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Regional Pathway Workshop Granollers Report

Workshop of the KNOWING Local Hub Granollers
29 October 2025, 10:00h –12:00h

Consorci Besòs Tordera headquarters
Av. Sant Julià, 241. 08403 Granollers

Content

1. Summary

The Pathway Workshop in Granollers provided a new meeting point for participants in previous project workshops, as well as for the involvement of new and strategic participants. In this sense, the meeting represented an important milestone, both for the presentation and discussion of the project's advancements and territorial benefits in the face of climate change challenges and for defining the next steps during the final months of the project and beyond.

A key part of the session involved the analysis of the domain models. Specifically, the workshop delved into the results of the flood models (ICM Infoworks) for the Congost river and the urban area of Granollers, highlighting that, in the baseline scenario, even moderate events (T10–T100) cause significant flooding. The preliminary results showed that while nature-based solutions like the Coconat project (Scenario 2) and long-term SUDS (Scenario 3) offer improvements, they are limited, particularly for low-probability, long-duration rainfall events. The conclusion stressed the necessity of hybrid measures (green/blue + grey infrastructure) and upstream actions to effectively tackle flood risks.

Regarding heatwaves, the results from the PALM-4U model were also presented, including the results from the simulated interventions like the transformation of the Congost Park and the creation of natural spaces in the city. The findings demonstrated that adding trees and vegetation significantly reduces air temperature, with the transformation of the Passeig Fluvial showing the greatest reduction (up to -3.8 °C during the day and -1.2 °C at night) by converting asphalt into green space.

Furthermore, the event covered the Behavioral Model, which categorizes citizen responses to climate impacts and interventions. This model's output provides insights into the potential effectiveness of measures and helps avoid rebound or counterproductive effects, underscoring that delayed implementation is ineffective and that communication combined with regulation is key.

Finally, the workshop addressed how the sectoral model results connect through a System Dynamics (SD) model. This fast-running model is crucial for analyzing risks and synergies between adaptation and mitigation actions over the long term (up to 2050), allowing for the rapid testing of different strategic variations.

The overall goal of the workshop, and the project,was to collaboratively define the roadmap for the implementation of KNOWING results at local and regional scale and to analyze the viability of scaling the models and interventions to other vulnerable municipalities within the Besòs-Tordera basin. The session concluded with a look at the KNOWING toolbox, which includes 'Playful Trainings' and the 'Shape your future' app to raise public awareness and support decision-making.

2. Agenda

10:00	Welcome and update of KNOWING project
10:05	Update of KNOWING project and results from the Vision WS
10:15	Context: the Congost River basin facing the risk of floods
10:30	Presentation and discussion of Domain Models and brief introduction to system dynamics
12:00	Coffee break
12:15	Group activity to discuss about: -Applicability of the modeling results to local and supra-local programs (risks and opportunities). -Definition of use cases (stakeholders, roles, and steps to follow) -Definition of the roadmap for the implementation of use cases beyond the KNOWING project.

13:15	Playful Training & Shape Your Future-App *Presentation of the tools and group discussions about applicability and improvement*
13:45	Next steps
14:00	Closing

3. Recapitulation of the Previous Workshops

The KNOWING's **Kick-off Workshop** on 14th June 2023, drew strong participation despite the city's modest population (60,000 inhabitants). It successfully launched a participatory process involving the City Council and a diverse group of local stakeholders. It contributed to validate the objectives of the KNOWING pilot and outlined the timeline for continued collaboration, positioning stakeholders as key actors at local and regional levels. The Granollers demonstration focused on defining priorities within the Municipal Civil Protection Master Plan (DUPROCIM), assessing vulnerabilities of critical infrastructures and socio-economic sectors in flood-prone areas, and on developing strategic planning visions that integrates climate mitigation and adaptation measures, with particular emphasis on communities most exposed to fluvial and pluvial flood risks. More on the results report here.

Figure 1. Kick-off workshop participants (left) and exercise on mapping of plans, projects and actions to address flooding in the municipality and the wider supralocal area (right). Source: Granollers city council

The **Challenge Workshop**, the 2nd Local Hub Workshop, took place on November 22, 2023. The event gathered 24 representatives from administrations, science, service companies, and civil society to identify and address challenges regarding flood resilience and emission reduction. Participants prioritized adaptation measures such as nature-based solutions and early warning systems, alongside mitigation actions like renewable energy promotion and building rehabilitation. The workshop concluded with a risk-and-co-benefit map that guided the Granollers Vision and informed the next Regional Hub workshop in 2024. More on the results report here.

Figure 2.Participatory dynamic on Granollers' Challenge Workshop. Source: Granollers city council

The **Vision Workshop**, the 3rd Local Hub Workshop, took place on April 17th, 2024. The session gathered 18 stakeholders from administrations, academia, companies, and civil society to co-create a Vision for a climate-resilient and climate-neutral Granollers and Congost river sub-basin. Participants prioritized immediate actions for 2025–2030, including energy efficiency in buildings, nature-based solutions, early warning systems, and renewable energy, while also mapping long-term measures and barriers such as costs and infrastructure constraints. The outcomes will guide Granollers' roadmap towards 2030, 2040, and 2050 milestones, strengthening resilience and cooperation across sectors. More on the results report here.

