

(A)

the contributing Re-Value?



Name[optional] Marjam

I would like to know more about the integration of different / plans in Rimini. what procedure/ tools one being 12 1 cince this is the first time



Could Re-Value contribute to the general Nature-based solutions concept with a list of proven measures, particularly related to coastal areas



# **Report information**

Deliverable: D1.4: Re-Value Innovation Cycles experience-based report 2

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# **Executive Summary**

In Re-Value, we leverage three Innovation Cycles to support our Waterfront Cities in making their journeys to climate neutrality inclusive, beautiful and sustainable. The cycles were introduced in Deliverable 1.2<sup>1</sup>; they also connect to Re-Value's work with the NEB Impact Model as described in Deliverable 1.3<sup>2</sup>.

In the first innovation cycle (IC1), NTNU with TV and SP use innovative story-building techniques to support public administrations in redefining their approach to urban development. By challenging conventional perspectives, IC1 facilitates co-creative processes that enable cities to experiment, reflect, and iterate toward transformative solutions. In its second phase (July 2023 – June 2024), IC1 worked with the waterfront cities to explore the multifaceted potential of story-building through initiatives like Short-Term Artistic Missions, reimagined reporting formats, and waterfront pilot "hacking" activities. These efforts aim to equip cities with practical tools and strategies for crafting impactful narratives that inspire and drive sustainable urban change.

During the City Dialogues (January – June 2023), key urban challenges and opportunities were identified, leading Innovation Cycle 2 (IC2) to design a framework to support the waterfront pilot initiatives. This report described how Ecoten, AC, and VITO are planning to integrate advanced data-driven technologies to create a unified digital-twin platform addressing urban microclimate, energy, and mobility. By combining Ecoten's microclimate simulation tools, VITO's energy evaluation technology, and AC's traffic simulation capabilities, the platform offers cities a comprehensive solution to inform and optimize their waterfront development strategies, driving sustainable urban transformation.

Furthermore, Innovation Cycle 2 explored different scenario-building frameworks, as this was not predefined in the original Grant Proposal. To deliver 23 tailored scenarios supporting the Impact Model by the end of the Re-Value project, a literature review of existing scenario-building methodologies was conducted. This effort ensures a contextual understanding to guide the creation of actionable scenarios aligned with Re-Value Cities' objectives and activities.

Innovation Cycle 3 supports Re-Value cities in advancing their Waterfront Pilots by developing tailored partnership and financing pathways. By building on co-created stories (IC1) and data-driven scenarios (IC2), IC3 helps cities refine their project ambitions, map existing partnership models, and identify opportunities for collaboration. Through City Finance Dialogues and dedicated guidance, the cycle fosters knowledge exchange, stakeholder engagement, and a deeper understanding of funding opportunities, enabling cities to formalise processes, overcome barriers, and achieve their development goals.

<sup>&</sup>lt;sup>1</sup> Deliverable 1.2: RE-Value Innovation Cycles experience-based report 1

https://re-value-cities.eu/documents/re-value-innovation-cycles-experience-based-report-1

<sup>&</sup>lt;sup>2</sup> Deliverable 1.3 Re-Value Impact Model (intermediate version) <u>https://re-value-cities.eu/publications</u>



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# **1 Using Innovation Cycles to generate impact**

In Re-Value, three interconnected Innovation Cycles guide our Waterfront Cities toward climate neutrality in an inclusive, beautiful, and sustainable manner. These cycles, first introduced in Deliverable 1.2<sup>3</sup>, are closely linked to implementation of the NEB Impact Model in each of the nine cities to support integrated urban planning and design, as detailed in Deliverable 1.3<sup>4</sup>.

We use story-building techniques to help public administrations reimagine their roles in urban development by challenging conventional perspectives and exploring broader possibilities. By blending experimentation, reflection, and iteration, we guide our waterfront cities through a dynamic, non-linear process of envisioning future scenarios and creating actionable steps for transformative change. During the second phase of the project (July 2023 – June 2024), we focused on co-creation and contextualisation, using innovative approaches such as Short-Term Artistic Missions, rethinking traditional reporting formats, and "hacking the waterfront pilots" to disrupt conventional methods. This process empowers our cities to craft their own successful narratives, fostering meaningful change in urban governance and development.

Building on insights from the City Dialogues (January – June 2023), Ecoten, AC, and VITO conducted a detailed assessment of the challenges and opportunities identified by participating cities. This analysis informed Innovation Cycle 2 (IC2) to design a framework tailored to support the development and implementation of waterfront pilot initiatives. Recognising the Re-Value cities' interest in data-driven technologies, IC2 focused on integrating expertise and laying the foundation for a unified digital-twin platform. By combining Ecoten's urban microclimate simulation, VITO's district-scale energy evaluation, and AC's traffic simulation technology, this platform aims to address urban challenges holistically, offering cities powerful tools to tackle issues related to microclimate, energy, and mobility.

Furthermore, IC2 has explored how to scope scenario-building in order to best support the Re-Value Cities. Since the original Re-Value Grant Proposal did not pre-define a fixed framework for scenario-building, a literature review of existing approaches was conducted to establish a contextual understanding. This review aims to inform the development of 23 tailored scenarios to support the Impact Model and align with the activities of Re-Value Cities and its other Innovation Cycles.

Innovation Cycle 3 supports Re-Value cities in developing partnerships and financing pathways to advance their Waterfront Pilots. Building on the co-creation of stories (IC1) and data-driven scenarios (IC2), IC3 helps cities refine their project ambitions by mapping existing partnership models, identifying gaps, and showcasing opportunities for collaboration. Through tailored guidance and City Finance Dialogues, IC3 fosters co-creation, knowledge exchange, and stakeholder engagement, enabling cities to formalise processes, address barriers, and better understand funding pathways to achieve their goals.

