LIFE Project Number
LIFE17 CCA/IT/000115

Final Report
Covering the project activities from 15/06/2018[1] to 15/12/2023

Reporting Date[2]
<15/05/2023>

LIFE PROJECT NAME or Acronym
LIFE SimetoRES

Data Project

Project location:	ITALY
Project start date:	15/06/2018
Project end date:	15/12/2023
Total budget:	€ 2,997,382
EU contribution:	€ 568,037
(%) of eligible costs:	59.42 %

Data Beneficiary

Name Beneficiary:	Comune di Paternò
Contact person:	Arch Giovani Francesco Ursino
Postal address:	Piazza delle Regione, 95047 Paternò, Italy
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Project Website:	www.Simetores.eu

1Project start date
2Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

This table comprises an essential part of the report and should be filled in before submission

Please note that the evaluation of your report may only commence if the package complies with all the elements in this receivability check. The evaluation will be stopped if any obligatory elements are missing.

Package completeness and correctness check	
Obligatory elements	
Technical report	
The correct latest template for the type of project (e.g. traditional) has been followed and all sections have been filled in, in English *In electronic version only*	**si**
Index of deliverables with short description annexed, in English *In electronic version only*	**si**
Mid-term report: Deliverables due in the reporting period (from project start) annexed Final report: Deliverables not already submitted with the MTR annexed including the Layman's report and after-LIFE plan Deliverables in language(s) other than English include a summary in English *In electronic version only*	**si**
Financial report	
The reporting period in the financial report (consolidated financial statement **and** financial statement of each Individual Beneficiary) is the same as in the technical report with the exception of any terminated beneficiary for which the end period should be the date of the termination.	**si**
Consolidated Financial Statement with all 5 forms duly filled in and signed and dated *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets + full Excel file)*	**si**
Financial Statement(s) of the Coordinating Beneficiary, of each Associated Beneficiary and of each affiliate (if involved), with all forms duly filled in (signed and dated). The Financial Statement(s) of Beneficiaries with affiliate(s) include the total cost of each affiliate in 1 line per cost category. *In electronic version (pdfs of signed sheets + full Excel files) + in the case of the Final report the overall summary forms of each beneficiary electronically Q-signed or if paper submission, signed and dated originals**	Si
Amounts, names and other data (e.g. bank account) are correct and consistent with the Grant Agreement / across the different forms (e.g. figures from the individual statements are the same as those reported in the consolidated statement)	Si
Mid-term report (for all projects except IPs): the threshold for the second pre-financing payment has been reached	Si
Beneficiary's certificate for Durable Goods included (if required, i.e. beneficiaries claiming 100% cost for durable goods) *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets)*	nr
Certificate on financial statements (if required, i.e. for beneficiaries with EU contribution ≥750,000 € in the budget) *Electronically Q-signed or if paper submission signed original and in electronic version (pdf)*	nr
Other checks	
Additional information/clarifications and supporting documents requested in previous letters from the Agency(unless already submitted or not yet due) *In electronic version only*	nr
This table, page 2 of the Mid-term / Final report, is completed - each tick box is filled in *In electronic version only*	Si

**signature by a legal or statutory representative of the beneficiary / affiliate concerned*

SEE FIRST PAGE

Instructions:

Please refer to the General Conditions annexed to your grant agreement for the contractual requirements concerning a Mid-term/Final Report.

Both Mid-term and Final Technical Reports shall report on progress from the project start-date. The Final Report must be submitted to the Agency no later than 3 months after the project end date.

Please follow the reporting instructions concerning your technical report, deliverables and financial report that are described in the document Guidance on how to report on your LIFE 2014-2020 project, available on the LIFE website. Please check if you have the latest version of the guidance as it is regularly updated. Additional guidance concerning deliverables, including the layman's report and after-LIFE plan, are given at the end of this reporting template.

Regarding the length of your report, try to adhere to the suggested number of pages while providing all the required information as described in the guidance per section within this template.

Table of contents

1. List of key-words and abbreviations

Here is a list of the key-words and abbreviations used within this report:

- OB: objective, one of the objectives of the Project, as set out in part 4 of the Proposal
- Project: LIFE SimetoRES Project LIFE17 CCA/IT/000115 – LIFE SimetoRES
- PM: Project Manager
- BGI: Blue Green Infrastructure
- ER: Expected result, one of the expected results of the Project, as set out in part 4 of the Proposal-Annex II of the LIFE SimetoRES project
- CC: Climate change
- CCA: Climate change adaptation
- CCM: Climate change mitigation

2. Executive Summary

LIFE SimetoRES aimed at contributing to address adaptation to CC with particular reference to flooding risk in urban areas through two type of actions:

- realization of BGIs in Paternò and Ragalna;
- awareness raising, training and co-designing initiatives for population and stakeholders; (schools, technicians, decision makers, general population). A participatory approach has been implemented, in order to foster best practices and sensibilization about climate change and urban flooding.

LIFE SimetoRES pursued, at a certain level, the following objectives (set in the proposal and presented in the Mid-Term report dated 20.11.2019):

- **OB1**: Promoting Blue green infrastructures (BGIs) as a best practice of the management of stormwater in a changing climate context.
- **OB2**: Educating to climate change adatation (CCA), particularly in relation to urban stormwater management, with the specific objectives of: i) Evidencing consequences and impacts of CC and the importance of adaptation and mitigation; ii) Increasing the awareness to urban floods; iii) Informing muncipality's technical offices, technicians and stakeholders in general about best practices for stormwater management and training them for the design of BGIs.
- **OB3**: Stimulating inclusion into municipality and regulation of BGIs(within the framework of River Agreements).

In relation to the above objectives, the following main outcomes can be listed as follows:

- Promotion of BGI has been attained thanks to:
    - Infrastructural intervention in a set of sites in the Paternò and Ragalna municipality. Specifically, in Paternò, porous asphalt has been used to replace part of the previous paving in Villa Moncada and restiling of Piazza Giovanni XIII; in Ragalna, solutions for sustainable drainage management have been implemented in four sites: Exibition Area "Piazza Cisterna", Palmento Arena, and Municipal swimming pool. In Paternò, also a significant part of the infrastructures for the District Contract II, which will include also a phytodepuration system have been completed (nevertheless, the completion will take place after LIFE SimetoRES project end).
    - "Soft" actions, such as laboratories in schools, seminars for engineers and other technical professionals, co-design actions with the public allowed promotion of sustainable drainage concepts inducing replication in other areas
- Educating to climate change adaptation (CCA), particularly in relation to urban stormwater management, has been achieved mainly by the E actions of LIFE SimetoRES, has been pursued thanks to:
    - Activities in several schools at all levels (elementary, middle and high), involving actively teachers and students.
    - Community involvement by several activities, from a workshop in the first months of the project implementation in Ragalna, for discussing about possible solutions to adopt for the Villa Moncada project, to the activities with population in San Biagio (Paternò) aimed at co-producing an urban strategic plan for resilience at the neighborhood scale (USP)
    - Surveys to the population and interactive sessions, aimed at understanding the level of risk preparedness of population (which has been found to be relatively low) and raising the urban flooding risk awareness as well as educating for correct behavior during heavy rain events (see Nanni et al., 2021, https://www.mdpi.com/2079-9276/10/3/25)
- Inclusion into municipality and regulation of BGIs has been stimulated mainly by seminars organized in cooperation Professional Orders (Engineers, Architects, Surveyors, and Geologists) and local decision makers (Municipalities, River basin authorities, Civil protection agencies), have contributed at spreading the concepts of sustainable urban drainage in a very difficult urban and territorial context, also subject to impacts of climate change (Mediterranean areas are a climate change hotspot); several regulatory acts have been approved, since the project start, that require the application of sustainable drainage principles (so-called "invarianza idraulica e idrologica", in Italian) when a new infrastructures has to be designed and built – LIFE SimetoRES has contributed to this improvement in stormwater management, in a general environment of other initiatives.

The project had also a rich set of dissemination activities, which included also interviews transmitted on local TV news, newspapers, scientific papers, national and international conference participation, activities for laymen within the EU Sharper Night, participation to "LIFE is 30!" initiatives, as well as to a seminar organized by the Italian LIFE National Contact Point (NCP) of Ministry of the Environment and Energy Security (MASE).

Networking links with other LIFE projects have been set as well (e.g. LIFE17 GIC/IT/000091 Beware, LIFE17/CCA/IT/000080 METRO ADAPT, and LIFE RESTART), which also stimulated reflections about how to implement LIFE projects.

Quantitatively, the project produced several positive impacts measurable in terms of Key Performance Indicators (KPIs), among which: a reduction of the area affected by urban flooding obtained through green infrastructure construction extending for 26.5 hectares at the end of the project, and awareness raising for an estimated number of individuals of 1200, surveys carried out regarding awareness about climate change, sustainable drainage and behavior during urban floods. Project activities are reflected in the deliverables (see attached list), among which lessons learnt during infrastructure construction and a book of contributions received and submitted to dissemination meeting and workshops of about 1000 pages.
As a side effect, the general objectives of the project have been successfully reached even though some challenges in project administration, due to COVID-19 pandemic and to limited experience of local administrations in managing EU projects, as well as external funding issues for infrastructure construction. In this sense, the project stimulated discussion for improving the capacity of local public administrations to manage European projects.

3. Introduction

Urban areas in general suffer of high human impacts on the hydrological cycle, which exacerbates the effects of precipitation events extremized by climate change (CC). The project aimed at contributing to a change in the urbanization strategy, in order to reduce impacts of CC by re-naturalizing the urban water cycle. This concept is clearly highlighted in EU policies regarding water (e.g. EU 2007/60 Flood Directive), and in Sicily it started to be particularly taken into consideration within the River District Flood Plan, which pointed out the need in the island to move toward an extensive implementation of Sustainable Urban Drainage (SUD), also as an adaptation strategy to CC. Within this context, LIFE SimetoRES rooted its motivation on the following premises related to its geographical scope, but that however can be assumed valid also at a larger regional and national scale:
a) the baseline of awareness of residents about urban flooding and CC was low
b) a strong trend toward increasing imperiousness of urban areas still persists. City areas have significantly increased their extension in the last 50 years, with a consequent dramatic increase of impervious areas.