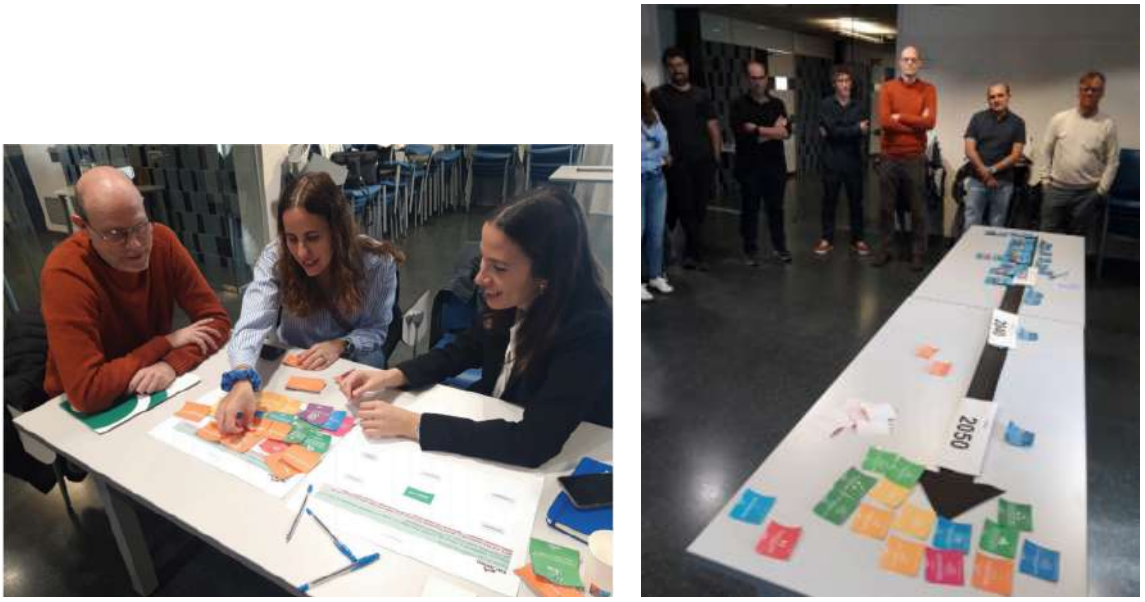

Figure 3. Co-creation session on Granollers' VIsion Workshop. Source: Granollers city council

4. Local Climate Programs

4.1 Climate Policy Framework in Granollers

The Mediterranean climate of Catalonia brings significant variability, and Granollers is increasingly affected by heatwaves, droughts, and flash floods. These impacts are intensified by climate change and worsened by overloaded drainage systems. The main strategies adopted by Granollers to move towards climate mitigation and adaptation are:

The ***Sustainable Energy and Climate Action Plan-SECAP*** (2016) and the adhesion to the *Covenant of Mayors for Climate and Energy* (in line with the Paris Agreements of 2015). In 2022, Granollers City Council also adhered to the new commitments of the Covenant of Mayors for Climate and Energy, aiming to achieve a reduction of greenhouse gas emissions beyond 55% by 2030 – through increased energy efficiency and greater use of renewable energy sources – and climate neutrality by 2050. The city's SECAP plan emphasizes resilience through green infrastructure, sustainable water management, and heat mitigation measures. More information: https://bit.ly/3AaZS8d

The ***Granollers Strategic Plan 2030*** (2022), structured around three main pillars: a carbon-neutral city, resilient to climate emergencies; a city that fosters talent and innovation; a city that safeguards the wellbeing of its citizens. More information: https://bit.ly/40mAqaC

The ***Local Action Plan – Granollers Urban Agenda*** (202) sets out 10 strategic objectives and 16 projects to transform the city and achieve: a conserved and protected territory; a revitalised urban model; a resilient city; resource management with a circular vision; sustainable mobility; and improved governance. More information: https://bit.ly/3UNqvtK

The ***Granollers Energy Saving and Efficiency Plan-PEEEG*** (2023) seeks to accelerate the green transition and establish actions aimed at a new model of energy management to make the city more efficient and sustainable. The Plan is a cross-cutting city project, organised around four axes: reduction of energy consumption; promotion and use of renewable energy production; improvement of energy management; and coordination across citizen sectors: domestic, industrial, commercial and municipal. PEEEG includes specific actions aimed at improving energy efficiency in both the public and private sectors, increasing renewable energy production, and implementing programs to enhance community awareness and knowledge management. These actions are essential for meeting the municipality's carbon neutrality and climate resilience objectives. More information: https://bit.ly/41c2D57

In the frame of the UP2030-HE project (2023-25), and applying advanced tools within a designated pilot sector of the city, Granollers has cocreated a set of guidelines for a greener city with opportunities for all, a handbook focused on the creation of climate-neutral, resilient and socially inclusive districts by identifying the right balance between Grey and Blue/Green infrastructure while maintaining inclusivity and equity. These guidelines offers strategic and practical recommendations to help Granollers align future urban development with its commitments to sustainability, innovation, and community well-being. Based on four core principles and structured around fifteen comprehensive recommendations, the set of guidelines addresses a wide range of topics—from the analysis of climatic conditions in previously urbanised areas to guidance on design, financing, and planning.