<sup>&</sup>lt;sup>3</sup> Deliverable 1.2: RE-Value Innovation Cycles experience-based report 1

https://re-value-cities.eu/documents/re-value-innovation-cycles-experience-based-report-1

<sup>&</sup>lt;sup>4</sup> Deliverable 1.3 Re-Value Impact Model (intermediate version) <u>https://re-value-cities.eu/publications</u>

# 2 Innovation Cycle 1: Story Building

## 2.1 Scope

In Re-Value, we use story-building techniques to help public administration understand, see, perceive, and experience their everyday work (as usual) in urban development from a different point of view, challenge their perspective, and play with their knowledge and experiences in various ways to envision broader possibilities and future perspectives.

Behind successful stories are processes with specific phases and steps; Re-Value's story-building activity supports the cities in creating these steps, in order to build their own successful stories. This is a non-linear process in which we continuously learn and improve by experimenting, observing, reflecting and starting again. In July 2023 - June 2024, (the 2nd phase of Re-Value, concentrated around co-creation and contextualisation), the waterfront cities experimented to understand, explore and experience the multiple meanings of story-building. In addition, we used different approaches to challenge the cities' usual perspectives:

- The Short-Term Artistic Mission (main contributors: TV and SP; support by all partners)
- Challenging the 'format as usual': from usual reports to... (main contributors: WP6, WP9, Speaker coach, Expert teams; support by all partners)



• Hacking the pilots (IC2,IC3 and Impact Model; support by all partners)

Figure: Illustration of the different story-building techniques used in Re-Value July 2023 - June 2024

re-value

## 2.2 Exploring and understanding story-building: Learning by playing

#### 2.2.1 The Lego metaphor in an online Community of Practice Round (20 Sept 2024)

A first purpose of using story-building in Re-Value, is to understand the interwoven nature of what we (as cities and partners) are and do, and what happens if we change perspective and challenge business as usual. An example of this technique was the Lego metaphor session coordinated by NTNU with SP and TV, organised during an online Community of Practice Round hosted by ICLEI.

Lego is a Danish building game that involves interlocking plastic bricks of various shapes, sizes, and colours. These bricks can be assembled and connected to construct objects, buildings, and vehicles. The concept encourages creativity and imagination, allowing users to build predefined models and original designs. These two approaches are at the base of story-building. On the one hand, there are boxes containing a random variety of coloured blocks, different dimensions, etc. You can use these pieces to build small objects, leaving your imagination open to create whatever you want. On the other hand, there are predefined models, with complex and challenging construction, that you have to build. These boxes provide the exact number of pieces, colours, shapes, and steps to follow to achieve the final result shown on the box.

The Lego metaphor is a way to help our partners understand that they all have a consistent background made by these varieties of Lego blocks. To use them in the best way possible, they have to know what kind of blocks they have, understand their potential, and know when and where they can use it, either in the predefined model or in the design they created themselves. By experimenting with different configurations and structures, partners develop the ability to envision and create unique solutions, fostering creativity and critical thinking skills.

Story-building is not about the Lego blocks or the final model built. It is about the process that allows a block to become part of a model, predefined or original.

#### 2.2.2 The Lego metaphor during the Rimini City Visit (16-18 October 2023)

To make the Lego metaphor more tangible, during the Rimini City Visit in October 2023, the project partners engaged in a dynamic and interactive Lego activity to foster co-creation and collective visioning of an original design.

This activity was conducted throughout the 3-day duration of the City Visit, culminating in a co-creation session on the final day:

**Collecting Blocks (Knowledge):** The partners collected one to two Lego pieces after each session or presentation throughout the City Visit. The number of pieces picked up depended on the session's impact on their knowledge or curiosity (if they felt they learned something new, they picked up a piece). This step symbolised the accumulation of insights and understanding gained during the visit.

**Putting the Blocks (Knowledge) Together:** On the last day, the partners brought their collected Lego pieces to the table, forming small mixed groups. NTNU provided additional blocks representing their pre-existing knowledge and experiences. This set-up encouraged the integration of new insights with established expertise.



**Co-Building Session:** In this phase, each table began by discussing and planning their vision for a Lego city. The partners shared their pieces of knowledge (represented by the Lego blocks) and collaboratively planned how to use all their pieces to build a cohesive story and envision a city. The rule that all blocks must be used compelled the partners to incorporate every piece of knowledge into their vision creatively. Optionally, the groups could exchange or negotiate blocks they didn't need, offering them to other tables for something more useful for their vision, provided both parties agreed on the exchange.

**Storytelling:** Upon completing their Lego cities, each group presented their work. They narrated their vision and the process, highlighting the diverse approaches and areas of expertise. This storytelling session showcased the physical Lego models, emphasised the collaborative effort, and shared insights into their creation.



#### Figure: The results of the Lego story-building session held during the Rimini City Visit in October 2023

**The Researcher's Point of View:** To add depth to the activity, a researcher moved from table to table, asking for Lego blocks (information) from each city or group. This researcher then created a comprehensive story using pieces from all the cities, providing a meta-perspective of the collective knowledge and visions shared during the activity. This final presentation offered a holistic view, integrating diverse insights into a unified narrative.

## 2.2.3 A Lego team-building exercise during the Ålesund Consortium Meeting and City Visit (19-21 March 2024)

During the last day of the Ålesund Consortium meeting, we used a Lego team-building session as an introduction to the Short-Term Artistic Mission session.

In this exercise, the groups were made by the cities and their respective ecosystems (9 cities = 9 groups). A little bag was on each table; inside were Legos and instructions. Following the instructions, they had to build their little mechanic object in five minutes. The challenge here was the limited time, which required a team effort to interpret the instructions and think strategically to make all team members work.

This exercise was an introduction to the work that followed. While in Rimini (Section 3.2.2) the groups had to build common visions and strategies by sharing all new and old knowledge, during the Ålesund exercise the groups needed to plan how to collectively follow instructions, and develop a strategy to involve everyone from the team to reach the result quickly. Building on this, each group then began designing their instructions for their local Short-Term Artistic Mission, starting with the development of their Vision (Section 2.3.1 Short-Term Artistic Mission).