The project proposed approach is to address urban adaptation to CC through a simultaneously-operating top-down and bottom-up approach. The top-down component means that actions of urban adaptation must be firstly stimulated, especially in the short-term, by decision makers, technical operators and stakeholders in general, by promoting and financing the construction of blue-green infrastructures (BGIs) and by re-thinking existing areas in a more "green way". The bottom-up approach means that an increase of the awareness about the impacts of CC is needed, and is fundamental for long-term effects. To this end, LIFE SimetoRES contributed to a participatory planning approach that capitalized

on the pre-operational partnership of the Simeto River Agreement (SRA). The project aimed also at replicability and transferability of best practices of stormwater management in urban areas at a wider level than just that of the project partners. The above approaches fit perfectly within the water resources regional planning, which foresees public participation as an essential step toward a more efficient implementation of measures.
The partners are the municipalities of Paternò (https://www.comune.paterno.ct.it/), Ragalna (https://www.comune.ragalna.ct.it/) and Santa Maria di Licodia (https://www.comune.santamariadilicodia.ct.it/it) located in the metropolitan area of Catania, on the eastern coast between Messina and Ragusa. Area that extends to the slopes of the Etna volcano.
The contacts of the three municipalities for the Life project are:
Paterno: project manager Arch Ursino (e.mail: g.ursino@comune.paterno.ct.it)
Ragalna: Caliò (email:antoninocalio1@live.it e anagraferagalna@libero.it)
Santa Maria di Licodia (e.mail:antonella.pappalardo@comune.santamariadilicodia.ct.it)
And other contats about Life programme www.findata-cfd.eu – dssa Giordano (095373088@findata-cfd.eu)
The Life SImeto Res project has created numerous opportunities for meetings and exchanges of information on the topics covered among the partner municipalities. Following these discussions, joint initiatives were born. The LIfe SImeto Res themes were made available to the technical offices of the municipalities that shared them - also during the presentation of building permits to private planners.
The entire territory of the metropolitan city of Catania was informed of the LIfe Simeto Res through the interventions of the Mayors – Antonino Naso, Giovanni Buttò e Salvatore Chisari and many councilors – Mannino, Salladino, Caliò, Cuccia - who took turns during the period from 2018 to 2023 and who in the technical construction interventions conveyed the issues of the danger of rainwater, advocating the adoption of more effective drainage techniques. Therefore, the representatives of the technical offices of the municipalities involved -Ursino, Mazzaglia - Pappalardo and Costanzo - have become representatives in the area for these issues.
The project Life Simeto Res - was inevitably affected by the renewal of the municipal administration of Paternò and Santa Maria di Licodia, the recewal of the regional administration and – above all - .has been affected by the Covid pandemic.
These events led to delays in the implementation of infrastructural works by the Municipality of Paterno.

4. Administrative part

Project management
The project was carried out by collaboration between the Coordinating Beneficiary Paternò and the associated beneficiaries University of Catania (Department of Civil Engineering and Architecture) and Ragalna and Santa Maria di Licodia Municipalities. Partnership agreements have been signed at the beginning of the project, defining rules for transferring the EU funds from the coordinating beneficiary to the associated ones. Project manager has been Arch. Giovanni Francesco Ursino which superseded former Dr. Anna Maria Caruso. Project has been managed mainly by emails, phone calls and meetings in presence at municipal offices in Paternò.

University of Catania staff, coordinated by prof. Antonino Cancelliere and prof. David J. Peres, provided general support to the other partners for project activities and advice for project management thanks to previous experience in EU funded project management.
To improve project management, Municipality of Paternò selected a company specialized in financial reporting. Company Findata (www.findata-cfd.eu) was selected, after a market investigation, on September 2019. Findata created a cost documentation data base of the project to improve the coordination among beneficiaries, so to always keep updated financial documents such as timesheets, invoices and financial reports with dssa Tiziana Giordano. This has required to add the categories "external assistance" to the budget of the project.

Challenges/deviations in project administration
Some challenges have been encountered in project administration. First of all, administrative constraints prevented the coordinator to timely transfer the advance payment to the partners. This has been managed with a greater effort in project activities by permanent staff engaged in the project. With regard to deviations with the original workplan, and changes should be highlighted with respect to the planned infrastructures. For Paternò, at 15-05-2024 the interventions at Villa Moncada and Piazza Giovanni XXIII have been totally finished.
Interventions at Parco del Sole (Giovanni XXIII) started in April 2024. They were built at the current date and completed even without showing months of amortization, the costs can be found in the financial reports.For the technical and administrative part, see attached folder: Villa Moncada and Piazza Giovanni XXIII.
The "contratti di quartiere" quoted 7 milion euros and co-financed by Regione Siciliana have only been started. Due to a problem with company who was realize project, works was stopped, but – project was evolved with new technique of invarianza idraulica.
For Ragalna, two of the planned infrastructure works (namely those related to the Municipal Sports Hall Infrastructure and to the Kindergarten in Ragalna Municipality) have been completed between the submission of the proposal and the start of the project and therefore, according to the project financial rules, their partial costs cannot be attributed to the project. However, these infrastructures, being built by including some of the principles of sustainable drainage, were used within community learning and dissemination activities, such as workshops at the initial stage of implementation of the project, with benefits for replicability of similar actions outside of the project activities. Only the exhibition Area "Piazza Cisterna" has been constructed among foreseen infrastructures in Ragalna. To compensate these issues, alternative infrastructures fostering the same objectives of LIFE SimetoRES have been constructed after project start, and been proposed to be included in the project: Palmento Arena, and Municipal swimming pool.

Communication with the Agency and Monitoring team.
Communication with the external monitor – Dr. Paolo Rosa-Clot – has been almost constant, though some issues occurred during periods of intense workload of the project manager, through the submission of periodic reports, exchange of emails and phone calls. Monitoring visits have taken place as follows:

1. March 8th, 2019, Paternò

2. June11th 2020, video conference (due to COVID19 pandemic)
3. June18th 2021, video conference (due to COVID19 pandemic)
4. November 26th 2021, Paternò and Ragalna
5. March 30th 2023, Paternò
6. December 6th 2023, Paternò

Amendment 2 sent to CINEA together with the Interim Report with the communication of the change in the bank account (request dated 6/12/2019) used in the second instalment. Furthermore, the further change in the IBAN due exclusively to an internal change made by the bank is attached to the balance request.
Several issues occurred due to the COVID19 pandemic, which slowed down many of the project actions, especially those related to infrastructure construction (C1 and C2 actions). Actions E involving students could not take places because of lockdown, nevertheless some events continued using web-based meeting tools, such as surveys to students and learning activities in the form of webinars.
Hence an amendment request has been submitted to the CINEA on 2 November 2021 (Protocol N.0039407/2021) which was approved and took effect on 18.02.2022 - The end date of the project has been postponed to 15.12.2023.

In the municipality of Paternò – Piazza Sicilia – Paterno (CT)- where the sixth audit took place - it was possible to notice that in the locked cupboard purchased as part of the Life Simeto Res programme, the administrative documents and the original minutes are preserved, including the documents delivered by the Found upon completion of her assignment. Documentation provided in previous reports and discussions mainly in electronic format.

5. Technical part

5.1. Technical progress, per Action

Action A1: Team building, infrastructure design and kick-off

The action had the following time schedule:

- Foreseen start date (according to the proposal): 15/06/2018
- Actual start date: 15/06/2018
- Foreseen end date (according to the proposal): 15/06/2019
- Actual end date: 15/06/2022

A first task of the action aimed at updating information from the proposal, and in particular those relative to the uncompleted design of infrastructures (see implementation actions C1 and C2). The information on the design of infrastructures has been collected within several meetings among the beneficiaries.

Some important updates concerned infrastructures of action C2 (Ragalna): the construction of kindergarten in Ragalna was completed in November 2018 and the sports hall works in Ragalna were completed in April 2018. Municipality of Ragalna identified other infrastructures (See description of Action C2).

The design of the infrastructures foreseen by the project has been completed according to the following timeline:

- Scala Vecchia-Palazzolo infrastructure (District Contract II) in Paternò has been totally completed (by 2019).
- Giardino Moncada by 2020
- Parco del Sole (Giovanni XXIII) by 2022
- Design of The Exhibition area in Piazza Cisterna has been finished on March 2019

The internal staff (to be charged on the “permanent staff or civil servant” direct personnel costs) has been defined with formal letters approved by the boards of the beneficiaries. LIFE SimetoRES office has been officially established with specific acts of the single beneficiaries. In the proposal it was foreseen that LIFE SimetoRES office had a precise location, corresponding to where the Laboratory of the Simeto River Agreement would have been located (technical office of Paternò). Indeed, there was no specific location neither of the Laboratory nor of the SimetoRES office. It is was “virtual” office made of the personnel listed above.

The project implementation encountered some issues, which however partially differ from the constraints and risk foreseen in part B5 of the proposal.

In particular, the implementation of the project actions has been delayed by some issues:

- Delayed transfer of the first pre-financing payment to the associated beneficiaries for the coordinator, due to issues in the Paternò municipality budget approval. Also, this impeded the coordinator to use the EU contribution until the budget approval. EU transferred to the coordinator the pre-financing payment on 25/06/2018. The project adviser has been informed on 12/07/2018 about this issue on and he encouraged the beneficiaries to start with the preparatory activities of the project in order to minimise any delays and to discuss this matter with the project Monitoring Consultant, with

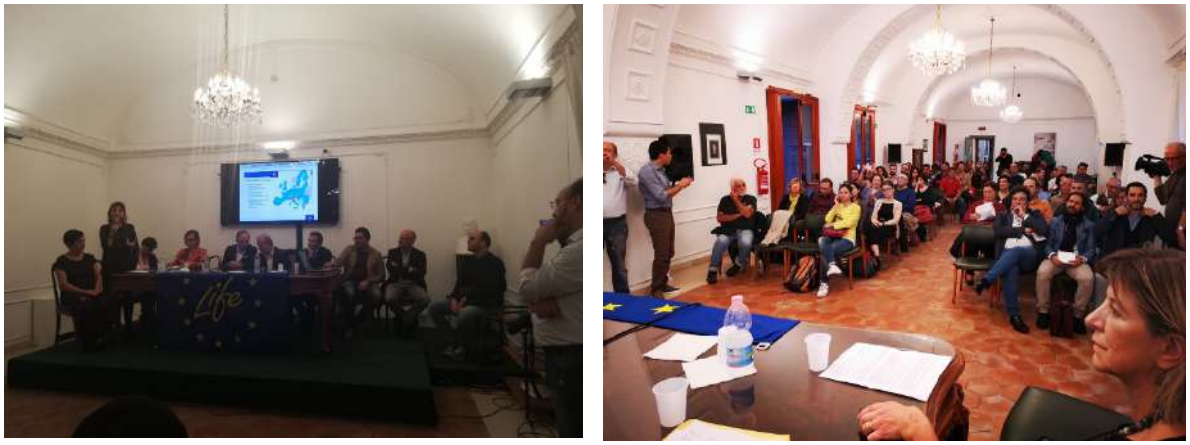
email of 16/07/2018. The issue was solved at the end of February 2019, when all the partners received their contribution as specified on the Partnership Agreements. Of course, this slowed down some of the project actions.

- Health issues of the former project manager Arch. Anna Maria CARUSO occurred from June 2019, so a new PM was nominated (Arch. Giovanni Francesco Ursino).