In the frame of KNOWING-HE project (2022-2026), the participation of Granollers and Congost river basin as demonstrator on how to mitigate damages on infrastructure from flooding and debris flows following extreme weather events, has allowed to develop an integrated hydrological and hydrodynamic model to simulate drainage, runoff and river behaviour under current and future scenarios. Incorporating climate adaptation measures and land-use evolution, the model will act as a living decision-support tool to minimise flood risks and guide long-term planning. It will also contribute to a wider dynamic framework that links mitigation and adaptation actions with measurable CO_2 reduction impacts.

Opportunity

Together, these plans and projects create significant opportunities for Granollers to strengthen resilience, achieve climate neutrality, foster innovation and ensure long-term sustainability, positioning the city as a leader among medium-sized European municipalities in turning climate challenges into opportunities.

From the Urban Typologies developed within the UP2030-HE project, it emerges that Granollers belongs to a cluster of European cities with significant opportunities to advance climate action. The tourism sector offers substantial economic potential, generating revenue that can be channelled into adaptation and mitigation projects. This is reinforced by strong human and financial capital, with high employment and a large working population providing both the resources and workforce needed to support large-scale initiatives, adopt innovative technologies and sustain long-term resilience. The cluster's economic strength and well-established institutions ensure solid governance, enabling the effective design, financing

and enforcement of climate policies while attracting private investment. Finally, the high level of education reflected in the Human Development Index fosters public awareness of climate risks and support for environmental policies, while also supplying the innovation and technical expertise required to drive clean technologies and build the digital infrastructure essential for climate-smart cities.

Granollers can serve as an example for other cities with similar characteristics that are seeking to develop sustainable, climate-resilient and inclusive strategies for their local contexts.

5. Participants

The workshop was attended by a total of **28 people**, including: 8 people from the KNOWING team, 15 people from regular stakeholders (which participated in previous workshops) and 5 people corresponding to new stakeholders (not having participated in previous workshops).

5.1 KNOWING team

Organization	Name
Granollers City Council	Virginia Domingo
AQUATEC	Jesús Soler
	Montse Martínez
	Andrés Crocianelli
	Daniel Yubero
	Ángel Villanueva
Consorci Besòs Tordera	Josep Pascual
	Jackson Tellez

5.2 Regular Stakeholders

Organization	Name	Role
Granollers City Council	Francesc Arolas	Environmental councilor of Granolles
	Quim Comas	Head of Environment and Green Spaces Service.
	Miquel Pujadas	Engineer. Energy Transition and Mobility Directorate.
	Josep Lluís Castell	Energy Transition and Mobility Director.
	Vicenç Planas	Rural development technician.
Consorci Besòs Tordera	Jesús Belda	Projects Director
	Sandra Valero	Innovation technician at the Ecology Department

Catalan Water Agency (ACA)	Sandra Ruiz	Head of the River Space Planning and Management Department at the Catalan Water Agency, regional administration responsible for managing, planning, and protecting water resources and infrastructure throughout Catalonia region
Fundació RIVUS	Manel Isnard	Members of the Advisory Council of RIVUS foundation, a non-profit foundation based in Granollers dedicated to the conservation, study, and promotion of rivers and their ecosystems. RIVUS foundation acts as a reference organisation for environmental education, citizen involvement, and interdisciplinary research on fluvial environments
	Sonia Sánchez	
	Bernat Barba	
VEOLIA	Desiree Marín	Innovation Director at Agbar, a leading Spanish water utility under Veolia
	Xavier Terrassa	Water cycle operator at Agbar (Veolia)
Drenatges Urbans	Alberto Soriano	Responsible for the PAITIDA Project (PERTE Digitalisation of the Water Cycle). PERTE stands for Proyecto Estratégico para la Recuperación y Transformación Económica (Strategic Project for Economic Recovery and Transformation). It is a Spanish government initiative designed to channel public and private investment into strategic sectors that are essential for modernisation and resilience.
Aprèn	Andreu Salvans	Technical Director and Botanist at Apren Environmental Services.