*Figure: The city teams competing against each other to build a small Lego product, following strict instructions.* 



## 2.3 Other story-building activities and methods

Challenging business-as-usual approaches requires rethinking traditional formats to inspire fresh perspectives and innovative outcomes. We can foster creative thinking and uncover new solutions by exploring the same topics, issues, and challenges through alternative methods—such as reframing content or experimenting with unconventional structures. Like experimental science, this approach equips individuals and teams with dynamic tools to build diverse viewpoints and generate more impactful results.

#### 2.3.1 Short-Term Artistic Missions

In Re-value, Short-Term Artistic Missions are an opportunity to improve the waterfront cities' roadmaps toward climate neutrality, using art and culture as driving forces. Building on the New European Bauhaus values<sup>5</sup>, the cultural sector can help to create and perform a sustainable transition to climate neutrality in a more inclusive, beautiful way. During the concentrated 4-year project period, we will involve local and transversal cultural partners to add value to the waterfront cities' roadmaps, and support them in implementing a portfolio of actions to address climate neutrality challenges, involving actors and stakeholders that are often not included in the process.

During the Ålesund Consortium Meeting and City Visit, NTNU with TV and SP initiated a co-creation process in which the waterfront cities jointly designed the first draft plan for their Short-Term Artistic Missions, including vision and challenges. This session built on the surveys and one-to-one dialogues that were held in Spring 2023 (see Deliverable 1.2<sup>6</sup>), mapping the cities' status regarding cultural initiatives, from arts to sports.

Building on this, each group began designing instructions for their local Short-Term Artistic Mission, starting with developing their Vision.



Figure: Steps to co-create the Short-Term Artistic Mission

<sup>&</sup>lt;sup>5</sup> <u>https://new-european-bauhaus.europa.eu/index\_en</u>

<sup>&</sup>lt;sup>6</sup> Deliverable 1.2: RE-Value Innovation Cycles experience-based report 1

https://re-value-cities.eu/documents/re-value-innovation-cycles-experience-based-report-1

The co-creation process started with the question, "How might we... and the Short-term artistic Mission Canvas as a shared language for describing, visualising, and assessing the STAM. It addressed the discussion/confrontation within the cities through three steps inspired by Systemic Design: Purpose | Scope, Elements | People, and Interconnections | Relationships.



# Figure: Co-designing the first draft plan for the Re-Value Short-Term Artistic Missions during the Ålesund Consortium Meeting and City Visit

The exercise confirmed the strong existing cultural pattern that each city has, as well as the difficulties to include the cultural sector as an active and essential actor in helping cities face the complex challenges of climate transition inclusively and understandably.

To explore this situation further, SP and TV suggest a follow-up questionnaire that was investigated, together with NTNU, during the Burgas Study Visit (14 June 2024) in a one-on-one Dialogue with the cities. SP and TV will work with the Lead and Replication Cities to build greater local capacity for their journey to climate neutrality by engaging local arts and culture stakeholders, and each city will decide when to perform its short Artistic Mission.

## WHEN a STAM can be done?

During a Study Visit or a Consortium Meeting

During an established local festival, cultural event etc etc

Working together with a city and the local partners to establish a new cultural project/event/festival

Option suitable only if the city doesn't have any ongoing cultural projects.

Figure: Options When a STAM can be performed.



## 2.4 Next steps

#### 2.4.1 Engaging students

IC1 will host a student workshop at the Venice Biennale (26-27 October), coordinated by UNG in cooperation with NTNU and the other partners.



#### Figure: Cover Biennale Workshop - Students Mission Agenda

This Biennale workshop invites students and partners to engage with transformative approaches to industrial heritage conservation, focusing on adaptive, sustainable reuse within the frameworks of the Re-Value and Go!2025 projects, and informed by the research perspectives of the UNISCAPE Network. The workshop will address three main themes: the adaptation of industrial sites, the regeneration of port areas, and the role of migration—both of people and goods—across heritage cityscapes.

The Biennale Workshop 2024 is an open event to introduce a collaboration between Re-Value and students. It also aims to establish itself as an annual platform where students and partners meet to discuss international challenges presented on the Biennale stage.

In the coming months, we will work collectively to explore the potential for integrating students into the Re-Value initiative, fostering meaningful contributions and innovative ideas.



#### 2.4.2 Planning Short Artistic Missions

Artistic Missions are being planned for the Rijeka Study Visit (29-30 October 2024), the İzmir Consortium Meeting and Study Visit (8-10 April 2025), and Cascais Study Visit (Fall 2025).

# 2.4.3 Strengthening Cultural Sector Integration and Sustainability (long-term partnerships with cities)

One of the most inspiring aspects of SP and TV work lies in their innovative business and organisational model, mainly how you collaborate with municipalities, secure funding, and sustain operations. This approach is especially relevant for Re-Value cities, where many have robust cultural sectors but need a cohesive strategy to integrate these sectors structurally into decision-making processes or ensure financial sustainability.

Cultural industries often face challenges in navigating periods of uncertainty and transitioning beyond reliance on sporadic funding. Addressing these issues is critical for fostering resilience and long-term growth. To support this, **IC1 will work with IC3: Finance and Partnership** to co-develop a dedicated initiative focused on these topics.

Potential next steps may include:

- 1. Dedicated Roundtable Discussion: a session where cities can exchange experiences, challenges, and strategies related to cultural sector sustainability.
- 2. Open Webinar: Host an open webinar for Re-Value cities, inviting their creative partners to learn from your model. This platform would provide valuable insights into effective funding mechanisms, partnership-building, and organisational practices that ensure adaptability and longevity.