A Kick-off event took place on 26/10/2018 involving about 60 participants. Apart from the representatives of all partners, participants are from the following stakeholders/associations:

- Participatory presidium of the Simeto River Valley Agreement
- Local schools
- Other municipalities that signed the Simeto River Agreement: Belpasso, Regalbuto, Centuripe
- Professionals (architects, engineers, geologists)
- Civil protection voluntary associations
- Local cultural associations

In the following there are some pictures of the event.



A b

Pictures from the kick-off meeting that took place on 26-10-2018: a) representatives of the beneficiaries and some stakeholders; b) audience (estimated total: about 60 persons)

The action envisaged some indicators to assess the performance of this action. Here we present the current assessment:

- Number of executive designs produced: 4 (out of 6 foreseen)
- Ratio between the number of persons employed and the total number of persons to be employed: 1/5 (as for the additional staff)
- Number of persons participating to the calls for new personnel to be employed: N.A. as calls have not been completed.
- Number of persons participating to the kick-off event: 46 according to the attendance sheet distributed.

Action C1: Adaptation infrastructure construction in Paternò Municipality

The action had the following time schedule:

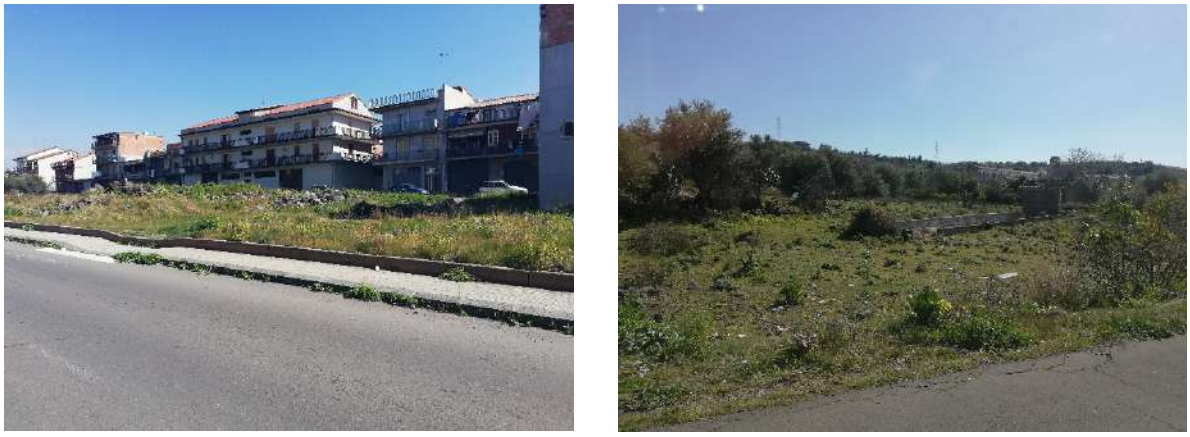
- Foreseen start date (according to the proposal): 01/01/2019
- Actual start date: 01/04/2020
- Foreseen end date (according to the proposal): 30/09/2021
- Actual end date: 15/12/2023

The action consisted in the intervention with BGIs on three areas: i) Quartiere Scala Vecchia-Palazzolo (District contract II); ii) Moncada Garden; iii) Parco del Sole (Giovanni XXIII).

In the following, details on each of these intervention areas.

Quartiere Scala Vecchia-Palazzolo

After the area has been acquired by the municipality, the municipality of Paternò has completed the design of the works for Scala Vecchia- Palazzolo on December 2019. In the following we show some pictures prior to the construction of the infrastructures.



Pictures of the area where the infrastructures of the "Contratti di quartiere" will be constructed

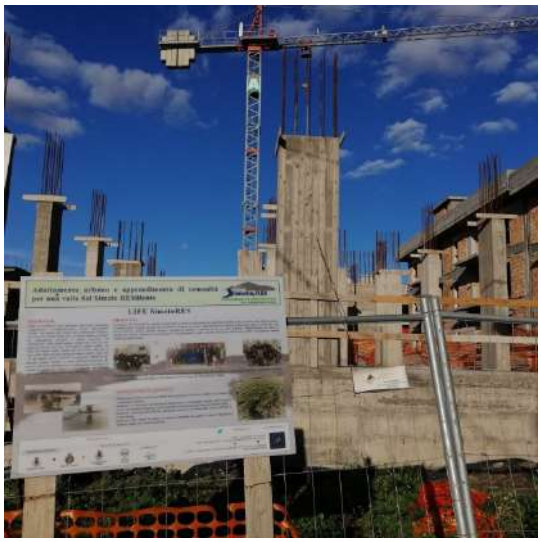
Specifically, the Scala Vecchia-Palazzolo intervention consisted, according to the proposal, in the following urban district requalification works:

a. #26 houses;
b. a parking area of about 1000 square meters, paved with permeable interlocking concrete blocks (grass pavement type) to obtain proper structural strength without neglecting the naturalistic aspects. The area should be provided of linear flowerbeds planted with rows of tall trees in the longitudinal direction of the parking area. The flowerbeds should serve as water retention areas as well and will be provided with drainage tubes connected to the whole city sewer network;
c. a walking path paved with permeable interlocking concrete blocks (grass pavement type), serving as drainage infrastructure in the case of precipitation;
d. a walking square area. Green areas should be planted with Mediterranean flora, while the paths and the courtyard should be paved with grass pavement for runoff reduction.
e. The grey-waters discharged by new houses will be conveyed by an underground channelization to the experimental phyto-depurative area, within the urban park. The horizontal sub-surficial flow phyto-depurative plant extends for an area of 32 m x 10

m and the water disposal and subsequent reuse will take place by means of underground tank, located in the internal courtyard of the social housing area;

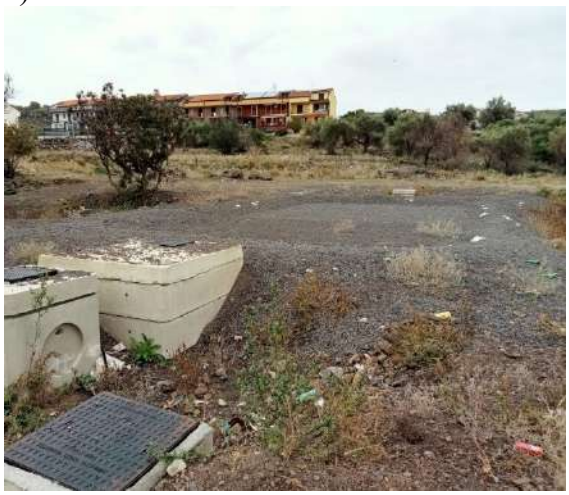
f. the Urban Park extending 5000 square meters accommodating the experimental phyto-deputation plant
g. a naturalistic dirt road trail to ensure connection with the remaining agglomerates of the Urban Park.

For the Scala Vecchia-Palazzolo interventions delays have occurred due to the increase of costs of building materials because of pandemic and Russia-Ukraine war. At the ending date of the project not all the interventions reached completion (see figure below)



a)

b)



c)

d)

a) Construction site of Scala Vecchia-Palazzolo "Contratti di quartiere", b) social housing, c) phytodepuration reservoir, d) pervious paving

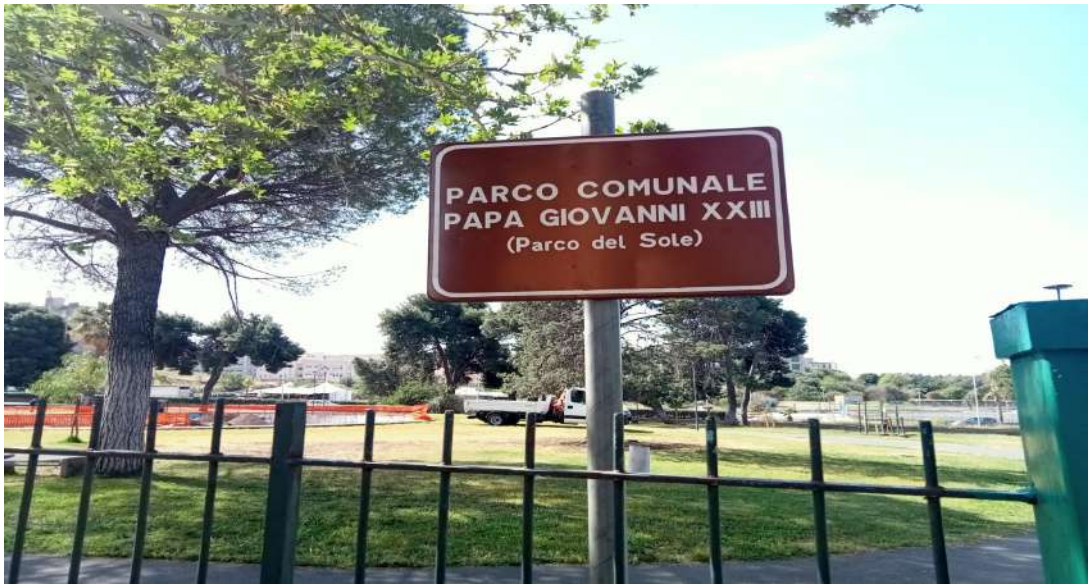
b) Works in the Parco del Sole site (started on April 2024)

Interventions at Parco del Sole should be consisted in the realization of a system for collecting and reusing rainwater for irrigation purposes. However, several issues have been

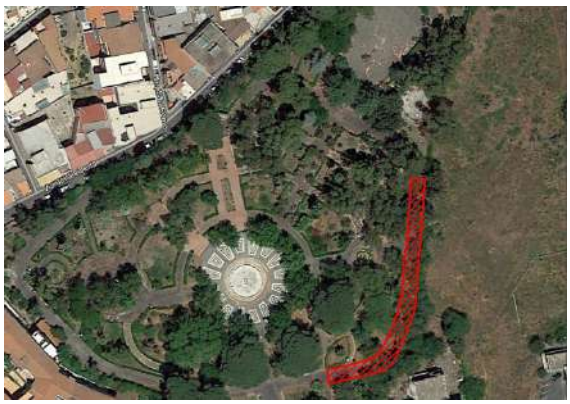
encountered concerning the design of such infrastructure, especially due to the increase in prices of building materials due to pandemic and Russia-Ukraine war.

Moncada Garden and Parco del Sole

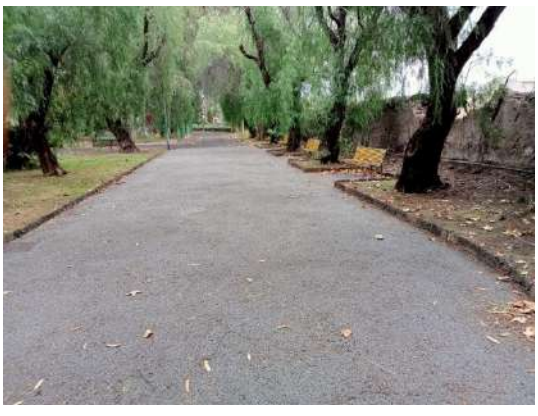
The Moncada Garden and Parco del Sole are public parks. The first one is located at the entrance of Paternò Municipality and represents its largest green area, extending for ca. 3.23 ha; its location in the historical city centre favours its frequentation by old people and those of reduced mobility. The second one, which extends for 2.35 ha, is recently-constructed green area located in the peripheral north-western part of the city and one the most popular parks for open-space gym activities. Both areas include a significant portion of asphalted areas. It was part of this LIFE SimetoRES to enhance permeability of these public parks by the removal of impervious surfaces and their replacement with permeable ones, favouring water infiltration and thus reducing runoff and urban inundation issues that occur in the lowest parts of the city.



