

## JOURNAL

### PROJECT

UPPER - Urban  
Productive Parks for the  
development of NBS  
related technologies  
and services

📍 Latina, Italy

### TOPIC

Sustainable use of land  
and nature based  
solutions

# Journal 3 - UPPER

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website



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The most important goal achieved by the Upper Project is that knowledge of NbSs and their potential impact on marginal areas has been gained by the local government and stakeholders. Previously these areas were abandoned or used without fully exploiting their potential, but now they are a component of the urban policies of the Municipality of Latina. Therefore, through the Upper Project it has been possible to recover (Demonstration Sites) and create new social aggregations (Productive Parks) in these areas. Another important achievement was the implementation of the technical and social plans related to the demonstration sites, which allowed for a debate on the environmental and economic sustainability of the rehabilitation of the areas and improved interdisciplinary techniques of City of Latina services. Unfortunately, external events, such as the Covid-19 pandemic, the increase in the price of building materials due also to the war in Ukraine, and events internal to the municipality itself, such as various election rounds and related administrative discontinuity, slowed activities and did not allow investments to be completed as planned. Therefore, it was necessary to revise the project timeline and implement only one of the investment projects instead of the three initially planned. However, the Municipality of Latina with other funding has included in its three-year public works program the together with additional interventions to complete the Demonstration Sites using the know-how gained from the Upper project.

## Update of the project

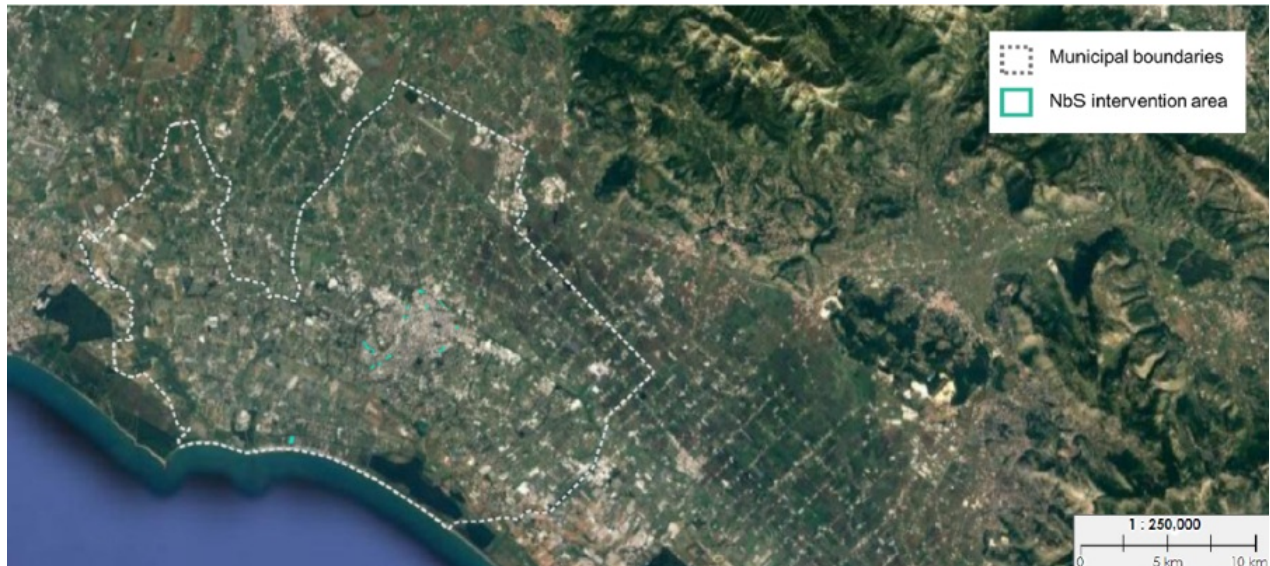
During the reporting period, the Municipality of Latina, supported by technical assistance (an external expertise team for project management support), made a great effort in order to coordinate partners in carrying out activities. Important results were achieved. First, the feasibility study for the realization of the three Productive Parks (PP) was approved. Subsequently, first the final design for PP2 and then the final designs for PP1 Campo Boario and PP3 via Massaro were approved. However, the delays due to political instability inside the Municipality of Latina led to difficulties in the execution of some activities as planned. The delay in the implementation of the productive parks also generated consequent problems in some of the activities under the responsibility of different partners, such as Labirinto, Engie, Cersites. Despite this, through strong cooperation and mutual support, alternative solutions were found in order to achieve project goals.