## **3 Innovation Cycle 2: Scenario-Building**

## 3.1 Building on the City Dialogues held in January - June 2023

Building on the City Dialogues organised by WP1 in January - June 2023 (see Deliverable 1.2<sup>7</sup>), Ecoten together with AC and VITO performed a detailed assessment of the challenges, approaches, and opportunities identified during these sessions. The next critical task was to design a comprehensive framework for Innovation Cycle 2 (IC2) to support and contribute to the development and implementation of the cities' waterfront pilots, tailored to their unique needs and context.

The cities' interest in exploring the possible contributions of data-driven technologies to support their waterfront pilot initiatives, inspired IC2 to explore possibilities to synchronise their respective technologies and expertise, and lay the groundwork for the creation of a new technology solution for cities that can address the challenges of urban microclimate, energy, and mobility together.

Ecoten has a technology to evaluate urban microclimate simulations which can predict the impact of blue-green infrastructure in the urban environment. VITO has a technology that can evaluate energy consumption on a district scale. AC has a digital-twin technology that can present the impact of traffic simulations. The idea was to combine these technologies and create a single digital-twin platform that can provide all the above applications for a city.

## 3.2 Tri-Tech Collaboration Rounds in Innovation Cycle 2

#### 3.2.1 Scope

Several brainstorming sessions, complemented by technical discussions and exercises, were conducted between the technology experts of Ecoten, AC, and VITO to explore the scope and potential of integrating their respective technical expertise. These discussions focused on developing a unified solution for Re-Value cities, referred to as the "Tri-Tech Collaboration." This innovative approach combines digital twin technology with urban microclimate simulations, energy modeling, and mobility simulations into a comprehensive, one-stop solution. The value of this integrated tool lies in its ability to empower Re-Value cities to effectively measure and evaluate the diverse dimensions outlined in the Impact Model (see Deliverables 1.1<sup>8</sup> and 1.3<sup>9</sup>), thereby driving data-informed decision-making and sustainable urban development.

#### 3.2.2 Rimini Study Visit (18th October 2023)

During the Rimini Study Visit, Ecoten, AC, and VITO convened an internal workshop to conduct a compatibility test for their three core technologies. The exercise demonstrated that Ecoten's microclimate simulations can be effectively assimilated into Augment City's digital twin platform, a conclusion validated

 <sup>&</sup>lt;sup>7</sup> Deliverable 1.2: RE-Value Innovation Cycles experience-based report 1 <u>https://re-value-cities.eu/documents/re-value-innovation-cycles-experience-based-report-1</u>
 <sup>8</sup> Deliverable 1.1: Re-Value Impact Model (initial version)

https://re-value-cities.eu/documents/re-value-impact-model-initial-version

<sup>&</sup>lt;sup>9</sup> Deliverable 1.3 Re-Value Impact Model (intermediate version) - Forthcoming



using a model based on the Ålesund waterfront pilot area. Additionally, the integration of remote sensing data into the digital twin was successfully tested. While integrating energy data presented certain challenges, the results indicated that it is feasible with further development efforts. This workshop marked a critical step toward enhancing the interoperability and functionality of the Tri-Tech Collaboration framework.

#### **3.2.3 Challenges and Outcomes**

Following an estimation of the potential scope of work required to develop the proposed solution, it was determined that the available funding within the Re-Value Cities framework was insufficient to cover the associated costs. Additionally, it was noted that VITO's energy model, in its current state, applies only to cities in Belgium, while Augment City's digital twin and mobility model are currently tailored specifically to Ålesund. Despite these limitations, Ecoten, AC, and VITO members reached a mutual agreement to explore opportunities for future collaboration through alternative funding mechanisms and initiatives.

## **3.3 Digital Twins and Other Digital Tools**

#### 3.3.1 IC2 Community of Practice Round (13th December 2023)

During Re-Value's Community of Practice Round 03, focused on Digital Twins and Other Digital Tools, IC2 partners organised an online workshop on the 13th December 2023. In this workshop, IC2 leveraged this opportunity to showcase the potential of digital twin technology, emphasising its applications, advantages, and opportunities for urban development. An immediate outcome of this workshop was the initiation of discussions with İzmir, which has expressed interest in developing its digital twin, marking a promising step toward expanding the adoption of these technologies within the Re-Value framework.

IC2 partner NTNU Ålesund presented their innovative technology for developing an open-source online portal to measure walkability and livability in the city of Ålesund.

#### 3.3.2 Bilateral Follow-Up Meetings between Innovation Cycle 2 and İzmir

İzmir engaged with Augment City to seek support in developing their Geographic Digital Twin (GDT). During the meeting, İzmir demonstrated thorough preparation, presenting a comprehensive set of queries on creating a successful GDT. While Augment City clarified that their current focus was on developing a GDT exclusively for Ålesund, they provided valuable guidance on the next steps İzmir should explore. In parallel, Ecoten initiated a dialogue with İzmir to explore potential collaboration, offering technical services to integrate climate change action within İzmir's digital twin. Additionally, VITO supported İzmir by assessing the initial steps and associated costs of adopting data-driven techniques through a digital twin approach in collaboration with the IT department from the municipality of İzmir.

## 3.4 Re-Value Cities Data Repository

Innovation Cycle 2 initiated the collection of global open data on climate from reputable sources, including the UN, EU, ESA, NASA, and IPCC. This effort aims to establish a foundational data repository that can be



utilised by the Re-Value cities. Furthermore, Innovation Cycle 2 explored the feasibility of developing a dedicated geoportal to provide Re-Value cities with streamlined access to this data, facilitating its application in urban planning and climate resilience initiatives. This is a tool that is still under development to provide Re-Value cities with a data-driven playground with features like data visualization of city-specific climate data as well as in-built GIS functionalities. Another intention for this tool was to facilitate scenario-building activities in the following years.