5.3 New stakeholders

Organization	**Name**	**Interest**
Polinyà City council	Miguel Ángel López	Local administration in Congost river basin
Sant Fost de Campsentelles City Council	Oscar Gallardo	Local administration in Congost river basin
Lliçà d'Amunt City Council	Oriol Passarell	Local administration in Congost river basin

TAIKOMETEOROLOGIA	Marc Silvestre	Company that provides specialised meteorological services, offering high-resolution, tailored weather forecasts and consultancy for multiple sectors such as energy, agriculture, tourism, maritime activities, construction, and events.
	Alfred Rodríguez Picó	

6. Expectations and main results of the Pathway Workshop

The objective of the workshop was to reunite participants of the previous KNOWING workshops in Granollers and to introduce new (and strategic) ones to present the project's progress and key results and to generate a space for collaboration between municipalities, experts, and territorial agents. The activity sought to expand its impact beyond the project's current scope (Granollers and the Congost basin), reinforcing the resilience of the Besòs Tordera basins against flood risk, while also achieving emission reduction targets for 2030. Building on the results of two complementary sectoral models: Infoworks (flood modelling) and PALM-4U (heatwaves modelling), together with the results of the behavioural model, the session aimed to translate complex modelling results into practical insights and applications for regional decision-making.

The presentation and assessment of future climate scenarios, particularly those related to flooding events and intense heat waves enabled better prediction and understanding of climate-related risks in Granollers and and for other municipalities in the area with similar characteristics. A key aspect of the discussion involved exploring how the current models and methodologies could be effectively applied and adapted to other vulnerable areas facing similar climate challenges, thereby extending the project's impact beyond its initial scope. The workshop emphasized a collaborative approach to defining specific use cases and developing comprehensive roadmaps that outlined practical implementation strategies, timelines, and resource requirements for climate adaptation initiatives.

Additionally, the event served as a platform for connecting with other municipalities and stakeholders who were actively engaged in climate adaptation efforts, fostering valuable networking opportunities and knowledge exchange that strengthened collective resilience and drove coordinated action toward shared climate adaptation goals across different regions and communities.

Beyond the technical analysis, the workshop also explored how information and education tools, such as the Playful Trainings, and the Shape Your Future App, can strengthen awareness, acceptance, and participation. In this sense, the presentation of these KNOWING communication tools served, on one hand, to identify potential use cases and on the other hand, to promote its use by participants.

7. Domain Models

7.1 Infoworks – Flooding

The presentation of the flood modeling was performed in around 45 minutes and included: a brief introduction of the regulatory context for flood management in Catalonia, the objectives of the flood modelling in Granollers, the used methodology, the modelling scenarios and the results.

Regulatory framework

Royal Decree 903/2010, dated July 9th, which transposes Directive 2007/60/EC, establishes the obligation to define Areas with Potential Significant Flood Risk (ARPSI) and the subsequent Flood Risk Management Plan. The European Directive mandates the assessment of fluvial flooding areas (from rivers), leaving the decision to include pluvial waters (urban runoff) to each member state. The ARPSI developed in Spain has focused exclusively on fluvial flooding. However, there has been a growing need to incorporate pluvial flooding, as it generates numerous problems and risks for citizens and infrastructure. The Catalan Water Agency (ACA) has begun requiring this from a series of municipalities for the third cycle. It is only a matter of time before pluvial flooding is definitively incorporated into future cycles of flood risk assessment and management planning.

Objectives

- Develop a comprehensive hydrological and hydrodynamic model of Granollers of the drainage network, surface runoff and the Congost River, pluvial and fluvial (1D+2D model).
- Model current and future scenarios, incorporating adaptation measures against the effects of climate change, as well as the evolution of land uses in the Congost basin and the city of Granollers throughout the 21st century.
- A model that serves as a tool for future decision-making for the city of Granollers with the aim of minimizing risks and damage from flooding with climate adaptation measures, anticipating future requirements. It is a living tool.
- This model will be part of a global dynamic model that encompasses various mitigation and adaptation actions and allows quantifying the impact on CO_2 reduction and thus improving decision-making.

Potential applications of the Granollers flood model

- Design and validate future measures in the sewer system (PDC and PIGSS)
- Development of urban planning
- Design and validate actions in the Congost River.
- Calculation and monitoring of indicators
- Identify the points in the city with the greatest risk for people and possible tangible and intangible damage. Update municipal planning and emergency plans (DUPROCIM)

Methodology

The flood risk assessment, driven by the need to incorporate pluvial (urban runoff) in addition to fluvial (river) flooding as per evolving European directives, utilized an integral 1D+2D hydrological and hydrodynamic model (ICM Infoworks). This model was designed to serve as a living decision-making tool for Granollers, allowing the validation of future measures for the sewage system, urban planning, and river interventions, while also identifying high-risk areas for people and infrastructure. The modeling methodology considered several scenarios, including the Business as Usual (BAU-Sc1), an intervention scenario with revegetation measures (Project Coconat, Sc2), and one with long-term Sustainable Urban Drainage Systems (SUDS, Sc3), all assessed against historical, T10, T100, and T500 flood return periods.

Following each simulation, the results were exported and integrated into a GIS-based risk assessment framework, composed of three analytical layers:

- Hazard maps – generated from maximum water depth and flow velocity rasters, classified according to hazard intensity (low, medium, high).