The Demonstration Sites (DS) were reduced from 8 to 6, eliminating DS4 Green Area near Torre Pontina and DS8 Middle Water Canal. This because DS4, characterized by the presence of a large shopping mall, appeared of little interest to residents, while in the areas bordering the "Middle Waters" canal a higher level of resident participation emerged. So, the design idea of the "Middle Waters" park as a reconnection of marginal part of the city was developed. Instead, part of DS8 was included in the PP1 project and will serve as a pilot project for the remaining part of DS8 and DS9 along the Paolone and Morbella ditches, which are currently not being implemented.

In February 2023, it was assumed that none of the three production parks would be built, however thanks to the

final effort desired by the municipal administration it was possible to guarantee immediate financial coverage for the PPI in Campo Boario and therefore the start of the works during the UPPER project, to date the works have reached approximately 80% of the forecast and they can be completed within the conclusion of the project.

Subsequently, the two other PPs will also be implemented with the resources of the ERDF 2021-2027 thanks to the city own resources. The Municipality of Latina managed to start working on the park and above all the local government approved the inclusion in the Three-Year Plan of Public Works ("Programma Triennale dei lavori pubblici"). The Three-Year Plan of Public Works is an instrument foreseen by the Italian National Procurement Code that includes the list of public works to be carried out by local authorities over the three-year period in compliance with the local planning initiatives, and in line with the budget of the local authorities. Regarding the budget, the funds are now guaranteed by Lazio Region using the new ERDF program.



### Overview of the operational challenges

Challenge	Observation
<b>Leadership</b> Challenge level <input type="checkbox"/>	The project management activities by the municipality were hindered by the administrative discontinuity due to several elections and a period of commissionership.
<b>Public procurement</b> Challenge level <input type="checkbox"/>	Due to the delays encountered by the project and the increase in raw material costs, public works were delayed and activities were reduced.
<b>Organizational arrangements within the urban authority (cross departmental working)</b> Challenge level <input type="checkbox"/>	The UPPER team, by investing significant time, was able to build connections between various sectors and departments, also establishing better communication and promoting collaboration, that was one of the initial project challenges.
<b>Participative approach for co-implementation</b> Challenge level <input type="checkbox"/>	Despite the activities and efforts of the partners, there has been no interest from the private sector. However, the foundations for future collaborations have been laid down.
<b>Monitoring and evaluation</b> Challenge level <input type="checkbox"/>	The monitoring and evaluation activities represent a strong point of the project by including innovations both in terms of the evaluation of environmental and social aspects.

<b>Communication and dissemination</b> Challenge level	Communication and dissemination activities do not represent a challenge. All expected outputs and deliverables have been produced and are of adequate quality.
<b>Upscaling</b> Challenge level	The project shows good potential for upscaling and replication. The continuation of many activities by the coordinator and partners is expected, also in collaboration with local stakeholders. Upscaling opportunities have also been identified through other European initiatives i.e. URBACT.

## Leadership

Some management problems were due to the administrative discontinuity and the period of administration which did not allow the activities to be managed in the best possible way. During the reporting period, only one steering committee meeting was held on 16 May 2023. Although no additional steering committees were held, there were many other meetings attended by all project partners and the Municipality of Latina, supported by the technical assistance team. These meetings focused on the development of project activities, coordination on the activities to be carried out, and resolution of any problems found in carrying out the activities.