*Figure: Screenshot of the geoportal developed by IC2 to support cities with scenario building by providing city-specific climate data. This is a prototype version of the geoportal.* 

# 3.5 Digital Workshop at the Ålesund Consortium Meeting and City Visit (20 March 2024)

#### 3.5.1 Scope

During the Ålesund Consortium Meeting and City Visit, IC2 hosted a technology workshop to allow all partners to participate and experience the main technologies involved in Re-Value. The participants were divided into 8 groups evenly distributed amongst 8 stations as shown in the diagram below.



#### Figure: The IC2 workshop format during the Ålesund Consortium Meeting and City Visit

The technologies were presented at 4 of these stations with the other 4 used for feedback and reflection on the technologies. After 15 minutes the groups rotated around to the next station until the cycle was complete. A survey was completed by the participants during the workshop gathering qualitative responses to the various technologies.

#### 3.5.2 Results of the workshop

These results were compiled into a PowerBi report, a simple excerpt of this report is included below.

**Ecoten** presented a demonstration of their 3 technical services. The Urban Heat Vulnerability Assessment utilises NASA and ESA satellite imagery to generate vulnerability maps, guided by the IPCC framework<sup>10</sup>, to help urban planners identify areas most at risk from extreme heat and develop targeted heat resiliency initiatives. The Urban Microclimate Simulations Assessment focuses on addressing overheating in specific urban areas by simulating the microclimate with SOLENE-microclimat software. This service proposes and validates heat-resilient designs incorporating blue-green-white infrastructure to demonstrate their effectiveness before implementation. A demonstration for the Písek pilot area was presented for this technology. Additionally, Ecoten showcased their Urban Resiliency Application Programming Interface (API), which is an interface that enables software to interact programmatically with up-to-date satellite and other data to urban stakeholders and smart city developers for innovative project solutions

**Augment City** presented their Sandbox Graphical Digital Twin software at a demonstration within their 360-degree immersive domes located with NMK in Ålesund. The demonstration visualized each technology partner's data (Ecoten, VITO, NTNU, and Augment City) within the GDT, allowing those participating to see different levels of information presented and visualized with one immersive experience.

**VITO** presented their "wijkrenovatie" (neighbourhood renovation) tool in the consortium meeting. The tool is based on a digital twin technology, developed on top of urban energy pathfinder (UEP) to support

<sup>&</sup>lt;sup>10</sup> Intergovernmental Panel on Climate Change (IPCC). Cities, Settlements and Key Infrastructure. In: Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press; 2023:907-1040.



municipalities and energy communities for data-driven energy planning. The procedure of data-driven energy planning and design was demonstrated for municipalities.

**NTNU Ålesund** presented its Urban Liveability Platform which assesses the liveability and walkability of the city of Ålesund based on various urban indicators obtained from open-source data of the city.



Figure: PowerBi dashboard of Survey : Summary page showing number of responses and composition of those responding. This allowed a visual side by side comparison of the technologies and the workshop participants' experience capturing a greater and nuanced detail. All dashboard information in this image and those that follow act as a useful baseline and reference point for the technologies as the project develops.



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Figure: PowerBi dashboard of Survey : Comparison of technologies ease of understanding and relevance, important to understand for the various technologies to ensure a baseline of comprehension.



Figure: PowerBi dashboard of Survey : Breakdown of AugmentCity technology.



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Figure: PowerBi dashboard of Survey : Breakdown of VITO technology.



Figure: PowerBi dashboard of Survey : Breakdown of NTNU technology.





Figure: PowerBi dashboard of Survey : Breakdown of ECOTEN technology.



Figure: PowerBi dashboard of Survey : Diagram of emotional feedback of all technologies.

### 3.6 IC2's Contribution to the Re-Value Cities' Roadmaps

VITO provided detailed insights for the city of Bruges in developing its waterfront pilot roadmap. The insights cover energy aspects and how new designs lead to decarbonisation. An alternative scenario was also developed and discussed. The feasibility of district heating, the maximum potential of solar energy, and reducing energy demand were explained and presented to the city of Brugge.

Ecoten has also provided Písek with a demonstration of urban microclimate simulations for the project pilot area in the city. The demonstration was made through an in-person workshop with the stakeholders in Písek



followed by a discussion on the application of this technology to support the city's ambitions for the pilot area in Re-Value Cities.

For the other cities, WP1 is currently organising a process to analyse each city's roadmap and potential WP1 contributions. The results will be included in the roadmaps of the respective cities, and shared in the next report.

## **3.7 Next Steps**

The following year is expected to be full of exciting challenges and opportunities for Innovation Cycle 2. The appropriate framework of scenario-building as well as its execution with Re-Value cities will be the main focus for the coming year. Innovation Cycle 2 will reach out and collaborate with the other Innovation Cycles, Community of Practice, and Impact Model to design a framework for collaboration concerning the project's pathways to impact. Here are the identified upcoming next steps to address the above issues:

- The most immediate challenge to address remains to identify an appropriate definition framework for scenario-building that can assimilate well with the activities of the other Re-Value partners and make significant contributions to Re-Value Cities' Roadmaps.
- Following the above challenge, Innovation Cycle 2 will execute scenario-building activities for Lead Cities and support Replication Cities to replicate or build scenarios from the "Do's and Dont's" learned from the experience of the Lead Cities. This will be done in collaboration with the other Re-Value partners to deliver 23 scenarios or more for the Re-Value Cities.
- The final step is to record and produce exploitable results from scenario-building activities to extract the various "Do's and Don'ts" from all scenario-building activities in the Re-Value Cities. We hope to be able to publish these "Do's and Don'ts" through a guideline documentation which would provide other cities with valuable knowledge on data-driven co-creation and scenario-building.

# 4 Innovation Cycle 3 - Partnership and Investment Building

## 4.1 IC3 Methodology for Phase 2 (July 2023 - June 2024)

Innovation Cycle 3 is about supporting the Re-Value cities in building relevant partnership and financing pathways that can support their Waterfront pilots. Co-creating stories (IC1) and data-driven scenarios (IC2) in order to define their ambition in more detail is an ongoing process for which the timeline varies from city to city.