- Exposure and vulnerability layers – derived from spatial datasets representing pedestrian, vehicular, and social components (population density, critical facilities, and land use).
- Risk maps – produced by combining the hazard and vulnerability layers using weighted overlay techniques, yielding quantitative flood risk indicators (m² of each risk class).

The results allowed comparison between scenarios and the evaluation of the effectiveness of proposed interventions in reducing urban flood risk.

Results and conclusions

In the base scenario (Sc1), even moderate episodes (T10–T100) cause significant flooding in the lowest urban areas of Granollers, especially in the river area.

The measures of the Conecta Congost Natura 2025 project (Sc2) slightly improve infiltration and delay runoff peaks at a local level, but do not significantly reduce the flooded area or the risk. The measures are not designed from a hydraulic point of view, but from a renaturalization point of view.

The preliminary results of scenario 3 (Sc3, with SUDS) show that the improvement is limited for scenarios with a low probability of occurrence:

▪ Long-lasting rains (10 h) exceed the infiltration capacity of the SUDS.

▪ The proposed SUDS have followed the criterion of available spaces, not hydraulic need. One more step must be taken to identify the most problematic points.

▪ Ordinary scenarios need to be tested.

Hybrid measures (green/blue+grey) are needed to address flooding problems, especially river flooding, with upstream actions.

Figure 4. Presentation of the flooding modelling results. Source: Granollers city council

7.2 PALM-4U – Heatwaves

The presentation of the heatwaves modeling was performed in around 20 minutes and included: a brief introduction of the methodology, the modelling scenarios and the results.

Methodology

The PALM-4U model was employed to assess the impact of urban greening interventions in heat reduction, considering that heatwaves are, together with flooding, one of the most

critical climate hazards in Granollers and in the Congost river basin. The domain was a 12 km × 12 km area around Granollers, with a 10m horizontal resolution. Meteorological conditions were based on a typical summer day (July 21, 2013) from a nearby station. Key outputs were the 2-meter air temperature and the Universal Thermal Climate Index (UTCI).

Modelling scenarios

Three urban interventions were modeled to mitigate the urban heat island effect:

- Intervention B2 (Renaturalization of Parc del Congost): Focused on replacing large impermeable surfaces with permeable pavements, vegetation, and tree planting (450 trees, 15,800 m² of shrubs/meadows).
- Intervention B3 (Superblocks in Barrio 1er de Maig): Involved converting parking spots into green spaces and planting trees to reduce through traffic.
- Intervention B4 (Green Connector): Focused on adding isolated vegetation, planters, and trees along narrow city streets (Calle Tres Torres and Calle Emili Botey).

Results and conclusions

Specific proposed interventions (B2, B3, B4) involved transforming paved areas into natural spaces. Intervention B2, which included eliminating a road and parking lot to revegetate the Congost Park, demonstrated the most significant cooling impact, achieving a temperature reduction of up to -3.8 °C during the day and -1.2 °C at night where trees and vegetation were added. Interventions B3 (creating two natural spaces) and B4 (naturalization of an urban connector) also showed cooling effects, with B3 reducing temperature by up to -1.2 °C during the day and -3.1 °C at night. The success of these measures highlights the potential of increasing urban green infrastructure to protect populations during increasingly frequent and prolonged heatwaves.

7.3 Behaviour model

The behaviour model developed by AIT was also presented to the attendees as a relevant and innovative approach to estimate possible behavioural responses (acceptance, rejection, etc.) to the mitigation and adaptation measures defined in the city's pathways. The conceptual model and the specific results obtained for Spain and urban areas (similar to Granollers and its nearby municipalities) were presented in around 15 minutes.

Conceptual model

Classifies citizens' reactions to climate impacts and measures (ranging from "Active antagonists" to "Fierce forerunners"). This model is used to estimate the overall effectiveness of measures by predicting behavioral responses—desired changes, unachieved potential (rebound), and undesired side effects (boomerang effect).

Results

The model provides an estimation of the distribution of behavioral responses and the overall effectiveness of an intervention, which helps in developing supportive measures and communication strategies.

Two scenarios were modeled: the Current scenario (using the observed distribution of Coping Types in Granollers) and the 2050 scenario (which assumes fewer Active Antagonists and a shift toward Emphatic Engagers).

Applicability of the behaviour model

- It can provide some first ideas about the different types of responses to address the climate crisis.
- The results can refine trajectory modeling by:
    - Evaluating the overall effectiveness of measures and possible side effects.
    - Evaluating the effect of specific interventions.
- The model indicates that delaying the implementation of measures in the hope of greater acceptance in the future does not work.
- The results of the model suggest that rebound and counterproductive responses should be avoided through regulation combined with good communication.
- How people face the climate crisis allows planning information campaigns and accompanying measures towards the desired results.