Communication and coordination with the Circeo National Park has been a little difficult and the partner was absent from the events of the project for quite some time due to the internal governance problems experienced during the period. However, the partner was able to coordinate and organize itself to carry out the activities within its competence, particularly the informative meetings. Overall, all partners always made themselves available and kept in constant communication.



## Public procurement

Unfortunately, the delays encountered in the realization of the productive parks forced to change the project plans. Given the impossibility of an extension, the permanent secretariat accepted the request to immediately realize only PP2, committing, however, to include the final projects of PP1 and PP3 in the Three-Year Programming of Public Works. In May 2023 there was the approval of the PP2 executive project and the determination of contract for the work and its implementation, as well as the contract with the provider signed on July 19.

During the design of the three productive parks, the war in Ukraine caused a rise in the price of building materials. So the Lazio Region had to adjust the Regional Price List and the economic framework of the expenditure increased significantly. All this led to the request to change the objectives of WP7: implementation of PP2, under UPPER funding, and design of the other two productive parks while the implementation of PP1 and PP3 was included in the Territorial Strategy of the ERDF Program 2021-2027. However, after the PP2 work was awarded, the previous concessionaire wouldn't leave the area and this caused delays in starting the work.

The Municipality of Latina assigned a contract to an external expert charged with the preparation of the "final project" (second step) and the executive project (third step). As of the contract, the expert should have sent to the municipality the final project by 30/08/2022 to receive feedback and then proceed with the executive project. At the end of October 2022, the expert sent to the municipality the final project, however the latter did not respect the legal standards required.

In January 2023 the executive project was approved with an expenditure framework of € 340,000.00. The contract for the execution of the works was immediately signed, so there were no delays in carrying out the works

within the demonstration sites. In March 2023, work was awarded on five demonstration sites: DS3 Autolinee parking lot, DS7 Via Neghelli and Via Legnano parking lots, DS2 Via P.zzale dei Mercanti parking lot, DS5 P.zza Ilaria Alpi green area, DS6 Via Goya green area.

Immediately thereafter, the contract for the works was signed. The work performed consists of preparation of the flower beds and the garden pathway for the planting of the first trees (more than 150 new trees), implementation of the irrigation systems powered by renewable sources, setting up of street furniture functional for the performance of the project activities, installation of the informative signage, purchase of the supplies provided in the project (additional 30 new trees to be planted on site), planting and water-saving, watering accessories, activities aimed at implementing the NbS indicated in the document "Technical Annex on design of Demonstration Site". It should be noted that throughout the design and execution of the works, the Municipality of Latina was supported by the partner Cersites - La Sapienza University of Rome.

### Organizational arrangements within the urban authority (cross departmental working)

The UPPER team, by investing significant time, was able to build connections between various sectors and departments, also establishing better communication and promoting collaboration, that was one of the initial project challenges. Due to the multidisciplinary nature of the action, the team involved almost all the municipality departments. All the actors of the UPPER management structures showed to cooperate in a proactive and effective way namely: the Project Coordination Team (PCT), the Steering Committee (SC), and the Quality Assurance Team (QAT).

During the previous implementation period, it was necessary to replace the internal professional technician appointed to manage the call for tenders for the construction of the parks. Now he started to work and deepen the many crucial aspects of the project. Also during the implementation period covered by the journal, the project team showed a cross-sector and cross-department way of thinking and acting, at all administrative levels, together with mixed and integrated resources.

### Participative approach for co-implementation

One of the main objectives of the project was to share values with the local community. Therefore, several stakeholder groups were included in the project through various forms of involvement. First, through the adoption of public-private forms of collaboration; in particular, 8 collaboration agreements were signed. Moreover, a Business Information Point (B.I.P.) was established to provide customized information, training, guidance, and assistance and support. In addition, project actions were promoted through three webinars focusing on NbS, business communication and business creation.