IC3 aims to guide the cities in defining their projects, and enabling them to form relevant partnerships and explore viable financing pathways to fulfil their Waterfront Pilot ambitions. IC3 further aims to map out and show-case existing partnership models to formalise internal processes, identify gaps and opportunities for potential project collaboration, build on existing partnerships that underpin the city's governance and decision-making structures, and share these partnership models and potential financing pathways with the Re-Value Community to foster knowledge exchange and collective learning.

This effort will be supported by dedicated guidance tailored to each city's needs and explored in the form of City Finance Dialogues that provide a platform for co-creation. Together with the cities, IC3 aims to gather relevant information, draft partnership models, identify and tackle barriers through forming partnerships and sharing knowledge, raise awareness and understanding amongst stakeholders, as well as build a better understanding of the funding and financing environment and opportunities.

## 4.2 IC3 Activities in Phase 2

#### 4.2.1 Study Visit in Rimini | October 2023

The workshop during the Rimini Study visit, centered on the Sea Park initiative in Rimini. It provided a platform for discussion around two priority themes: private sector involvement, structures for public-private partnerships, innovative financing mechanisms, and adaptive project management across municipal sectors. The discussions underscored the necessity of attracting private investment and establishing effective public-private partnerships to address urban challenges like low-emission transitions and urban regeneration, which require substantial funding.

Drawing from the Sea Park experience, participants recognised that while a clear and shared vision facilitated strategic urban transformation, governance challenges hindered private-sector involvement. The project demonstrated the potential of integrating environmental and cross-sectoral approaches but revealed difficulties in coordination and resource mobilisation across sectors and municipal departments.



Figure: Workshop on financing challenges, example Rimini Sea Park

Looking forward, the workshop identified critical gaps and new objectives. Engaging private investors remains challenging due to insufficient project management resources and a lack of experience in setting up public-private financing structures or innovative financing instruments. Additionally, a siloed working culture within municipal departments hampers effective multi-sectoral collaboration. Participants explored strategies to enhance financing and governance, such as identifying or creating incentives, fostering a culture of collaboration, leveraging systemic approaches like circular economy models, and employing facilitative leadership. Questions posed included how municipalities could create attractive conditions for private investment while fostering cross-departmental synergy to achieve ambitious urban (re-)development goals. These reflections aim to guide future efforts in developing resilient and inclusive urban transformation plans, partnerships and models.

#### 4.2.2 WP6 Capacity Development & Exchange Programme | January 2024 Round 04 Financing the Ambition

#### 4.2.2.1 Scope of the workshop

IC3 organised and delivered the "Financing the Ambition" workshop and provided a fundamental introduction to funding and financing infrastructure projects and used two case studies of exemplary projects by the two Lead Cities Ålesund and Bruges for a hands-on approach to the discussion. GIB deployed a participatory brainstorming method using an interactive Miro board to engage participants in the conversation around financing mechanisms and incentives for green and/or sustainable urban development projects. Participants explored funding options based on potential revenue streams that can make the business case for projects, as well as considering suitable partnership models, such as public-private partnerships. By examining these key elements, the workshop aimed to generate practical solutions for financing sustainable urban development projects that align with and support the cities' climate and sustainability goals and plans.





Picture: Introduction to funding and financing sources for green-grey infrastructure projects<sup>11</sup>

In the months prior to this workshop, GIB engaged Ålesund and Bruges in an iterative process based on the Project Clinic<sup>12</sup> approach attempting to gather information on a project within their ongoing Waterfront Pilot area that could serve as a case study for the purpose of this workshop. Both cities are still in the process of identifying priorities in the development of their Waterfront Pilots. These two case studies therefore depict an exploration of potential financing and partnership avenues, rather than the full reality of the context of each project. The Roadmaps shall give further clarity on the plans and interventions each city will drive forward. Based on each city's ambition and priority, the cities will explore partnership and financing pathways within IC3 that support the realities on the ground.

GIB provided a Financing Toolkit to support cities in defining their projects and gathering relevant information and data:

#### FINANCING THE AMBITION TOOLKIT



#### Picture: IC3 Round04 Financing the Ambition presentation by GIB, January 2024

The result of the preparation for the two case studies by the two Lead Cities Ålesund and Bruges under the guidance of GIB was summarised and provided to all participants prior to the workshop.

<sup>&</sup>lt;sup>11</sup> Green-Gray Community of Practice (2022). Green-Gray Infrastructure Funding and Finance Playbook. Available at: https://www.conservation.org/projects/globalgreen-gray-community-of-practice.

<sup>&</sup>lt;sup>12</sup> Project Clinic is an exercise where relevant stakeholders and experts analyse the strengths and weaknesses of a defined project and together define the way forward.





#### ROUND 04: **Financing the Ambition**

#### **CASE STUDIES – HANDOUT**

Date: 17 January 2024

Time: 09:30 - 12:30 CET

For both cases, consider the following:

- Which sources of public and private finance are adequate for your type of project and for the different project phases (development, construction, and operation)?
- Consider the different types of financing (grant, debt, equity), and the sources of funding that can be used to finance your project.
- What are possible revenue streams can a business case be made?
- Who is involved and what kind of partnership models can be considered?

#### Bruges – Greening the KAAIDISTRICT

The Challenge: Financing a parking tower and the greening of existing grey retail and parking area The Case Study: Can a positive business case be made for the construction of a parking tower in this area? Consider the economic model for a parking tower (with or without greening the area) > Can we measure the added value for greening the area and repurposing the parking tower? How? Can we trigger the existing retailers to invest? **Actions & Planning** Stakeholders: Funding: • City of Bruges Urban planning · Greening of concrete area & creation

- Project developers, charges/costs (at the start of a development) investors
- Current building owners
- LEKP: local energy & clim ate pact (Flanders)
- Neighbourhood, citizens
- Province West-Flanders • EU
- of repurposable parking structure
- Parking management
- Bilateral meetings
- Trade covenant
- City atelier: instrument to align developers' plans with city policies

#### Ålesund – Low Emission District Heating System for Sørsida Project Area

The Challenge: Financing a low emission district heating system in Sørsida project area

#### The Case Study:

- > How can a low emission heating system be financed as part of or in addition to the Sørsida development project?
- ≻ How can we approach the challenge of high initial investment cost and find a suitable ownership and financing model?