Concerning Moncada garden, the renovation through the implementation of permeable paving has been completed, demonstrating potential interventions in favour of sustainable management of stormwater during intense rain events.



a)

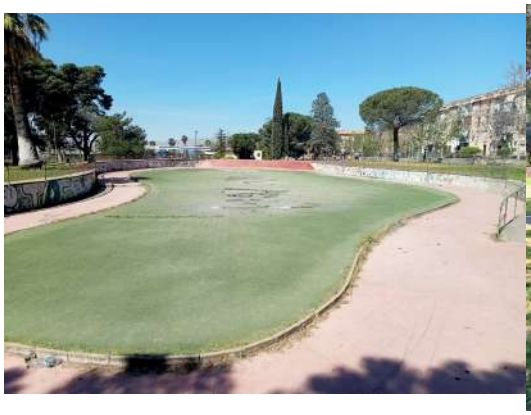


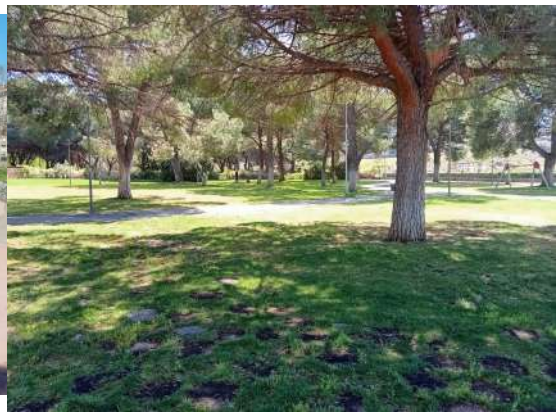
b)

a) Intervention area in Moncada Garden and b) draining asphalt

Interventions at Parco del Sole should be consisted in the realization of a system for collecting and reusing rainwater for irrigation purposes. However, several issues have been encountered concerning the design of such infrastructure, especially due to the increase in prices of building materials due to pandemic and Russia-Ukraine war.

b) Works in the Parco del Sole site (started on April 2024)





Deliverables: Folder_ C1 Villa Moncada – Piazza Giovanni XXIII - CDQ

Action C2: Adaptation infrastructure construction in Ragalna Municipality

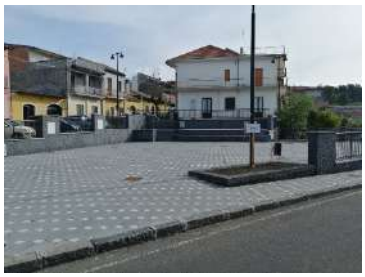
The action had the following time schedule:

- Foreseen start date (according to the proposal): 01/04/2019
- Actual start date: 15/06/2018
- Foreseen end date (according to the proposal): 30/09/2021
- Actual end date: 15/12/2023

In the case of Ragalna, some foreseen infrastructures (e.g., Kindergarden enlargement and Municipal Sports Hall Infrastructure) have become ineligible (e.g. because completed by the project start). Hence other infrastructures have been proposed for eligibility, given their compatibility with sustainable drainage concepts fostered by the project, namely: i) the exhibition area in Piazza Cisterna; ii) Palmento Arena; iii) completion of the external area of the municipal swimming pool; and iv) fognatura “Viale dei fiori”.

Exhibition area in the main square Piazza Cisterna

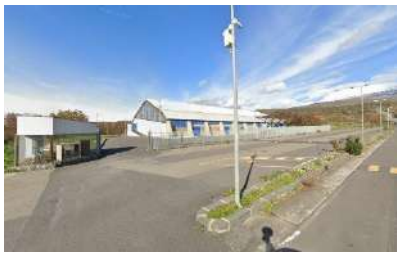
For this work in 2018 the executive project was approved. It foresees the realisation of an area, about 50%, of permeable surface consisting of flowerbeds and permeable pavings. Also, a system for rainwater disposal to convey it toward the permeable surfaces will be made as part of the work. The call for tenders has been launched on 19/12/2018 and expired on 17/01/2019. Works have been completed: expansion of the square included landscaping with green flowerbeds, evergreen trees, and a grassy surface for rainwater drainage. A rainwater collection system for the stage and pedestrian areas directs water to a 6 m^3 underground tank, with a filtration system. Additionally, a separate pumping system distributes water to green areas and toilet flush boxes.



Municipal public swimming pool

On November 10th 2018 the realization of the works for the completion of the external area of the municipal public swimming pool has been awarded. Subsequently it was executed

The intervention consisted of supply and laying in the works of vegetal ground for green areas and flowerbeds to increase the permeable surface. Also, a system to convey rainwater from impermeable surfaces upon the building and some of the external areas to the external permeable surfaces was realised, improving water infiltration with a sustainable drainage system around the building itself.



Palmento Arena

This intervention regarded the implementation of a system for rainwater disposal and the increasing of permeable paving around the building Palmento Arena by replacing the asphalt with another type of permeable pavement.

Action C3: Transferability labs for the Simeto River Agreement

The action had the following time schedule:

- Foreseen start date (according to the proposal): 15/06/2019
- Actual start date: 15/06/2019
- Foreseen end date (according to the proposal): 15/12/2021
- Actual end date: 15/12/2023

The Transferability Labs (TLs) consisted in a series of meetings and workshops aimed at Learning by Doing how to implement actions for CCA through BGIs. The objectives were to develop activities for the SRA Laboratory to facilitate transferability actions, acquire knowledge on Climate Action principles within Municipal boards, establish connections between Community activities and technical/administrative functions within Municipal boards, craft proposals to extend Life SimetoRES actions beyond the SRA. The transformative impact of the LIFE SimetoRES project on the Simeto River valley has been realized through a set of transferability workshop all involving municipal politicians from the Simeto River Assembly; the Participatory Presidium; technicians and administration workers from; students from professional schools, professionals, private owners interested in replicating best-practices into their buildings, up to SMEs that possess expertise for replicating best-practice. This action has started, as some of the infrastructures of action C2 have been finalized before project start (Kindergarten and Sports Hall). As mentioned before, for this reason these infrastructures cannot be considered anymore for LIFE co-funding. However, they were used to show best practices of stormwater management to the local population and the involved stakeholders. The action started with a course including TLs together with the professional order of engineers and the association “Engineers of the Simeto Valley”. The course took place in 18/10/2019, and had a duration of 8 hours (“Hydraulic and hydrological invariance, green and blue infrastructures and urban planning”- Oral presentations by four experts of University of Catania; “How to design of infrastructures for hydrological invariance: criteria and case study” - technical staff of the municipalities of Paternò and Ragalna presented the green and blue infrastructures that have been constructed in their territory, with a particular focus on those of the LIFE project).

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d e f

Pictures of the course for professional orders, that took place on 18/10/2019 in the morning and in the afternoon. a) The project manager (standing up in the center of the photo) introduces LIFE SimetoRES project; b) Prof. Cancelliere from UNICT presents the role of BGIs in climate change adaptation strategies; c) an interactive question is administered to the audience in the morning (about 60 participants); d) Dr. Saija explains the role of participatory processes and community involvement; e) Speaker explains criteria for designing BGIs; and f) audience in the afternoon module (about 40 participants).

Through these active dissemination efforts including conferences and workshops, LIFE SimetoRES has significantly contributed to the spread of sustainable urban drainage concepts and principles of hydraulic and hydrological stability. This influence has spurred independent initiatives for green infrastructure development across various municipalities within the Catania metropolitan area. Notable initiatives include "101 Idee" competition, sponsored by the Order of Engineers in Catania, which aimed to inspire innovative projects for urban enhancement, showcasing a range of ideas emphasizing originality and sustainability. Additionally, the GIFLUID project addressed the growing flood risk in Sicily and Malta's coastal watersheds due to climate change, focusing on integrating nature-based solutions to enhance resilience in coastal communities. An exemplary initiative within GIFLUID involved the implementation of green roofs at the Di3A University of Catania, which serve as a sustainable measure for managing urban rainwater. The National Operational Program for Metropolitan Cities (PON Metro) has further supported these efforts by funding projects aligned with sustainable urban development principles, particularly in areas such as digital services, environmental quality, climate change mitigation, and social inclusion. Overall, as the LIFE SimetoRES project celebrates its first anniversary, it is evident that its impact extends far beyond physical infrastructure implementation. It has served as a catalyst for numerous green projects, embodying best practices and sustainable urban solutions in the face of climate change challenges. In the proposal, this action encompassed meetings aimed at encouraging subscription to SECAPs (Sustainable Energy and Climate Action Plans). However, as the project reached its final date, this activity could not be completed. Nonetheless, it surely remains a crucial activity to carry out during the after-LIFE plan.

Deliverables:

- Report on Lessons learnt from transferability labs

Action D1: Data collection and analysis. Assessment of indicators measuring impact of actions

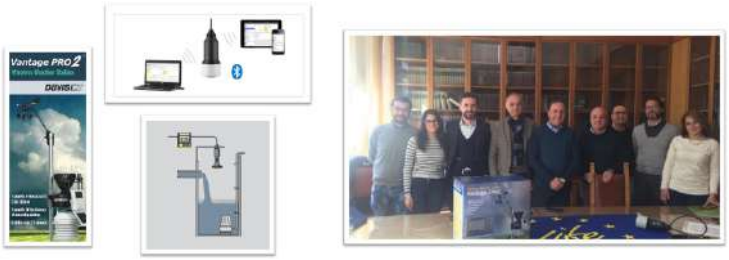
The action had the following time schedule:

- Foreseen start date (according to the proposal): 15/06/2018
- Actual start date: 15/06/2018
- Foreseen end date (according to the proposal): 15/12/2021
- Actual end date: 15/12/2023

With this action the following objectives were pursued:

- Initial and final assessment of Key performance indicators (KPIs) and other means of quantitatively measuring project impact
- Contribution to online databases about climate change adaptation
- Investigations for Life Cycle Assessment for permeable paving

For the LIFE KPIs the webtool has been accessed and filled. The First KPI report was checked 25/06/2020 and no issues were identified. At the current date of writing (12-03-2024) the Final KPI report, with update values (see Section 7. Key Project-level Indicators), is under KPI Expert Review status. The proposal presented also some other indicators for each action; it was possible to monitor not all of these indicators, due to some difficulties (for instance related to the delays infrastructure construction, actions C1 and C2). Nevertheless, during the project implementation we realized that KPIs alone can be deemed sufficient for quantitively monitoring most of the impacts of the project (use of KPIs was not consolidated and explicitly defined at the time of submitting the proposal, so it was difficult to realize at which level they could measure impacts of the project). Regarding the additional monitoring respect to KPIs, beneficiaries S.M. di Licodia and Paternò have installed a weather station each, on the roof of municipality administrative buildings. Meteorological data has been collected, but could not be used effectively for measuring the runoff reduction associated to infrastructure construction, as it was not possible to install the flowmeter in the sewer pipe (see figure).