However, the potential economic network did not respond as positively as we expected. In fact, no start-ups joined the call to submit new ideas for PPP. Possible reasons for this include the fact that work on the productive park had not yet begun when the call for bids was issued, and that the various election rounds and related administrative discontinuity did not allow for the necessary support from decision makers. Anyway, further approaches to stakeholders were made through the information meetings held by the Circeo National Park. In addition, the communication campaign with stakeholders has been very effective, thanks to both Tesserae's publications of Upper stories and research papers produced and published by Cersites on the WHiP platform. Finally, it is possible to say that today the idea of "Productive Parks" represents a consolidated idea in different segments of the local community.



### Monitoring and evaluation

During the reference period, the Municipality of Latina together with the delivery partners Cersites, Engie, and Labirinto carried out the project monitoring activity through the periodic collection of quantitative and qualitative data on the activities carried out, the products, and the deviations and difficulties of the project. The main objective of the activity was to verify the adequate progress of the project in terms of performance, i.e. by checking compliance with the deadlines, execution methods (number and type of activities carried out), the

achievement of the milestones and products (outputs and deliverables) provided for the Monitoring and Evaluation handbook. These data were collected by the partners and constantly compared with what was established by the project (Application form) in terms of activities and output indicators.

The partner Cersites was in charge of the monitoring of technical parameters. Field-based proximal sensing techniques (i.e., near-infrared spectroscopy, NIR) and satellite-based remote sensing data from the Sentinel-2 mission were employed. By integrating these techniques, the study enables comprehensive and multi-scale monitoring of vegetation health and assessment of green areas. Various band ratio indices were calculated to assess vegetation coverage, water content, and urbanization. Temporal variations in these indices were analyzed to evaluate the effectiveness of NbS interventions and their impact on the urban environment. The combined approach of proximal and remote sensing demonstrates the potential for comprehensive and multi-scale monitoring of NbS in urban environments. The research findings contribute to the existing knowledge on NbS monitoring and evaluation, providing valuable insights for sustainable urban development and evidence-based decision-making.