Figure 5. Presentation of the behaviour model results. Source: Granollers city council

8. Correlation of Models & Pathway with local Climate Program

The contents of this section stem from the participatory discussions on the applicability of the KNOWING project's results, the definition of use cases, and the roadmap for implementation beyond the project's end.

Alignment of the modelled scenarios with local and supra-local programmes

The modelled scenarios merge coherently with a wide range of strategic local and supra-local programmes and planning instruments. They are aligned with initiatives such as the PAESC, the PDC and the PIGGS, particularly with regard to CBR system calculations, and are integrated with the PDAR (Master Plan for Reclaimed Water) as well as projects like PACÍFICA (CERTEI), which focus on water management and territorial resilience. In addition, they connect with the new TARU, reinforcing coherence between modelling and public policies on climate adaptation and urban sustainability. At the local level, the scenarios merge with the Sewerage Master Plan, the Integrated Plan for Sanitation Systems (PIGGS) — especially concerning CSOs in river environments — and with urbanisation projects and public works. They also integrate with the Sustainable Urban Drainage Systems (SuDS) construction programme, the Sustainable Urban Mobility Plan, infrastructure planning, the Urban Green Master Plan, and municipal heat plans, which enable the identification and prioritisation of areas for action. Taken together, these scenarios strengthen territorial response capacity in the face of climate and urban challenges.

Model use cases: value, risks and opportunities

The models provide significant value in areas such as territorial understanding, risk assessment, and the prediction of future scenarios. They offer added benefits in practical applications including flood management, urban planning, urban green management, and

municipal heat plans. In the field of sanitation, the model applied to the PIGGS at basin and river level enables the optimisation of layouts and the identification of priority zones, while the heatwave model demonstrates potential for anticipating impacts and guiding measures.

Nevertheless, **certain risks are identified**, such as the possible loss of economic value in areas declared at risk, the creation of social vulnerability if equity criteria are not applied, limited public acceptance, and difficulties in comprehension among municipal technicians and managers. On the other hand, the opportunities are considerable: improved planning and prioritisation of actions, the application of dynamic models that incorporate social behaviour, measurable results through indicators, and the possibility of extending these models to other territorial areas. Taken together, these elements strengthen the capacity to respond effectively to climatic and urban challenges.

The use cases involve a **diverse network of stakeholders**, each with specific roles and responsibilities. Citizens act as end users and recipients of actions, and in some cases as potential engineers or developers. Political leaders provide institutional leadership and decision-making authority, while local and supra-municipal administrations are responsible for territorial management and planning. Coordinators oversee processes and monitor implementation, supported by technical advisers who provide expert knowledge in modelling and interpretation. Political technicians bridge political vision with technical implementation, and research centres focus on developing and studying the tools. The economic sector contributes as providers and vendors of technological solutions, while service and infrastructure operators manage electricity, communications, water, gas and transport systems. Urban Services representatives apply the models directly to infrastructures and services, and legislators play a key role in granting subsidies, drafting guidelines and driving standardisation processes.Together, this network of stakeholders ensures that the models are applied effectively, balancing technical expertise, political leadership, citizen engagement and sectoral innovation.

Assessing the usefulness and feasibility of the roadmap for Granollers and the Congost river basin

The roadmap is considered useful and realistic, with the capacity to support decision-making processes in both local and supra-local planning. It is particularly relevant for achieving water-related objectives, such as the management of drinking water and the reclaimed water network. To enhance its impact, it is recommended to provide additional information on electricity infrastructure, mobility and other essential services, together with interpretative indicators that facilitate the reading of results. Attention is also drawn to the need to integrate aspects such as wastewater treatment plants (EDARs) and mobility (cycling and driving) in sensitive areas, including flood-prone zones.

The roadmap is especially valuable for experts and decision-makers, with a recommendation to present the main models to contractors. The behavioural model is highlighted as crucial for defining measures to be implemented, while the agricultural model of the basin is proposed to anticipate flood impacts. In terms of scalability, extending the model's results to the entire basin would help guide investment and prevent risks. Working with time horizons (2030, 2040, 2050) is suggested to calculate levels of investment and impact. For evaluation purposes, the results of the flood risk model could be used to review Flood Control Plans and applied to urban planning, including impermeability models.

Finally, it is recommended to incorporate additional data such as roof types (VNS) into the heatwave model, along with adaptation solutions such as the creation of spaces that facilitate water runoff.

Figure 6. Group activity. Source: Granollers city council

9. Playful Trainings & Shape your Future-App

The KNOWING communication tools were presented in order to maximize their dissemination and to find potential use cases. KNOWING communication tools were presented as a set of tools dedicated to raising awareness, education, and decision-making specific to each target group in order to improve the understanding of the complex interrelationships of climate actions and the interdependence of systems.

They support decision makers and citizens to understand what adaptation measures we can "afford" without further harming the climate, avoiding maladaptation responses based on incomplete system knowledge and motivated by short-term goals that generate unwanted side effects in other sectors and reduce the effectiveness of other adaptation and mitigation.