Nevertheless, UNICT carried out some simple evaluations to assess potential runoff change. On this purpose, meetings with the Department of Civil Protection of the Sicilian Region at Palermo, have allowed to collect relevant information data on the management of extreme storm events in the municipalities involved in the project. An assessment which has been used also for estimating impacts in terms of KPIs, is based on the hypothesis that 2 flood events may occur within a 5-years period after the project end and that thanks to the infrastructures constructed, related damage/loss will be reduced by a percentage of 5 % in the Simeto Valley area. In particular, according to some estimations (https://www.greenpeace.org/static/planet4-italy-stateless/2021/08/ae9471fc-quanto_costa_allitalia_la_crisi_climatica.pdf), floods and related phenomena cause damages that amount in average of 3 billion euros per year for whole Italy, i.e. over an area of 302073 km^2. Rescaling such a damage to the extension of the Simeto River Valley (582.59 km^2), this results in 0.05 × 2 × 582.59 km^2/302.073 km^2 × 3 000 000 000 EUR = 578591.92 of reduction in damage.

Also, to assess the baseline of risk awareness and to improve climate resilience of individuals, a survey has been prepared on the EU SURVEY platform and administered to the population. This has been done on April 2019; the survey allowed to measure: behaviour

during urban flooding (risk awareness), knowledge of the difference between climate change adaptation and mitigation, awareness of the benefits of green infrastructures. The survey was filled by more than 1000 persons. Despite high concern about climate change impacts, especially urban flooding, the population exhibited limited knowledge about proper behaviour during climate-related extreme events. The survey revealed a discrepancy between the level of concern and the understanding of correct emergency responses (more than 52% of citizens has inadequate knowledge of the correct behaviour during flooding events and only 30% of them feel responsible for mitigation of flooding risk), responsibility attribution for flood damage, and trust in authorities responsible for safety. The analysis demonstrated that a higher degree of concern about climate change did not translate into increased resilience factors, such as correct behaviour during emergencies or willingness to invest in adaptation measures. The findings suggested that media and educational efforts have focused more on raising concern about climate change than on promoting practical risk awareness and investment in sustainable drainage practices. A scientific paper has been published about the survey and further analysis (Nanni et al., 2021 - https://www.mdpi.com/2079-9276/10/3/25). Other surveys were conducted during Pathways for Transversal Skills and Orientation (PCTO) conducted with high schools by the UNICT, as well as during Sharper Night 2023, for a total of about 100 persons (see figure)

Surveys during PCTO activities and Sharper Night 2023

Regarding the contribution to online databases about climate change adaptation, the Italian Institute for Environmental Protection and Research, invited the project to contribute to the GELSO platform to be included in the Italian Platform for Climate Change Adaptation, as an example of best practices. The project staff of UNICT provided the material which has been made available con the website (https://gelso.sinanet.isprambiente.it/scheda_progetto.html?id=life-simetores-adattamento-urbano-e-apprendimento-di-comunita-per-una-valle-del-simeto-resiliente, last accessed 12.03.2024). Project information is also available in the Climate Adapt platform (https://climate-adapt.eea.europa.eu/en/metadata/projects/urban-adaptation-and-community-learning-for-a-resilient-simeto-valley, last accessed 12.03.2024).
Regarding LCA, guidelines have been prepared by UNICT staff about how this analysis should be carried out for permeable paving, including basic concepts, software recommendations and literature review. This was, respect to the proposal, a second plan in case of lack of preparation of the deliverable by Paternò. This document is presented as the deliverable “LCA for relevant elements in the project”.

Deliverables:

- Survey forms to be submitted to population/stakeholders (awareness-rising activities) – not filled

- Report on lessons learnt from the assessment of indicators
- LCA for relevant elements in the project (porous asphalt)
- The deliverable "Contribution to Climate-ADAPT platform: Book" has not been produced, as the aim of contributing to Climate-ADAPT platform has been reached as described (such a contribution was requested in the proposal review process, just with the aim of contributing to the platform. As the project progressed, partners recognized that creating a book wasn't essential to the overarching goal of contributing to the platform.).
- The deliverable "Report on lessons learnt from the assessment of indicators" has not been produced as its' objectives have been fulfilled by submitting the KPI indicators (with comments) by the dedicated webtool.

Action E1: Community involvement and learning

The action has the following time schedule:

- Foreseen start date (according to the proposal): 15/06/2018
- Actual start date: 15/06/2018
- Foreseen end date (according to the proposal): 15/12/2021
- Actual end date: 12/2023

This Action aimed at fully involve the local community in Life SimetoRES, collaborating with schools, the Participatory Presidium, professional associations, and the Simeto River Agreement. Its aim was to promote LIFE SimetoRES locally, nationally, and internationally, while also raising awareness about flooding and climate change risks through educational activities for all age groups. Specifically, the action focused on Community Involvement and Learning, developing participatory activities to engage people in Life SimetoRES and gather their insights, particularly regarding behavioural responses to urban flooding and climate-change-induced risks. Educational activities targeting various age groups were also implemented to enhance awareness of flooding and climate change risks within the community.

Since the start date of the project in 2018, public events and face-to-face meetings have been organized as initial forms of engagement focused on informing potential stakeholders of the LIFE SimetoRES project, spurring their interest in being involved while raising public excitement about the project. Moving on, in 2019, UNICT and Participatory Presidium members diligently identified and confirmed several local public schools. The objective was to establish a network conducive to community learning, leveraging the schools' capacity to reach diverse households across various socio-economic backgrounds. This phase predominantly involved preparatory meetings between university staff, presidium members, school principals, and teachers to facilitate the setup of the network. Then, a series of workshops held between March and May 2019 served as forums for sharing insights and planning future collaborations within the project's framework. Notable highlights included

schools sharing past projects on environmental sustainability, the presidium detailing its work under the Simeto River agreement, and university staff presenting research on school engagement in community learning and climate change-related activities. In particular, more than 100 scholars were involved in the event that took place in the high school Liceo Fermi High School (29/05/2019), where LIFE SimetoRES actions were explained to the teenagers. Survey was distributed to the audience, that filled it. After the students had time to comment they experience and their answers to the questions. Afterwards a short lesson on correct behaviour during urban and non-urban flooding events has been given to the students, which (as the answers to the survey revealed) are fully aware of climate change risk, but not on how to behave in case of heavy rainfall events. These workshops culminated in the development of a shared work-program, structured into three phases: i) The Cognitive Phase, aimed at integrating age-appropriate educational tactics into school curricula to enhance students' understanding of climate change impacts; ii) the Laboratory and Design Phase, focusing on empowering students to shape their local built environment through visits to project sites and design exercises on blue-green infrastructures; the Community Design Phase, envisioning youth as agents of change within their communities through participatory activities involving families, neighbourhoods, and city officials. A detailed timetable, including teacher training sessions and in-school education activities to impart knowledge on climate change impacts, was provided in the previous report.

In 2020 and 2021, due to the COVID-19 pandemic, many planned activities had to be adapted or postponed. Despite these challenges, we remained committed to engaging the community in Life SimetoRES. Our efforts focused on finding alternative methods to promote awareness about flooding and climate change risks while ensuring the safety of all involved. At that time, activities with Liceo Fermi High School have continued. In particular, 60 students were involved in order to define strategies to engage citizens of Paternò in sight of Community Workshops. About 20 of them attended the activities carried out during 2019. A questionnaire was elaborated along with students to identify two neighbourhoods in Paternò related to urban flooding risk. Then, students had been involved in activities which aimed to understand how blue-green infrastructures co-design processes could also respond to local needs. With this respect, residents of both Scala Vecchia and San Biagio were interviewed by students (they collected 35 in depth interviews). These activities also allowed to reach out local grassroots and organizations. The latter had been involved in a meeting (28/05/2021) to co-design the community workshop in Paternò. A set of community workshops have been carried out in the San Biagio neighbourhood. Meetings with students took place (year 2021): 27 January, 3, 17, 24, February, 17 March, and 19 May. Dissemination of the project activities has been carried out also by publications (e.g., https://www.mdpi.com/2079-9276/10/3, https://bit.ly/3c2TXqs) and at national/international conferences (all contributions are collected within the *Book of contribution*). The project has contributed to the Celebration of the 30th anniversary of the LIFE program. In particular, an event was organized at University of Catania involving two local high schools. The activity was advertised on various social channels and included in the LIFE is 30 database, which can be consulted for details (https://www.lifeis30.eu/life_action/infrastructure-di-drenaggio-sostenibile-e-il-progetto-lifesimetores-per- adaptation-to-climate-change /, last accessed 15/12/2023). On 7 June 2022, the school Madre Teresa of Calcutta of Belpasso municipality presented the results of the work carried out on issues related to water in the city. In particular, the children presented to the Mayor and Councillors a power point on the water cycle and the results of the observations on the behaviour of rainwater around the school, as

well as the mapping of the fountains still active in the urban center. On February 2023, as part of the academic orientation activities organized by the Department of Civil Engineering and Architecture at the University of Catania, the dissemination and awareness-raising activities involved also the students of the scientific high school Galileo Galilei in Catania. During the presentation, the students were encouraged to reflect on the current climate crisis and to consider ways in which they can take action, even in their daily lives, to help mitigate its effects and limit the damage.