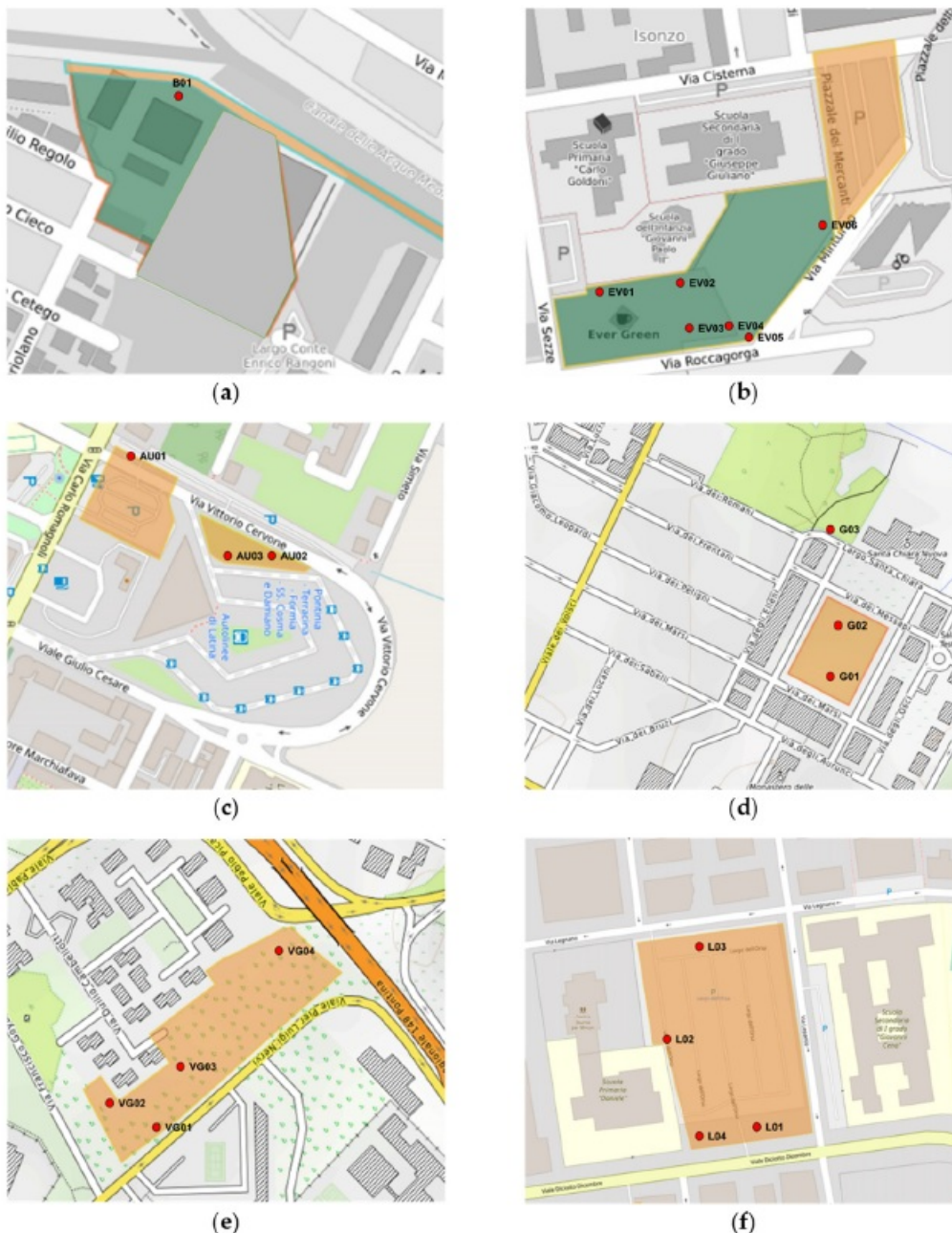
The third Monitoring Report was produced, which describes the information on the development of the project and its achievements (activities carried out, outputs and deliverables produced, criticalities found) in the period from 01/05/2021 to 04/30/2023. In another deliverable, the methodological aspects and the analytical and instrumental issues relating to both the management of the environmental sensors network and the robustness of the simulation model results were examined in depth. Another one included the methodology applied to maintain the environmental sensors network until August 2024 and to carry out the final environmental impact evaluation.

The WHiP platform has been accessible to all since September 2023 (<http://lpdt.cersites.uniroma1.it/upper/whip>). Layout, rendering and video of the DS have been inserted in the platform to represent the project, with possibility to insert comments. Deliverables dedicated to the mid-term and final environmental impact evaluations were useful for refining the analysis and simulation methodologies, but the lack of plants in the productive parks did not allow meaningful impact assessments to be carried out. However, considering that until August 2024 ENGIE will maintain the efficiency of the environmental sensors network and Ce.R.S.I.Te.S. will continue to use the data of this network and carry out simulations - it will be possible by August 2024 to elaborate a complete and effective environmental impact assessment.

The final social impact evaluation was carried out by partner Labirinto and the related evaluation report produced. The evaluation of the social impacts of the project's infrastructures and NbS on citizens' well-being was assessed through a qualitative study on the inhabitants of the DS Ilaria Alpi and related indicators were used in a qualitative way. The focus of the final social impact evaluation was changed and a greater attention was put on the effects of the UPPER JOBS initiative, with additional data collection and analysis devoted to the assessment of this project activity.

The evaluation of the effects of the project on well-being indicators was carried out through a qualitative research activity (a focus group) aimed at citizens and members of associations in the Piazza Ilaria Alpi district, a demonstration site that has been the subject of numerous interventions during the UPPER project.

The evaluation of the impact on employability indicators was carried out through an in-depth evaluation of the UPPER JOBS program. To this end, the Labirinto partner has carried out several qualitative and quantitative research activities, including the analysis of video story-telling interviews, a final questionnaire administered to participants at the end of the internship, an in-depth interview with the internal internship tutor, an individual CATI (Computer-Assisted Telephone Interviewing) interview with the participants three months after the end of the internship, and the content analysis of the periodic monitoring reports produced by the tutor of the Cooperativa Labirinto. These data were analysed and the results described in a final social impact evaluation report produced by partner Labirinto.



