(Projects funded under the Call 2014 onwards must use this format)



LIFE Project Number LIFE15 GIC/IT/000030

Final Report Covering the project activities from 01/07/2016 to 31/12/2019

Reporting Date¹ **31/03/2020**

LIFE PROJECT NAME or Acronym FRANCA Flood Risk Anticipation and Communication in the Alps

| Data Project | | | | | |
|---------------------------------------|--|--|--|--|--|
| Project location: Italy, Trentino Alt | Project location: Italy, Trentino Alto Adige | | | | |
| Project start date: | 01/09/2016 | | | | |
| Project end date: | 31/12/2019 Extension date: NA | | | | |
| Total budget: | € 1,058,242 | | | | |
| EU contribution: | €630,383 | | | | |
| (%) of eligible costs: | 59,57% | | | | |
| | Data Beneficiary | | | | |
| Name Beneficiary: | Universita' degli Studi di Trento | | | | |
| Contact person: | Prof. Roberto Poli | | | | |
| Postal address: | Via Verdi 26, 38122 Trento Italy | | | | |
| Telephone: | 0039 0461 281 403 | | | | |
| E-mail: | Roberto.poli@unitn.it | | | | |
| Project Website: | https://lifefranca.eu | | | | |

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

Table of contents

| 1. | LIST OF KEY-WORDS AND ABBREVIATIONS | 3 |
|------|---|----|
| 2. | EXECUTIVE SUMMARY (MAXIMUM 2 PAGES) | 4 |
| 3. | INTRODUCTION (MAXIMUM 2 PAGES) | 5 |
| 4. | ADMINISTRATIVE PART | 6 |
| 5. | TECHNICAL PART (MAXIMUM 25 PAGES) | 7 |
| 5.1. | ACTION A1 DATA ORGANIZATION AND REVIEW | 7 |
| 5.2. | ACTION C1 SCENARIO BUILDING | 10 |
| 5.3. | ACTION C2 TOOLS (WEBSITE) | 16 |
| 5.4. | ACTION C3 PORTAL AND GUIDELINES FOR FLOOD RISK COMMUNICATION | 19 |
| 5.5. | ACTION C4: TRAINING AND EDUCATION | 23 |
| 5.6. | ACTION D1 MONITORING | 28 |
| 5.7. | ACTION E1 EDUCATION AND COMMUNICATION | 31 |
| 5.8. | ACTION E2 NETWORKING | 39 |
| 5.9. | ACTION F1: MANAGEMENT | 51 |
| 5.9. | 1. MAIN DEVIATIONS, PROBLEMS AND CORRECTIVE ACTIONS IMPLEMENTED | 53 |
| 6. | EVALUATION OF PROJECT IMPLEMENTATION | 55 |
| 7. | ANALYSIS OF BENEFITS | 56 |
| 7.1. | ENVIRONMENTAL BENEFITS | 56 |
| 7.2. | ECONOMIC BENEFITS | 56 |
| 7.3. | SOCIAL BENEFITS | 56 |
| 7.4. | REPLICABILITY, TRANSFERABILITY, COOPERATION | 56 |
| 7.5. | BEST PRACTICE LESSONS | 57 |
| 7.6. | INNOVATION AND DEMONSTRATION VALUE | 57 |
| 7.7. | POLICY IMPLICATIONS | 57 |
| 8. | Key Project-level Indicators | 58 |

1. LIST OF KEY-WORDS AND ABBREVIATIONS

| acronym | Full name | Steering committee |
|-----------|---|--------------------------|
| | | member and administrator |
| UNITN | Universita' di Trento, Departments of | Prof. Roberto Poli |
| | Sociology and Engineering | Elena Erbi |
| UNIPD | Universita' di Padova | Prof. Marco Borga |
| | | Monica Barzon |
| TRILOGIS | Trilogis SpA | Stefano Piffer, |
| | | Irene Facchin |
| PAT | Servizio Bacini Montani of the Autonomous | Stefano Fait |
| | Province of Trento | Gabriella Corelli |
| MUSE | Museo delle Scienze | Michele Lanzinger |
| | | Elide Rizzi |
| ABA/ then | Autorita' di Bacino delle Alpi Orientali then | Daniele Rossi |
| ADAO | Autorita' di Bacino Distrettuale Alpi Orientali | Guido Perghem, |

PARTNERS' ACRONYMS and responsible persons

ACTIONS' FULL NAMES

| acronym | Full name | Partner responsible | Action leader |
|---------|-------------------|---------------------|---------------------------------|
| A1 | Data | UNIPD | Marco Borga |
| C1 | Scenario building | UNITN | Roberto Poli |
| C2 | Tools (Website) | TRILOGIS | Stefano Piffer, Andrea Revolti |
| C3 | Portal | PAT | Ruggero Valentnotti |
| C4 | Training | UNITN | Giorgio Rosatti |
| D1 | Monitoring | UNITN | Rocco Scolozzi |
| E1 | Communication | MUSE | Claudia Lauro, Lucilla Galata' |
| E2 | Networking | ABA/ then ADAO | Daniele Rossi (replaces Antonio |
| | | | Ziantoni) |
| F1 | Management | UNITN | Francesco della Porta |

