I actions</li> <li>• Anticipate both expected and unexpected ethical risks</li> <li>• Foresee the cultural and ethnic differences in R&amp;I actions</li> </ul>	<ul style="list-style-type: none"> <li>• Establish responsive procedures for informed decision-making in urban R&amp;I actions.</li> <li>• Report all outcomes (positive and negative), funding details, and methodologies honestly.</li> <li>• Foster transparency and accountability in R&amp;I actions, adapting roles and assumptions as situations evolve.</li> <li>• Safeguard personal data, ensuring it's used only for its intended purpose.</li> <li>• Design R&amp;I actions to minimise societal harm.</li> <li>• Uphold freedom and equity in R&amp;I processes.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop reflexive procedures for informed decision-making in different city collectives to respond to new urban challenges.</li> <li>• Ensure that the lessons learned from R&amp;I actions are reported honestly.</li> <li>• Warrant that R&amp;I actions at the city level are developed and supervised by people with the necessary skills and knowledge.</li> <li>• Promote reflexivity to re-think and re-consider the underpinning norms and values in the urban R&amp;I actions.</li> </ul>

	INCLUSION	ANTICIPATION	RESPONSIVENESS	REFLEXIVITY
GENDER EQUALITY	<ul style="list-style-type: none"> <li>• Ensure GDEI approaches among stakeholders and participants in the PPPPs.</li> <li>• Develop GDEI protocols in the urban R&amp;I actions.</li> <li>• Address GDEI imbalances when designing R&amp;I actions</li> <li>• Develop GDEI impact assessments for R&amp;I actions.</li> <li>• Use gender-inclusive methods to tackle unconscious biases in urban R&amp;I actions.</li> <li>• Use inclusive, non-stereotypical language in research outputs, materials, and public communications.</li> </ul>	<ul style="list-style-type: none"> <li>• Anticipate the needs of different collectives using GDEI perspective.</li> <li>• Identify gender-sensitive issues to be addressed in the urban R&amp;I actions.</li> <li>• Create frameworks to address gender imbalances.</li> <li>• Promote gender balance and leadership roles in the composition of urban R&amp;I teams.</li> <li>• Encourage women's involvement in R&amp;I process.</li> <li>• Track gender differences in urban R&amp;I actions.</li> </ul>	<ul style="list-style-type: none"> <li>• Train researchers and staff on gender equality, unconscious bias, and responsive R&amp;I practices.</li> <li>• Develop and update urban Gender Equality Plans in line with national and European strategies.</li> <li>• Promote women's voices in urban R&amp;I initiatives.</li> <li>• Host talks or panels with successful female scientists to promote gender-responsive R&amp;I in urban challenges.</li> </ul>	<ul style="list-style-type: none"> <li>• Create spaces to reflect critically on how assumptions and methods may reinforce gender biases and how biases linked to culture, beliefs, and personal experiences might be tackled.</li> <li>• Encourage reflection on how R&amp;I actions benefit different genders equitably.</li> <li>• Offer training on gender equality, unconscious bias, and inclusive research practices to foster reflexivity.</li> <li>• Host talks or panels with successful female scientists to promote gender-reflexive R&amp;I approaches.</li> </ul>
SCIENCE EDUCATION	<ul style="list-style-type: none"> <li>• Use inclusive tools to boost science literacy, especially in vulnerable communities.</li> <li>• Create R&amp;I community projects addressing local issues.</li> <li>• Use local citizens' knowledge and promote collective learning.</li> <li>• Encourage people to engage in urban R&amp;I actions.</li> <li>• Involve school children and youth in R&amp;I actions.</li> <li>• Use inclusive and culturally relevant communication tools to disseminate goals and outcomes through popular social networks.</li> </ul>	<ul style="list-style-type: none"> <li>• Equip city planners and managers with necessary skills to supervise R&amp;I actions and present outcomes to support urban decision-making.</li> <li>• Strengthen citizens and local communities' competencies to anticipate future R&amp;I needs.</li> <li>• Enable the workforce to leverage knowledge, skills and competencies, providing continuous development opportunities.</li> <li>• Promote STEM skills and competencies among women and girls.</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage inter-, trans-, and multi-disciplinary approaches to value diverse urban knowledge and perspectives.</li> <li>• Share knowledge responsively, tailored to the needs of different citizens and collectives.</li> <li>• Use digital tools and interdisciplinary methods to enhance science education for vulnerable groups.</li> <li>• Communicate urban R&amp;I results and share benefits with participants to boost their skills.</li> <li>• Cultivate a culture of learning through continuous monitoring and responsiveness to new urban challenges.</li> </ul>	<ul style="list-style-type: none"> <li>• Promote reflexive share of knowledge between different collectives.</li> <li>• Develop actions that promote creativity and adaptation to face new challenges.</li> <li>• Create mentorship programs and showcase diverse gender role models in STEM and R&amp;I leadership.</li> </ul>
OPEN ACCESS	<ul style="list-style-type: none"> <li>• Create open and inclusive platforms for participation in R&amp;I processes.</li> <li>• Promote inclusive and open access to all the dataset, resources and outcomes from public-funded urban R&amp;I actions</li> <li>• Devolve outcomes of urban R&amp;I actions and gather feedback.</li> <li>• Promote transparency and accountability to all the city collectives involved onof R&amp;I actions.</li> <li>• Promote open and evolving engagement opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Foster open knowledge sharing and transparency to anticipate outcomes, risks and impacts of urban R&amp;I actions.</li> <li>• Promote open dissemination and communication to anticipate and timely address real problems.</li> <li>• Anticipate and promote open methods to address conflicts and dilemmas.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase access to research outcomes, sharing both positive and negative impacts of urban R&amp;I actions and reflect on them.</li> <li>• Establish city-level monitoring and data collection mechanisms of R&amp;I actions and use them to support open decision-making and comparability.</li> <li>• Provide open datasets stored in FAIR-compliant repositories, encouraging responsive use of R&amp;I outcomes.</li> <li>• Share information on the social and economic returns of R&amp;I actions and adapt processes to new needs.</li> </ul>	<ul style="list-style-type: none"> <li>• Organise open online consultations to reflect on the R&amp;I actions that affect society.</li> <li>• Use previous outcomes, reflect on their utility, and do not reinvent the wheel every time that urban R&amp;I actions are planned.</li> <li>• Deliver replication and upscaling guidelines on the development and outcomes of urban R&amp;I actions, based on reflections on what worked well and what did not and the reasons behind.</li> </ul>