**Figure 4.** Schematic localization of the acquired plants (red dots) prior to NbS planned intervention (2020) of the sites: CAMPO BOARIO (a), MERCATO (b), AUTOLINEE (c), PIAZZA ILARIA ALPI (d), VIA GOYA (e), and VIA LEGNANO (f).

## Communication and dissemination

Communication and dissemination activities encountered no problems and took place as expected. Tesserae, in collaboration with the other partners, produced and uploaded on the website 5 new articles, 12 new Upper Stories, 4 working papers, 1 final press kit, 8 documents on Upper results. Social media channels managed by Tesserae have been active and have reached the general public with project news, opportunities and the last public call for startups, the final event and related activities. A big attention has been dedicated during the last months to preparing the final event, designing the visual communication and supporting the Municipality of Latina in organising an effective event of dissemination and feedback with the population of Latina and all the partners and stakeholders involved in the Upper project.

The topics of Upper stories and working papers have been slightly readapted in function of the activities realised and themes emerged in the practical implementation of the project, in order to reflect issues, discussions and learnings experienced in the practice. The third issue of the publication "working paper" introduced the idea of nature-based solutions as an element of mitigation of the impacts of urbanisation and as a strategy of transformative resilience in cities and analyses the social impact of NbSs in the Latina context through the UPPER seeds project. The fourth "working paper", with contributions by Cersites and Labirinto, focused on strategic

planning. All papers are accessible from the website. Two additional newsletters prepared by Tesseractae reached the general public disseminating activities and results, updates from partners and opportunities for citizens. The final report on digital communication has been completed. 11 new UPPER Stories were produced by Tesseractae with the support of an external expert for photo and video making and a video editor for the post production and web publication. All the 24 stories are online and accessible from the project website. <https://www.upperlatina.eu/?s=stories>

The final conference event has been accomplished with the participation of representatives of all the partners on August 31st at the town hall of Latina. The conference was participated also by citizens and local stakeholders and presented a wide range of results and positive feedbacks on the project.

## Upscaling

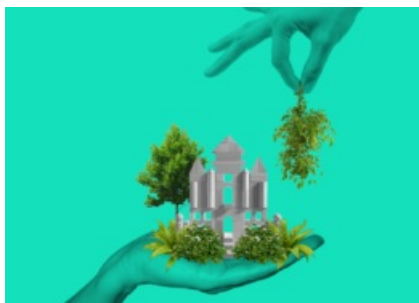
The Municipality of Latina's attention to some areas considered residual does not remain confined to the project itself, instead it has become part of the urban policies of the municipality itself. During the last months of implementation, the Municipality of Latina achieved an important goal for funding the works to finalize and upscale the technical projects. In fact, the municipality is a beneficiary for grants in the Territorial Strategy of the ERDF Program 2021-2027, which guarantees the correct closure of constructions over the period covered by UIA programme.

Continuity of the project was guaranteed through an institutional synergy with the Lazio Region which, having appreciated the efforts made, recognized the interventions on the other two production parks as a priority. In fact, they have been included in the regional program of the territorial strategy of the Regional Program ERFD 2021 -2027. This will guarantee continuity and capitalization of the project that goes beyond the timeline of horizon of 31 August 2023.

Ce.R.S.I.Te.S. will continue systematic and time-based on-site detection until August 2024, the output "Evidence from Demonstration Sites on soil phytodepuration and hydrogeological risk" can be obtained and in particular recommendations and guidelines will be produced for the extension of the tested NbS to the city level. Moreover, on 26 May 2023, partner Labirinto participated in a workshop organized by the Municipality of Latina within the Social Mediation Project, with the aim of promoting the Green Areas Bank of UPPER project among the inhabitants and associations of Latina Scalo. Partner Labirinto assisted the local inhabitants in the preparation of the pacts' proposals, by providing the necessary information to meet the requirements of the UPPER project in terms of contents, regulatory scheme and objectives of the pacts. After this meeting, three additional Pacts of Collaboration of the Green Areas Bank were signed by the Municipality of Latina with these stakeholders for the co-management of nature based solutions in other public green spaces of the city.