The 4 KNOWING Communication tools (Playful Trainings, Knowing App, Knowledge Base and Decision Support Service) were introduced, but only the first two were explained in detail.

Playful training was presented as an innovative approach to improving climate culture, combining scientific content with interactive, narrative-focused methodologies. The activity format aims to support a wide variety of stakeholders (planners, civil society, educators, and business representatives) to understand the complexities of climate interactions and contribute to defining grounded local responses. It contributes to an expanded understanding of climate culture. Traditionally focused on cognitive knowledge of climate science (what is happening and why), evolving it towards action-oriented knowledge (what are the impacts, what measures exist to deal with them, and what are the responsibilities).

The KNOWING App "Shape your future" was presented as a mobile/web application aimed at the general public through narrations of everyday scenarios and information about the region. It contributes to:

- Increase citizens' knowledge and critical thinking about climate complexity, interconnections and proposed measures
- Promote active participation in the climate transformation process (e.g. before municipal meetings)
- Provide a playful approach (brief information, questionnaires, own decisions, gamification)

Once both tools were presented a Mentimeter exercise was conducted in order to obtain feedback from the participants at different levels.

1- Contribution of the tools to the participants' field of activity

The contributions of the Playful Training tool are seen in several areas, primarily focusing on awareness, social acceptance, and involvement:

- Awareness and Education: The tool can contribute to increasing awareness about the climate crisis and public initiatives. Specific actions mentioned include:

  -Implementing it in environmental education dynamics.

  -Increasing climate crisis awareness.

  -Dissemination and awareness raising in general (e.g., through Rivus Foundation and Neighborhood Associations - AAVV).

- Social Acceptance and Involvement: It is expected to improve public perception and acceptance of urban adaptation and mitigation measures. Key points are:

  -Facilitating citizens' perception of public initiatives.

  -Gaining social acceptance for urban adaptation and mitigation measures.

  -Involving stakeholders.

- Problem-solving: It can help in the ideation of effective urban adaptation and mitigation solutions.

The contributions of the KNOWING App are seen in the areas of: communication, awareness raising, decision making support and project scaling:

- Explanation and Communication: the tool can help to explain projects in an enjoyable way, serving as an argument and a debate tool.
- Awareness and Education: it contributes to awareness at all levels and promotes interrelation of viable concepts and solutions. It also encourages reflection on the multiple consequences of decisions and policies.
- Decision-Making and Implementation: it is described as "Very useful for giving the definitive impetus to measures already planned in various Master Plans" and "Helps in decision-making for similar cases of application".
- Scaling and Outreach: it can contribute to scale the results for Granollers and the Congost basin to other territories and to expand the target audience of the project..
- Warning/Concern: one response expresses concern that it might only be for technical use.

2-Target Audience for the tools

The identified target audience for the Playful Training tool is broad and includes the following groups:

- General Public.
- Educational Sector: schools and institutes, secondary school teachers and students.
- Trainers/Educators: trainers of trainers and awareness agents.
- Political/Decision-Makers: decision-making bodies) and political leaders.
- Associations and Organizations: neighborhood associations.

The identified target audiences for the KNOWING app are varied and include:

- General Citizens.
- Students.
- Affected Residents: residents affected by specific projects/plans.
- Professionals and Officials: municipal technicians, consultants, planners, directors, and politicians.

3-Suggestions to improve either of the tools

The suggestions focus on maintenance, promotion, and initial testing:

- Language and Testing:

  -Translation of the two tools into the local language.
  -The tools should be tested first

- Deployment and Promotion:

  -Ensure wide dissemination so they don't get overlooked
  -Deploy them on the CBT website and the City Council website

- Maintenance and Scalability:

  -Identify a person responsible for keeping them alive after the project ends.
  -The tool should be expandable and continuously fed with new information.

10. Impact Plan

Actions and timetable for post-KNOWING project implementation

To ensure the continuity of the use cases beyond the KNOWING project, it is necessary to define an implementation timetable that includes applied research to consolidate the models, funding to guarantee economic viability, integrated territorial planning, the identification of critical points and priority areas, influence on legislators to facilitate regulatory implementation, and the updating of the PIGGS investment list with an integrated vision of the entire basin.

The implementation of the use cases beyond the KNOWING project is correlated to the PIGSS implementation plan that will be available around May 2026. This document establishes a timetable of actions with three years allocated for the application of urgent measures and ten years for the deployment of the remaining measures. The PIGSS must include detailed planning and an implementation budget, thereby ensuring the continuity and real impact of the proposed actions.