Deliverables:

- Layman's report
- Report of the Closing Events
- Life SimetoRES website
- Notice boards

Action E2: Community workshops

The action has the following time schedule:

- Foreseen start date (according to the proposal): 30/09/2018
- Actual start date: 30/09/2018
- Foreseen end date (according to the proposal): 15/12/2020
- Actual end date: 15/12/2023

This action aimed at community Design Climate Change Adaptation measures to be implemented within the Simeto Valley. Community design thus fosters the construction of BGIs and for other sites than those within actions C1 and C2. This strengthened the sense of ownership for the new infrastructure projects, as a result of the bottom-up process. Community Design were implemented through a set of participatory tools (e.g. Community Mapping, Community Design) that allow non-experts to give their contribution to the development of a project. It has been developed for engaging a specific target audience that may be deeply interested about Life SimetoRES, together with a sample of students on behalf of the youngest generations that can embrace the challenge of climate action. To achieve these goals, several Community Design Workshops have been carried out with specific methods in relation with the variety of participants that will be involved. On the basis of the initial outcomes of the action E1 and the interconnections that occurs between action E2 and action E1, most of the community design workshops have been held within the framework of the schools-led community learning process. Three different community workshops have been held during 2019: i) "Workshop at the San Marco Station" - Within the context of the Participatory Presidium, the grassroots association named SUdS and University of Catania researchers have organized a public workshop on how to enhance hydraulic invariance in the rehabilitation project of the Historic San Marco Station, in Paternò (the workshop has identified the elements to be taken into account for the restoration of the outdoors for the purpose of enhancing hydraulic invariance; ii) "Workshop with Community groups and associations in the city of Ragalna" promoted by the Simeto Participatory Presidium with the collaboration of UNICT, within which a survey presented on action D1 was administered to the audience, and the answers discussed after to receive feedback from the associations on main LIFE project themes; iii) "Workshop and technical visit to Sport Hall in the city of Ragalna" organized with professional orders - 40 participants have been registered, and after a visit to the Sport Hall in Ragalna where technical board members of Ragalna explained the measures adopted for sustainable drainage, the attendees moved to the city hall where a

workshop on co-design of possible interventions to be implement in the Moncada Garden (cf. action C1) took place. Moving on, other community workshops have been held during 2021, namely at the kick-off meeting of the initiative "San Biagio mobilizes", at the European Researchers' Night through an interview campaign training, and focus group and coordination meetings in Paternò. During 2022, three community workshops were organized within the CoPED Summer School, in order to share co-analysis findings and define Urban Strategic Plan (USP) overall goals with San Biagio residents, to implement co-design activities with San Biagio residents, and to receive feedbacks by San Biagio residents about the preliminary draft of the USP. From September to November 2022, the USP was finalized by UNICT researchers. The plan, as a result of the collaboration among researchers and the local community, was delivered by the civic coalition "San Biagio Mobilizes" to both neighborhood residents and Paternò public authorities.
In 2023, the municipality of Ragalna hosted numerous community workshops in collaboration with the Simeto River Pact Participatory Presidium. These workshops primarily engaged primary school children in recreational and educational activities designed to introduce them to concepts such as climate change, adaptation, resilience, and strategies for mitigating and adapting to climate change. Among these activities, particularly stimulating was the World Tree Day 2023, event centered around discussions on environmental respect, green preservation, and knowledge of the territory. Two olive trees donated to the schools by the Sicilian Region were planted, and the administration presented the LIFE SimetoRES project.

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Pictures from the community workshop at Ragalna on 27-05-2019: a) Audience filling the online survey "Il clima cambia: tu che fai?" [climate changes, and you?]; b) The entire audience (25 persons); c) feedback collection phase; d) collected feedbacks from the audience.

a b c

Pictures from the community workshop: a) at the kick-off meeting of the initiative "San Biagio mobilizes" (June 2021), b) at the European Researchers' Night (September 2021), c) and focus group and coordination meetings in Paternò (July-November 2021)

a b c

Pictures from the community workshop at the CoPED summer school: a) San Biagio Church (June 2022); b) Piazza Berger (June 2022); c) Palazzo Alessi (July 2022)

Pictures from the community workshop at the primary school in Ragalna on the occasion of World Tree Day 2023

Deliverables:

- First video that summarizes the community activities
- Community model blueprints

Action E3: Project results dissemination and networking

The action has the following time schedule:

- Foreseen start date (according to the proposal): 06/2019
- Actual start date: 06/2019
- Foreseen end date (according to the proposal): 15 Dec 2021
- Actual end date: 15/03/2024

Regarding the task of organizing a workshop on LIFE SimetoRES at the project start, instead of a single workshop, several events have been organized, involving several participants of the
different foreseen audience classes, namely: i) a Kick-off event on 26/09/2018 involving about 50 participants (see also action A1); ii) press conference at Paternò on 23/10/2018, during which the project activities have been advertised in local newspapers (Catania province but also regional stream), and TV channels (Gazzetta Rossazzura; Meridionews; La Sicilia; Ciak Telesud); iii) a seminar in schools (see letters of interest) on 11/12/2018 at the primary school (III circolo di Paternò), involving about 30 teachers and related staff of the

School. This school was among those who made a formal expression of interest to be involved in SimetoRES activities, prior to the submittal to EU of the proposal in 2017. Another boost to the communication and dissemination was given by media channels on 20/05/2019, to disseminate the survey to the population. Specifically, CiakTelesud and VideoStar channels made a news report for disseminating project activities and, in particular, the survey.

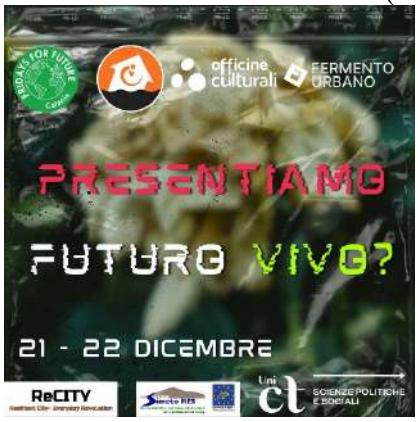
Collateral events not directly organized as LIFE events, but where LIFE project was disseminated, involved the annual seminar for the population organized by the Vivisimeto association (member of the Participatory Presidium), within which a member of UNICT staff made a talk about the project (Vivisimeto 15-16/12/2018, and Vivisimeto 13-14/12/2019). Furthermore, on 07/02/2020, within the "*Cambiamenti climatici & democrazia energetica*", seminar in High School "Rapisarda" organized by the presidium, UNICT members made a talk about SimetoRES. More than 100 persons participated.

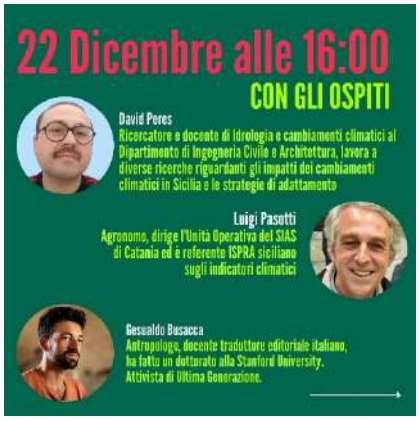
As technical dissemination activities, several technical workshops coordinated with Catania Order of Engineers took place:

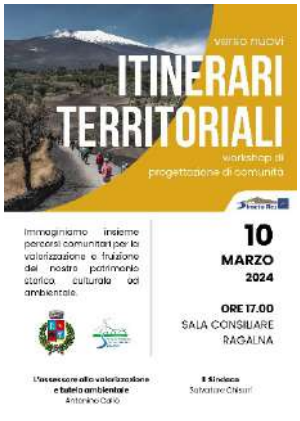
- 24/05/2019: "*Il dissesto idrologico nel bacino del F. Simeto – Resilienza, mitigazione e buone pratiche*" seminar for the professional orders (engineers, architects, geologists) - a member of UNICT staff made a talk about the project. This event has seen the participation of executive of the management of the hydraulic and hydrological risk of the Civil Protection Regional Service. More than 50 persons participated to the seminar. During the event the survey (action D1) was advertised and distributed the participants (37 persons);
- 18/10/2019: "*Invarianza idraulica e idrologica in un contesto di cambiamento climatico*" seminar for the professional orders (engineers, architects, geologists) - a member of UNICT staff made a talk about the project. More than 50 persons participated to the seminar.
- 19/04/2023: a series of contributions, within the framework of the Green Expo of Mediterraneo ECOMED 2023, exploring themes such as extreme events, climate change, and the future of the Simeto Valley.

Several dissemination activities were carried out also during the European Researchers Night (editions of 2022 and 2023), where researchers of UNICT presented the project's actions to the community, and administered a questionnaire to visitors of various age groups to prompt reflection on climate change and possible adaptation actions, with particular reference to the context of the Simeto Valley.

It was not possible to organize a specific final event where all project partners could discuss and disseminate to the general public the project actions. Nevertheless some initiatives were promoted in order to spread the news about the overall success of the project, such as those organized by the Participatory presidium and an event organized with the local Fridays for Future association in Catania (See







Closing events

Networking activities started at LIFE Kick off meeting in Brussels (2-3/10/2018), at which the project manager (Paternò) and the UNICT scientific responsible for the project participated. After the visit of the External Monitor on 08/03/2019, following his suggestion, the Project manager of Life Beware Project has been contacted. This project includes climate change awareness raising activities that have been discussed. Also, LIFE project management advices have been shared. In order to increase networking, a link between other municipalities and the LIFE MetroADAPT - integrazione delle politiche di adattamento nel Piano Territoriale Metropolitano - project has been created thanks to IFEL event. During ECOMED 2023, a link has been created with Interreg Italy-Malta project GIFLUID - Green Infrastructures to mitigate flood risks in Urban and sub-urban areas and to improve the quality of rainwater discharges. Furthermore, at the ECOMED 2023 again, within the framework of initiatives undertaken by LIFE National Contact Point (NCP) of Ministero dell'Ambiente e della Sicurezza Energetica (MASE) the LifeSimetoRES project was presented at the information corner installed at the fair. A crucial role in the networking activities has been played by the dissemination of the project through the participation at national/international conferences, and the drafting of scientific papers, all included within the Book of contributions.

Deliverables:

- Book of contributions received and submitted to dissemination meetings and workshops

Milestones:

- First information and awareness raising meeting
- First technical dissemination workshop
- Final meeting

Action F1: Project management and After-LIFE plan

At the project start, a member of the internal staff of the coordinating beneficiary, Paternò Municipality, has been nominated project manager (PM). From the project start until the end of 06/2019 project manager has been Arch. Anna Maria CARUSO. Due to personal health issues of Arch. Caruso, a change in the PM was needed. With deliberation n. 203 of the 23/09/2019 of Paternò Municipality, Arch. Gianfranco URSINO was nominated the new PM. Either PMs have been supported by the staff of UNICT for carrying out their task. Some criticalities emerged about the management of the project during the visit of the external monitor. For instance, the monitor reported that not all the documentation of the project was available during his visit. Also, he suggested to search for an external administration support, to be carried out by figures that have experience in accounting LIFE projects. An external assistance to an accounting society has been acquired (Findata). The project Steering Committee has been nominated and is composed by members from the beneficiaries, Findata external assistance and the Participatory presidium of the Simeto River Valley.
Project has thus been managed by collecting the documentation by sending it to the coordinating beneficiary when requested or at least for the external monitoring visits.
Several meetings among the beneficiaries for the project management have been carried out, mostly at the Palazzo della Regione of Paternò.