The Municipality of Latina in collaboration with partners CeRSITeS and Innovaction Europe provided the deliverable "Call for partners launched by the Municipality" that contained the call addressed to local companies and start-ups for a preliminary market consultation according to the current legislation. This consultation was duly held and constituted a preparatory phase for the bidding process to manage the concession of the productive parks that there will take place in 2024.

Upscaling of the project results can also be supported by the scientific publications produced, like the article published in sustainability by Prof. Bonifazi available via the following link: <https://www.mdpi.com/2071-1050/15/22/16076> ("*Assessing the Environmental Performances of Nature-Based Solutions Implementation in Urban Environments through Visible and Near-Infrared Spectroscopy: A Combined Approach of Proximal and Remote Sensing for Monitoring and Evaluation*").



The project manager Eng. Vagnozzi took part in the activities of the in the master's degree Valore PA at the Catholic University (Rome, 02/12/2022) and in Missione Italia (ANCI) urban regeneration workshop (Rome, 05/07/2023).

## Lessons learnt and conclusions

The delays occurred reduced the effectiveness of participatory activities and made the companies skeptical and

did not allow concrete outcomes to be provided in order to attract their attention, despite the partners' efforts to foster public debate and reflections during several meetings and workshops.

A second negative element was the absence of decision makers during the period related to this report, the most important one for communication with companies. In fact, from end of September 2022 to 1 June 2023, the Municipality of Latina did not have an incumbent administration, instead a prefectural commissioner. This resulted in a poor ability to mobilize the media and especially to stimulate floriculture businesses and nursery and edutainment services more effectively. Consequently, although all the activities for the design and launch of the call for entrepreneurial challenge were carried out regularly, no start-up companies participated and the 3 planned prizes could not be awarded.

Still, during the period of this report, partners collegially continued activities to stimulate entrepreneurial initiative and new business models for exploiting the Productive Parks market and related NbS technologies and services. Additional meetings were held with representatives of Lazio's floriculture businesses, nursery and edutainment services; moreover a People-Private-Public-Partnership (PPPP) governance model was set up to ensure long-term sustainability for an effective and efficient management of the Productive Parks after the closure of the UPPER project. Thanks to the involvement of the wider group of stakeholders in a workshop held on 26 May 2023, three additional Pacts of Collaboration of the Green Areas Bank were signed for the co-management of nature based solutions in other public green spaces of the city. By the granting of a municipal concession, the model implies the production of native plants and, at the same time, the capability to provide recreational and cultural services to the inhabitants, with the possible association with other enterprises.

Important has also been the storytelling process run through realisation and publication of the 24 Upper stories, gathering contributions from different target groups as high school students and teachers, citizens associations active on the territory and institutional actors, and giving them the opportunity to tell their stories related to the Upper themes. A particular effort has been done in experimenting innovative audio-video formats, with the use for some stories of interactive web storytelling through the the platform NarrAbility developed by Tesseractae. Upper stories have been dedicated to different purposes, as to document the activity and background of some Upper partners and local stakeholders, to document the activity realised by the project or to sensitise young people to the theme of NbS, and environmental issues, like in the case of the storytelling laboratories realised with youths.

This integrated approach significantly enhances the understanding of NbS' effectiveness, allowing for targeted interventions and evidence-based decision-making in the context of sustainable urban development. By combining these implementation and monitoring techniques, stakeholders can gain a holistic view of NbS' environmental impacts. This knowledge is essential for designing and implementing effective NbS strategies that address the challenges faced by urban environments.



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