11.Action Plan

Action	Responsible	Due
1. Publication of the Pathways WS feedback report on the city council website	Granollers city council	December 2025
2. Integration of KNOWING results for the definition of new SUDS in Granollers eligible for funding by the Barcelona provincial council	Aquatec and Granollers city council	January 2026

3. Completion of modelling tasks and delivery to Granollers City Council for internal use implementation of KNOWING results	Aquatec and Granollers city council	February 2026
4. Playful Training specific activity (training to trainers)	Granollers city council and Aquatec, in collaboration with CBT and Granollers' Resource Pedagogic Center	March 2026
5. Possible dissemination activity on KB and DSS (to be defined): potential communication to all participants with corresponding links and information	Granollers city council & CBT	April 2026
6. Publication of the *KNOWING Communication tools* on the Granollers & CBT websites	Granollers city council & CBT	May 2026

12. Compilation of results and materials from the workshop

Photographs

Outcomes of the discussion by groups: Dynamics_results_canvas

Presentation: KNOWING_Pathways WS_Granollers_CBT_291025.pptx.pdf

Media impact

Local newspaper: ElNou9_Granollers_KNOWING_31102025.png

EL 9 NOU Divendres, 31 d'octubre de 2025 17

Un projecte europeu estima que Granollers necessita accions híbrides per afrontar el risc d'inundacions

La recerca servirà per dissenyar noves polítiques de prevenció en un context de canvi climàtic

Granollers

E.C.

Una de les conclusions provisionals del taller participatiu celebrat aquest dimecres al matí al Consorci Besòs Tordera (CBT) és que Granollers necessita aplicar solucions híbrides –combinant mesures verdes, blaves i grises– per fer front als riscos d'inundacions, especialment les fluvials. Aquestes estratègies combinades permetran una millor gestió dels efectes del canvi climàtic a la ciutat, aprofitant espais verds, punts d'aigua i actuacions sobre les infraestructures urbanes.

Durant la jornada es va explicar que les mesures verdes inclouen la creació d'espais verds i vegetació que ajudin a la captació i absorció de l'aigua de pluja. Les mesures blaves integren punts d'aigua per afavorir el drenatge natural i reduir l'impacte de les inundacions. D'altra banda, les mesures grises se centren en la millora de les infraestructures existents, com els edificis, per augmentar la seva capacitat de resistència i adaptament davant els efectes climàtics.

Aquest taller forma part del projecte europeu Knowing Horitzó Europe, en el qual l'Ajuntament de Granollers i el Consorci Besòs Tordera col·laboren per dissenyar estratègies d'adaptació als riscos d'inundacions, tant pluvials com fluvials. El projecte, que forma part de les iniciatives del Pla d'Acció per l'Energia Sostenible i el Pla de Resiliència Urbana de la ciutat, se centrarà a desenvolupar solucions més eficients i sostenibles per afrontar els impactes del canvi climàtic. Granollers és un dels quatre casos d'estudi seleccionats per aquest projecte, que inclou quatre tallers al llarg de 48 mesos. Tot i que les conclusions definitives no es coneixeran fins l'any vinent, els treballs i les aportacions recollides fins ara ja són clau per a la definició de futures polítiques públiques.

Des d'Aquatec, enginyeria del Grup Agbar, i sòcia del projecte Knowing, s'està contribuint a l'aplicació dels models de domini per quantificar les intervencions ambientals més adequades i el seu potencial en la mitigació del canvi climàtic i en l'adaptació als impactes climàtics locals, que es complementen amb els resultats obtinguts als tallers participatius, amb l'objectiu que aquest full de ruta sigui més eficient i sostenible. A la trobada hi van intervenir, entre d'altres, Josep Pascual i Jesús Belda, del CBT; Montse Martínez i Jesús Soler, d'Aquatec, i el regidor de Medi Ambient Francesc Arolas i la tècnica Virginia Domingo, de l'Ajuntament.

La sessió va servir perquè experts, tècnics municipals de municipis de la comarca i ciutadans debatessin diverses propostes i acordessin la necessitat de fer actuacions aigües amunt, a les conques fluvials, per evitar que les inundacions afectin zones urbanes com Granollers. Els resultats d'aquest taller seran utilitzats per a la definició de futures polítiques públiques, les quals es basaran en les conclusions obtingudes per millorar la resiliència de la ciutat davant el canvi climàtic i els riscos associats.

Figure 7. Communication of KNOWING workshop in a local newspaper. Source: El 9 Nou

Linkedin

CBT:https://www.linkedin.com/posts/consorci-bes%C3%B2s-tordera-841731298_aquesta-setmana-la-seu-del-consorci-bes%C3%B2s-activity-7389934259949432832-V8Cq/?utm_source

=share&utm_medium=member_desktop&rcm=ACoAAEgC0nEBBojjcVVrVljg7GuxqL3wxJD7WZY

KNOWING:https://www.linkedin.com/posts/knowing-climate-europe_riverflooding-today-pathwayworkshop-activity-7389271024531480577-IgUH?utm_source=share&utm_medium=member_android&rcm=ACoAAAC0M9wBAq3tsFP84MQ9ixddi-1xlwgUwlU

https://www.linkedin.com/feed/update/urn:li:activity:7391059787196731393

Instagram

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CBT: https://x.com/consorcibesos/status/1984191188027707595