Communication with the EU EASME then CINEA has been carried out regularly, even though due to the COVID-19 pandemic, due to internal difficulties in managing the workload related also to other activities, as well as cumbersome burocratic procedures, some issues

have occurred, which had some impacts on the quality of project management, as also evidenced by the letters of the CINEA Project adviser. As illustrated in other parts, efforts have been constantly spent, also with additional support by UNICT partner to the others, for a better flux of documentation production as well as in communication with the EU contracting authority.
Even thought with some delay, mid-term and progress reports have been produced and transmitted to EU, also with the support of the external monitor.
UNICT nominated an administrative responsible, in the name of Eng. Alessandro LO FARO, who, together with permanent and additional staff, managed the financial documentation of the project, such as timesheets and documentation proving expenses in other cost categories, so to prepare the financial report, according to LIFE guidelines on Reporting.
The municipalities relied on the support of Findata for collecting data, while PM Arch. Ursino coordinated the activities. The external monitor, Dr. Paolo Rosa-Clot, provided unvaluable support with several calls and emails to the project manager.

An After-LIFE plan has been also prepared following the guidelines on the LIFE Reporting website, as well as examples from other projects.

Further details on project management and accounting are provided in the section "Comments on the financial reports".

5.2. Main deviations, problems and corrective actions implemented

In the following we describe the main deviations/problems and corrective actions implemented:

- Two out of three infrastructures in Ragalna foreseen by the proposal (C2 action), have been constructed before the project start. This happened because the proposal was first submitted within LIFE call of 2016; then a revised version was sent on 2017 and was funded, with project start date on June 2018. Corrective actions: new infrastructures have been proposed during project implementation in Ragalna: Palmento Arena, and Municipal swimming pool; which are consistent with project objectives (specifically OB1)
- Actions C1, E1, E2 and E3 present some conceptual overlapping. This was a structural issue of the proposal. However, the main objectives of the three actions can be deemed at almost completely pursued.
- To improve project administration the coordinating beneficiary needed the support of an external consultant. This required a modification of the foreseen budget and the addition of "External consultancy" costs. Project administration improved, at least partially, after this step
- COVID19 pandemic was an unforeseen event that limited most of the project actions. An amendment request to postpone project end has been submitted and approved by CINEA (24 months of extension). This has allowed to move forward with C1 and C2 actions and to carry out E actions in presence with citizens, even though some activities deviated from the original proposal, still maintaining the general objectives (cfr. S. Biagio district activities vs. activities with schools) ;
- New subscriptions/promotion of the Covenant of Mayors/SECAP was foreseen in the proposal. This was not implemented for general lack of interest by

partners; nevertheless in the After-LIFE plan it is foreseen to consider the possibility of participating to EU initiatives for stimulating participation to CoM, such as Pathway2Resilience (pathways2resilience.eu)

- Difficulties in preparing documentation in English: UNICT has provided support in preparing drafts
- Transfer of CINEA Payments from the coordinating beneficiary to associate beneficiary has been. This required additional efforts by internal staff to carry out activities that were to be assigned to additional personnel.
- Leave of Anna Maria CARUSO, first project manager of the Coordinating beneficiary after roughly one year of project implementation, caused some issues for project implementation. The role of project manager has been untaken by Giovanni Francesco URSINO.
- Delay in the construction of infrastructures was caused by several external issues: a) COVID-19; b) Ukraine-Russia war, which caused an raise of the prices of raw materials for construction, implying a revision of cost of formerly approved projects; c) delays in payments by funder (Sicilian Region) and thus suspensions of construction progress;
- Difficulties in installing hydrological monitoring instrumentation for measuring benefits of infrastructure construction, related also to the fact that infrastructure completion has been delayed for unforeseen issues. Simple analytical methodologies have thus been applied to have a rough estimation of the hydrological benefits (flood risk reduction), also for providing the KPI values
- Difficulties in involving the Participatory Presidium in project activities have been encountered. This caused some difficulties in project activities, such as the website and social media updating, activities with schools (E actions) and with the citizens in general. At the end, it was possible to make a formal agreement between the Participatory Presidium and the Municipality of Ragalna (see actions description). Nevertheless, many efforts have been made in order to pursue project objectives at best.

In conclusion, some actions remain unfortunately incomplete at the project end; however, the main objectives of the project have been successfully reached, also taking into account the territorial contexts and the administrative issues affecting municipalities in Southern Italy. Overall, the project contributed also at building capacity among municipalities about the management of LIFE and European projects, as well as climate change issues, in a disadvantaged context.

5.3. Evaluation of Project Implementation

Please evaluate the following aspects of the project:

– Methodology applied: The methodologies applied for project implementation consisted mainly in infrastructure construction with sustainable drainage principles, learning-by-doing and community participatory involvement.

A comparison of the results achieved against the objectives and expected results foreseen in the proposal is presented in the following table, which compares through quantitative and qualitative information the actions implemented in the frame of the project with the objectives and expected results in the revised proposal:

Action	**Foreseen in the revised proposal (related objectives and results)**	**Achieved**	**Evaluation**
A.1 Team buiding, infrastructure design and kick-off	Preparatory activities for the correct implementation of the project Agreement signing among beneficiaries Personnel hiring; Initial participatory meetings; Kick-off meeting	Almost totally achieved, as explained in previous section 6.1.1	100,00%
C.1 Adaptation Infrastructure construction in Paternò Municipality	Sustainable drainage interventions (BGIs): District Contract II - Scala Vecchia Palazzolo,Giardino Moncada and Parco del Sole – Papa Giovanni XXIII	General objectives of the action has been achieved, in spite of the difficulties in completing the 3 infrastructures foreseen in the proposal. In particular only Villa Moncada has been completed, while Scala Vecchia Palazzolo, the main infrastructural intervention has been implemented only partially, due to various difficulties, including delays in payment by Sicilian Region. The third infrastructure, Parco Giovanni XXIII (a.k.a. Parco del Sole) has been started on April 2024 (after project end), due to administrative issues.	100,00%
C.2 Adaptation infrastructure construction in Ragalna Municipality	Sustainable drainage interventions (BGIs): Kindergarden enlargement (work R1); Exhibition area in the main square of the Municipality (work R2); Municipal Sports Hall Infrastructure (work R3)	Two out of three of the foreseen infrastructures in the municipality of Ragalna have been constructed but cannot be funded by LIFE as finished before project start/co-funded with other EU programs, as already reported in section 6.1.3. The remaining one is on ongoing realization. The works for Municipal swimming pool completion, Palmento Arena, and sewerage system of Via dei Fiori have been proposed as alternatives to the two ones that cannot be longer cofounded with LIFE SimetoRES.	100 %

C.3 Transferability Labs For The Simeto River Agreement	Transferability Labs (TLs): sets of meetings and workshops aimed at Learning by Doing how to implement actions for CCA through BGIs. Meetings and actions for promoting the adoption of sustainable drainage solutions in other nearby municipalities. Meetings to stimulate subscription to the new Covenant of Mayors and to prepare SECAPs (Sustainable energy and Climate Action Plan).	Ragalna has adopted general urban development plan where it is mandatory to comply with hydraulic invariance in the construction of new public/private buildings. A workshop has been organized which includes a laboratory day with the local professionals and practitioners that discussed on how to modify built and to-be-built infrastructures to include the principles of hydrological invariance. See the deliverable "First video that summarizes the Community Activities" for some pictures and description of this and other "soft" activities. Other activities have been carried out then stimulating transferability, which has been obtained with some level of success (GiFLUID, PON Metro, …). This action encompassed also meetings aimed at encouraging subscription to SECAPs (Sustainable Energy and Climate Action Plans). However, as the project reached its final date, this activity could not be completed. Nonetheless, it surely remains a crucial activity to carry out during the After-LIFE plan.	100,00%
D.1 Data collection and analysis. Assessment of indicators measuring impact of actions	The aim of this action is to collect the necessary information for assessing and validating indicators. This action comprises: assessment and communication of LIFE KPIs, contribution to Climate ADAPT data base, and LCA for relevant infrastructural parts	The survey for assessing the baseline awareness of climate change and urban flooding risk and the importance of blue green infrastructures has been administered to the population and allowed to carried out a reliable assessment of such a baseline in the territory of the Simeto River Valley. The equipment for monitoring project hydrological impacts has been purchased and has been partially installed (e.g. meteorological station at S.M. di Licodia). Sewer level monitoring has not been installed as District Contract II works have to be completed. KPIs were assessed and successfully reviewed by the monitoring team. Further surveys about climate change and urban flooding risk awareness have been carried out (e.g. for Sharper Night and activities with students visiting UNICT for orientation).	100,00%
E.1 – Community Involvement And Learning	Engagement of the local community in Life SimetoRES, by involvement of schools, the Participatory Presidium, NGOs, professional associations and SMEs; Advertising LIFE SimetoRES to the local, national and international community: website and social networks; print out of brochures, booklets and layman's report	The specific objectives of the action were to implement participatory activities for engaging local communities and to produce an increase of awareness against flooding and climate change risks by teaching activities across different population age categories. These objectives have been fully achieved, in spite of some adaptations during project implementation, partially related to external factors (specifically COVID19 pandemic, which caused an interruption of activities in physical presence and a partial disengagement by the school students).	100%

		Main actions to reach the objectives were as follows: a) meetings with school directors and teachers to agree together the activities to be conducted in schools; b) Activities with students (high school level, teenagers) producing positive impacts on raising their awareness against hydrogeological and climate change risks; c) SAN BIAGIO MOBILIZES!' initiative, aimed at redefining urban spaces for climate resilience. The action included an interview campaign. This specific initiative was partially a re-direction of project activities after COVID19.	
E.2 Community workshops	Community Design of Change Adaptation measures to be implemented within the Simeto Valley. Community design aiming at inducing the construction of blue-green infrastructures and for other sites than those within actions C.1 and C.2. The action also aimed to strengthen the sense of ownership for the new infrastructure projects, as a result of the bottom-up process	Community workshops had the objective informing municipality's technical staff technicians and stakeholders about best practices for stormwater management. Several activities were carried out for achieving the objective: community workshops during 2019: i) "Workshop at the San Marco Station" ; ii) "Workshop with Community groups and associations in the city of Ragalna"; iii) "Workshop and technical visit to Sport Hall in the city of Ragalna" organized with professional orders. Moving on, other community workshops have been held during 2021, namely at the kick-off meeting of the initiative "San Biagio mobilizes", at the European Researchers' Night through an interview campaign training, and a focus group and coordination meetings in Paternò. During 2022, three community workshops were organized within the CoPED Summer School, in order to share co-analysis findings and define Urban Strategic Plan (USP) overall goals with San Biagio residents, to implement co-design activities with San Biagio residents, and to receive feedbacks by San Biagio residents about the preliminary draft of the USP. From September to November 2022, the USP was finalized by UNICT researchers. In 2023, the municipality of Ragalna hosted numerous community workshops in collaboration with the Simeto River Pact Participatory Presidium (e.g. World Tree Day 2023).	100 %
E.3 Project results dissemination and networking	Workshop focused on LIFE SimetoRES at the project start Technical dissemination activities Networking	The action mainly aimed at disseminating outside the project area (Beneficiaries/Simeto River Valley) project objectives e main concepts (climate resilience, protection against urban flooding risk and sustainable drainage), as well as project actions and results. Dissemination actions have been particularly intense during the entire project, also with webinars organized during COVID19 pandemic. Networking with other LIFE projects took place (BEWARE, METROADAPT, and LIFE RESTART). LIFE SimetoRES contributed also in dissemination activities at National and European level: https://www.mase.gov.it/pagina/life-ecomed-progettocomfort-green-expo-del-mediterraneo-edizione-2023 and "LIFE is	100,00%

		30!" campaign. The only limitation in the implementation of this action was in issues in updating the project website and social media. Dissemination was carried out also with scientific papers and conference participation.	
F.1 Project management and after-LIFE plan	Monitoring the progress of the project as well as satisfying all reporting duties requested by the EU Contracting Authority. After-LIFE plan	Project management has encountered a few issues: e.g., delays in transferring EU payments to the associated beneficiaries; delayed responses to External Monitor/ emails . These difficulties were related to several factors: limited knowledge of English within public administrations, excessive work load for municipal employees, unfamiliarity with EU project management, and COVID19 pandemic. Actions have been undertaken to solve these issues: a greater commitment by UNICT (more familiar with English language and EU project management, hiring of an external financial consultant, …) which brought to a significant improvement of project management, even though significant issues remained throughout the whole duration of the project. In spite of the issues, project management has been carried out with sufficient success in relation to the difficult context. After-LIFE plan has been prepared and submitted as a deliverable.	