Stakeholders:	Funding:	Actions & Planning
<ul> <li>Ålesund Municipality</li> </ul>	<ul> <li>Private funding</li> </ul>	<ul> <li>Zoning plan with minimum</li> </ul>
<ul> <li>Sørsida Ltd</li> </ul>	<ul> <li>Enova contributes financially</li> </ul>	requirements: costs are
Investors	to transition to a low-	mapped and defined in
<ul> <li>Neighbourhood, citizens</li> </ul>	emission society in Norway	Sørsida project
	<ul> <li>Municipal funds</li> </ul>	<ul> <li>Find optimal energy mix:</li> </ul>
	PPPs	Explore potential heating
	• EU	sources and technologies

#### Figure: Handout of the case studies made available during the workshop

#### 4.2.2.2 Results of the workshop: Bruges – Greening the KAAIDISTRICT (Case Study 1)

This case explored the economic and environmental feasibility of transforming a grey retail and parking area into a greener space, complemented by constructing a multi-purpose parking tower. The challenges included making a positive business case for the parking tower and incentivising existing retailers to invest.

Adequate funding sources identified were urban planning charges, the Local Energy & Climate Pact (LEKP), provincial funds, and EU contributions. Revenue streams from parking management and potential trade covenants were considered alongside partnerships between the City of Bruges, developers, investors, building owners, and citizens. Actions included leveraging "city atelier" sessions to align developer plans with city policies and integrating greening and repurposing into the urban development model.

Participants proposed rethinking assumptions about free parking, suggesting a new framework where parking is charged to create a sustainable business case. The parking tower could be reimagined as a multifunctional structure incorporating living spaces and retail to stabilise income. Ideas for monetising green space included community tree adoption programs or increased tax revenue linked to the greening investment.



*Picture: IC3 Round04 Financing the Ambition by GIB: Miro board participatory brainstorming exercise on Bruges case study* 

# 4.2.2.3 Results of the workshop: Ålesund – Low Emission District Heating System for Sørsida Project Area (Case Study 2)

This case focused on financing a low-emission district heating system as part of Ålesund's Sørsida development. High upfront costs posed a major challenge, requiring innovative ownership and funding models.

Financing options considered included municipal funds, private investment, contributions from Enova (Norway's Energy Agency, promoting amongst others a low-emission transition fund), public-private partnerships, and EU grants. Potential revenue streams were tied to cost-sharing within zoning



requirements and optimizing an energy mix of heating technologies. Key stakeholders are Ålesund Municipality, Sørsida Ltd., investors, and the local community.

The workshop participants collaborated to map potential financing sources and mechanisms, such as carbon reduction incentives or subsidies for renewable heating sources and technologies, ensuring alignment with sustainable development goals.

Participants explored strategies to overcome the high upfront costs and operational challenges associated with financing low-emission district heating systems. Key financing solutions included blending public and private funding sources, as well as leveraging EU Climate Action Funds and programs like Enova. Public-private partnerships and co-financing models were highlighted as essential tools for distributing costs and risks among stakeholders, which include municipalities, private investors, banks, and private actors in the energy sector, developers, asset owners.

Revenue streams identified included carbon credits, tariffs, subsidies, and potential savings on CO<sub>2</sub> pricing and energy costs. The system's broader co-benefits, such as improving energy independence, reducing carbon emissions, and catalysing neighbourhood retrofits, were seen as vital to enhancing the project's attractiveness to investors. Participants emphasised the importance of aligning the district heating project with the city's broader sustainable urban development plans and climate ambitions, integrating project goals such as offering land-value capture models while highlighting its long-term potential as a driver for technological innovation and climate resilience.



Picture: IC3 Round04 Financing the Ambition by GIB: Miro board participatory brainstorming exercise on Ålesund case study

#### 4.2.2.4 Findings

The exercise was a great way to start thinking about partnership and financing mechanisms. However, cities find themselves in the planning stage of their pilot area and no concrete projects have been identified yet.

![](_page_29_Picture_0.jpeg)

Identifying projects of priority to the city and defining the scope of these projects is the first step. Financing happens once a project and the investment proposition has been fully substantiated. Only then investors will be able to express potential interest and determine their level of involvement. Overcoming this initial shortcoming is of paramount importance to progress in the financing discussion. The projects are at very early stages of development.

At this stage, IC3 can focus on existing partnership models and governance structures underpinning the cities' urban planning process. As the planning and definition of more concrete actions advances, aligned with WP1, IC1 and IC2 efforts, relevant stakeholders can be involved and engaged in partnerships that can support the progress of potential projects by filling knowledge and capacity gaps as well as sector expertise and funding and/or financing involvement. GIB is available to support cities in this process, engage relevant stakeholders, and build capacities in order to support the building of suitable partnership and financing pathways.

![](_page_29_Picture_3.jpeg)

## 4.2.3 Consortium Meeting Ålesund | March 2024

Picture: Consortium Meeting Ålesund IC3 presentation

At the Consortium Meeting in Ålesund, GIB presented the methodology to Innovation Cycle 3 and show-cased some of the questions that the cities will need to answer when developing and preparing their sustainable urban projects. Innovation Cycle 3 has an expert team available to guide cities through this process. Furthermore, it is IC3's ultimate goal to engage local stakeholder and knowledge holders to form an expert group on the ground that can support the city/municipality in driving their mission forward during and beyond the Re-Value project.

![](_page_30_Figure_1.jpeg)

#### Figure: Innovation Cycle 3 Intervention Logic

The partnership and financing approach for sustainable urban infrastructure projects involves several key steps. First, it's essential to clearly define the project's scope and objectives, ensuring alignment among all stakeholders on goals and deliverables. Next, project leaders must identify diverse sources of funding, such as grants, equity investments, debt financing, and public-private partnerships (PPPs), each suitable for different stages of the project, like development, construction, and operation. For instance, urban regeneration projects often utilize PPPs to leverage both public funds and private expertise. Following this, it's critical to evaluate potential revenue streams, such as green bonds, carbon credits, or user fees, to ensure the project can deliver sustainable financial returns. In cities like Copenhagen, the revenue generated from energy-efficient district heating systems can help fund future infrastructure investments.

Engaging stakeholders is the next step, including local governments, private developers, and citizens, to foster collaboration and share risks. Finally, developing a financing strategy and structure, and securing the necessary funding—often from a mix of municipal funds, international climate finance mechanisms, and private investors—ensures the project's financial viability and supports its long-term success. For example, the use of EU climate action funds alongside municipal contributions can make large-scale sustainable projects more feasible. Given the early stage of planning in many of the Re-Value cities, concrete financing mechanisms may remain exploratory and may be provided in a form of guidance for future action. Partnerships shall be built to support the cities to pursue their ambition, and to enable the cities to apply to additional funding sources and technical assistance where possible.

#### 4.2.4 City Finance Dialogues | Ongoing

GIB as the IC3 lead has launched the City Finance Dialogues, which provides a platform for continuous exchange to support the advancement of the cities' Waterfront pilot. The first round of dialogues have been held with the two Lead Cities Ålesund and Bruges. The objective for these City Finance Dialogues is two-fold:

• IC3 supports the city in formalising and building on existing partnership and governance structures to underpin their urban planning processes, while sharing partnership models – and financing pathways at a later stage – with the Re-Value Community for collective learning

![](_page_31_Picture_0.jpeg)

• Together with each city, GIB defines the tailored support needed from Innovation Cycle 3, including prioritising projects, addressing bottlenecks, and engaging stakeholders to build and advance partnerships and financing solutions.

This is an example of how IC3 City Finance Dialogues can provide a platform for collaboration and discussion on potential projects within a city's roadmap – in this case using information from the Bruges roadmap exploring the potential of a future project for a sustainable district heating system. It's a step-by-step approach of gathering information and strategising together with the cities and their experts to shape and eventually define the scope of a project, identify and engage relevant stakeholders, and explore suitable funding and financing solutions. Please note, that this first mapping was done by GIB and is not a comprehensive depiction of the realities on the ground nor a commitment by the city to pursue the project in question. It is an example of what can serve as a basis for the City Finance Dialogue.

![](_page_31_Figure_3.jpeg)

Picture: City Finance Dialogue Exploratory Mapping for Project Definition

### 4.3 Next Steps

The next steps within the City Finance Dialogues will focus on achieving the two-fold objective of supporting cities in formalising and building upon existing partnership and governance structures, while also identifying tailored support to advance project development.

Mapping and Building on Existing Partnership and Governance Structures: The immediate action is to work with cities to assess and formalise their current partnership and governance models. This will involve a detailed mapping of stakeholders and the roles they play within the city's urban planning and decision-making processes. The City Finance Dialogues will serve as a platform to share partnership models and financing pathways with the Re-Value Community for mutual learning. This will help cities strengthen their governance structures and ensure alignment with sustainability goals, facilitating smoother project development in the future.

**Defining Tailored Support for Project Development:** The second key action will involve engaging with each city to define the specific support needed to advance their Waterfront Pilot. This includes prioritising potential projects, identifying bottlenecks, and exploring suitable partnership and financing mechanisms.

![](_page_32_Picture_0.jpeg)

Through the City Finance Dialogues, cities will be able to discuss challenges they face, from project definition to financing, and explore the best ways to engage relevant stakeholders such as investors, developers, and local citizens, and to tap suitable funding and finance sources for project preparation, technical assistance, and/or project implementation based on the level of maturity and availability of resources for each project. GIB, as part of Innovation Cycle 3, will guide cities in building capacity, formulating financing strategies, and fostering partnerships that can overcome obstacles and drive project success.

By facilitating these objectives, the City Finance Dialogues will provide cities with the necessary tools, knowledge, and connections to move from planning to action. The next steps aim to ensure that cities are equipped with tailored support for project prioritisation, effective stakeholder engagement, and exploring sustainable financing pathways to make their urban projects a reality.

# About Re-Value – Re-Valuing Urban Quality & Climate Neutrality in European Waterfront Cities

The Re-Value partnership consists of nine European waterfront cities and selected European organisations that work to make the urban transition irresistible for everyone. This is done by demonstrating how climate neutrality and urban quality can be aligned, by re-valuing the cities' connection to their waterfronts, strengthening co-benefits and mitigating potential adverse impacts.

Ålesund (Norway), Bruges (Belgium), Burgas (Bulgaria), and Rimini (Italy) demonstrate how integrated urban planning and design can be optimally deployed to achieve climate neutrality and significantly reduce GHG emissions by 2030. In addition, Cascais (Portugal), Constanța (Romania), İzmir (Türkiye), Písek (Czechia), and Rijeka (Croatia) learn, replicate and develop their own participatory story-building, data-driven scenarios, and financial and partnership models on integrated urban planning and design to accelerate their journeys to climate neutrality.

The partnership is coordinated by the Norwegian University of Science and Technology (NTNU) and is funded by the European Union's Research and Innovation funding programme Horizon Europe under grant agreement 101096943.

#### Learn more about the partnership and the outcomes on <u>re-value-cities.eu</u>.

![](_page_33_Figure_6.jpeg)

## Partners

![](_page_33_Picture_8.jpeg)

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