Most of the results of the project are visible both current and after a certain amount of time after project implementation. For instance, while blue green infrastructures have a direct impact on flood risk mitigation, the diffusion of sustainable drainage principles have long-term effects that will be visible especially after project implementation.

As mentioned above, a project amendment was requested and approved to mitigate implementation issues related to the COVID19 pandemic. This allowed to solve the issues, at least partially. Other important deviations (not included in the amendment request) concerned the infrastructures in Ragalna municipality C2 actions. New infrastructures have been proposed for inclusion in the project, which can be, at least partially, deemed consistent with sustainable drainage principles.
Replications efforts were pursued thanks to the rich variety of dissemination activities carried out within the project (E3) and transferability labs (C3). This is partially proven by the significant number of activities on sustainable drainage and climate resilience that took place outside of the project (PON Metro, GiFluid, …). Several green infrastructures are under construction in the city of Catania, and the River Basin Authority has approved acts promoting sustainable drainage. Also, activities with communities (E1, E2) produced clear impacts in terms of climate change and flood risk awareness and improvement of behaviour during flooding events. The involvement of teachers of elementary, middle and high schools will allow replication of activities beyond the project, as once they have gained knowledge about the principles promoted by LIFE SimetoRES, they are prone to continue spreading them for the forthcoming years.
In terms of policy impact, the project aligns with EU sustainability goals, and directly supports the EU Floods Directive implementation. By implementing sustainable drainage

measures, the project contributes to the prevention and reduction of flood risks, in line with the directive's objectives. The emphasis on community participation enhances the directive's requirement for a holistic and collaborative approach to flood risk management, involving local communities in decision-making processes. Therefore, the project not only complements EU policy on sustainability but also specifically addresses the goals outlined in the EU Floods Directive.

Also the actions are consistent with the National Strategy for climate change adaptation https://www.mase.gov.it/notizie/strategia-nazionale-di-adattamento-ai-cambiamenti-climatici-0, which sees blue green infrastructures as a win-win strategy and awareness rising as an important "soft" action to pursue. Furthermore, several sustainable drainage interventions are being funded by the National Recovery and Resilience Plan (NRRP)/Next Generation Italy, nationwide and in Sicily as well. From a regional perspective (Sicily), the project actions and achievements are aligned with the sustainable drainage regulations approved recently by the River Basin Authority of Sicily District, D.G. 102/2021 and guidelines prot. n. 6834 of 11.10.2019 (https://www.regione.sicilia.it/sites/default/files/2021-07/ddg%20102%202021.pdf).

In spite of issues in project implementation, LIFE SimetoRES has successfully contributed to the general objectives set out in article 3 of the LIFE programme, stated in the Grant Agreement Form B1:

1) blue-green infrastructure have been constructed and promoted, contributing at reducing the risk of floods and act as carbon sinks. Thus blue-green infrastructures contributes "to the shift towards a resource-efficient, low- carbon and climate resilient economy"; 2) the school educational component and public/private stakeholder participation in LIFE SimetoRES project actions helped "to improve the development, implementation and enforcement of Union climate policy and legislation" and "act as a catalyst for the integration of climate objectives into other Union policies and public and private sector practice" and 3) the urban planning and design laboratories supported climate governance at the Municipality (Local) level. Thanks to these activities the local Technical Offices are now more acquainted to design blue-green infrastructures, understanding their role in climate change adaptation and flood risk mitigation. Unfortunately, it was not possible to achieve the objective of resigning the Simeto River Agreement; nevertheless the Participatory Presidium has consolidated his identity and activities also outside of the LIFE SimetoRES project (https://www.presidiosimeto.it/chi-siamo; last accessed 03/2024).

LIFE SimetoRES addressed with success the priority area of Climate Change Adaptation, and having also positive side-effects on the other three priority area of Climate Action as well as in the Environment (e.g. less impermeabilization of urban areas). More specifically: 1) The construction of blue-green infrastructures with actions C1 and C2 goes in the direction of reducing urban flooding, thus contribute to Climate Change Adaptation, thanks to the enhanced permeability and re-naturalization of the urban hydrological cycle and thus the increased infiltration that contrasts the increased runoff induced by climate change; 2) Blue-green infrastructures produce some benefits in reducing the urban heat-island effect and improve air quality as well (see EU strategy on adaptation to climate change - COM(2013)2016 final); 4) Blue-green infrastructures act as carbon sinks and thus help in mitigating climate change (See KPI values, with an estimated reduction of 600 kg/year/ha);

5) The educational component of LIFE SimetoRES allowed to increase population preparedness to climate change effects and to build up the ability to adapt; 6) The training and meeting component allowed to foster "the integration and mainstreaming of climate objectives into […] the public and private sector practice" (art. 3 of LIFE14-17 programme), consistently with the general objectives of the LIFE Climate Action. The project is not significantly biodiversity related.

5.4. Analysis of benefits

Environmental benefits are described in the following table.

Category	Benefit	Description
Direct/quantitative environmental benefits	Reduction of greenhouse gas emissions	The construction of green infrastructures produces benefits in terms of carbon sequestration. As reported in the KPI assessment (Final), these benefits can be estimated from literature data. For instance, based on a study by Zirkle et al. (2011), http://dx.doi.org/10.21273/HORTSCI.46.5.808, carbon sequestration from a green area can be estimated as 200 gC/m^2/year. Hence per hectar: 200*10000/1000 = 2000 kg/ha/year. This value is reduced to its 30% to take into account the degree of green coverage of blue green infrastructures = 2000*0.3 = 600 kg/ha/year
	Increase of climate resilience	Blue green infrastructures constructed and promoted by LIFE SimetoRES increase climate resilience as they contribute in mitigating increased flood hazard due to climate change. Activities in schools and community involvement has increase awareness of population and thus climate resilience (both immediate and future benefits)
	Impact on policies related to Climate Action	The project contributed to principles that are consistent with Climate Actions policies of the Floods Directive, the EU Adaptation strategy (sustainable drainage obtained by Nature based solutions), and national strategies and regional/local regulations
Qualitative environmental benefits	Long term sustainable technology	Materials for blue green infrastructures have in general a greater sustainability than traditional urban drainage infrastructures
	Improved planning	Planning has been improved thanks to a participatory approach (community involvement and co-design of urban planning) and by indirect capacity building to local administrations not used to manage EU-funded projects.
	Change of behaviour	Pupils and students as well as adults have been involved in surveys/interactive presentation and other important activities (mapping) to improve their behaviour in case of urban flooding. This produced an increased awareness on climate change adaptation and flood risk mitigation

Economic benefits are not the main impact of the project. However, the project created a few jobs, that in terms of FTE can be estimated in the value of 5: four from the university (post doc, highly qualified staff), another position has been created by Paternò for a qualified professional to support the accounting and administration duties related to the project implementation. Furthermore, LIFE SimetoRES contributed to the strengthening of the Participatory Presidium, with consequences in terms of visibility that created indirectly jobs.
The project produced also social benefits, in terms of social inclusion fostered by community involvement as well as with activities in schools.
Replicability, transferability, cooperation have been promoted by dissemination actions and networking.
The administrative and territorial context in which LIFE SimetoRES had to be implement proven to have some issues. We acknowledge that the new LIFE program has introduced some simplifications of administrative and financial rules from which the project implementation would have benefit at a certain degree. Perhaps some of the LIFE rules may be partially customized for areas of southern Europe to take into account of the economic and societal disadvantage respect to northern regions.

6. Key Project-level Indicators

KPI final values have been submitted to be entered in the online KPI database (https://webgate.ec.europa.eu/eproposalWeb/kpi).
University of Catania staff, coordinated by prof. Antonino Cancelliere supported by prof. David J. Peres, provided general support to the other partners for project activities to monitoring KPY.
In the following table we provide an analytical comparison with the targets at the beginning of the project.

Indicator code	Short description of indicator	Comment about targets vs. achieved at the end
1.5	Green infrastructure construction: area/length	The figures at the end have been reduced respect to those foreseen in the First Report Snapshot
1.6	Awareness raising: Persons with improved capacity or knowledge due to project actions	This figure has been reduced respect to what foreseen in the proposal to take into account actual level of project impact
2.1	Green infrastructure construction: Terrestrial extent affected by the pressure or risk addressed	These values have been modified to make them consistent with updated figures for indicator 1.5
8.2	Carbon sequestration	A more reasonable estimate has been entered (based on scientific studies of carbon sequestration by green areas)
9.3	Infrastructures targeted for climate resilience: Number of facilities	Figure has been updated to take into account of actual C1 and C2 actions degree of implementation
11.1	Website (mandatory): No. of unique visits	This figure has been reduced due to issues in updating the project website
11.2	Other tools for reaching, raising awareness of the general public: Number of events, exhibitions organized, Number of different displayed information created (posters, information boards), Number of articles in print media (e.g. newspaper and magazine articles), Publications/reports	Figures were adjusted to take into account actual project implementation degree (especially in E3 action)
11.3	Surveys carried out regarding awareness of the problem addressed (only mandatory for information and awareness projects): Individuals	This figure has been updated (increased) to take into account additional surveys carried out (e.g. for EU Sharper Night 2023).
12.1	Networking (mandatory): Laymen	This value has been reduced to take into account difficulties in distributing the layman report
12.2	Professional training or education: No. of individuals	Figures were updated based on project implementation at the end
13	Awareness raising, Jobs: No of FTE	Values at the end increased to take into account the number of contracts for additional staff hired with LIFE SimetoRES funds (mainly UNICT)