OTHER ACRONYMS

| ALM | Action Leaders Meetings |
|-----|-------------------------|
| | |

2. EXECUTIVE SUMMARY (MAXIMUM 2 PAGES)

FRANCA is a small-scale experiment aiming at increasing the resilience of communities facing climate-change related risks. By enabling better communication between administrators and citizens, by performing futures exercises with both, and by organising several dissemination and educational activities aimed to citizens and students FRANCA explores approaches to communication and anticipation that increase awareness of hydrogeological risks among multiple stakeholders. A key hypothesis is that citizens' active participation in the understanding and communication of dangerous instances is a precondition for effective land management.

The main difficulties encountered had to do with interaction between partners and government agencies, due to (a) scarce flexibility of the public administration, in particular regarding WEB publication rules. FRANCA had to comply with those rules, or spend substantial time explaining why it wouldn't and (b) elections that changed the composition of regional government in a populist direction, after 20 years of continuity.

Both problems were eventually solved. The project was completed in time, within budget, and in compliance with the performance indicators (KPIs). All deliverables and milestones have been met.

The success of FRANCA may be summarized by three facts: The FRANCA WEBSITE (Action E1) was presented by EASME as an example of good practice; FRANCA's PORTAL (Actions C2 and C3) was adopted as the official digital interface between the public and *Servizio Bacini Montani*, the agency of Trentino in charge of hydrogeologic risk prevention and alert. FRANCA was mentioned in the EASME publication *Life is good for governance:* https://ec.europa.eu/easme/sites/easme-site/files/life_is_good_for_governance.pdf

Other actions were equally instrumental to ensure the project's positive outcome: Action A1 collected a survey of methods employed to communicate risk, particularly related to hydrogeologic events. Actions C1 performed multiple future exercises with the aim of collecting feedback from three sample areas representative of three socio-ecological systems in Trentino. Actions C2 and C3 developed the digital communication tools. In particular, the portal built in Action C3 met with the approval of regional government and became its official interface with the public. Action C4 provided basic training on several hydrogeological hazard aspects (i.e. phenomenological, managerial, communicative, social and legal) and analysed some risk communication features. Action D1 and F1 provided staff support to the technical aspects of the project. F1 provided management, while D1 took care of collecting performance indicators. Finally, action E1 organized several activities such as conferences, training classes, science cafés, temporary exhibitions, educational activities with national agencies, white water regulatory bodies, and local governments in charge of risk management and prevention.

The After Life plan of Franca displays multiple opportunities to replicate the future exercises, as well as the outreach activities, export some of the digital tools developed, and transfer some of the lessons learned during the project. A follow up of the project may be needed in order to transform that potential into action, by providing the right incentive to some or all the public bodies involved in the first FRANCA project.

3. INTRODUCTION (MAXIMUM 2 PAGES)

As stated in the application, FRANCA was primarily focussed on the anticipation and awareness of flood risk, with secondary focus on information dissemination, cooperation fostering among stakeholders, and delivering training courses related to the issues composing the sub-programme for Climate Action. The project was centred on flood risks, leaving in the background other hydrological or climate change-related risks, as well as the management of emergencies. Our aim was to understand and eventually change mental and social models, and the consequent habits and behaviors, related to flood risks. To better achieve our aims, we developed a network of connections with political decision-makers, including both the regional government (the Autonomous Province of Trento) and the governments of the municipalities selected for the project's pilots. Maintaining a relevant alignment between the needs of the project and those of the political decision makers' agenda was key for the project's outcome.

A major difficulty arose after the regional elections of 2018, when for the first time in decades the regional government of Trentino changed radically. We had to reconnect ties and to explain time and again the project's purposes. Apart from minor delays, our efforts have been successful. The new government accepted to assume the management and guarantee the longterm maintenance of the portal developed by FRANCA and it is supporting our proposal to extend to other Italian regions the framework and the methodology framed by FRANCA.

The institutions composing the FRANCA consortium have been able to work together smoothly and productively. All the intended outcomes have been achieved:

- Decision makers, technicians and the citizens have been actively involved in a variety of future exercises on both flood and social risks.
- A great variety of training courses and outreach activities have been organized, including activities for engineers, architects, urban planners, journalists, and teacher, as well as as educational and dissemination activities for students and citizens.
- The portal has been developed, tested and populated with information. As scheduled, the portal has become an official tool of the Autonomous Province of Trento.
- The ideas of FRANCA have been presented extensively, both in Italy and abroad.

FRANCA's idea to systematically exploits the methods of strategic foresight and futures studies struck many as deeply innovative. As a matter of fact, we have anticipated an awareness that is presently becoming mainstream. To wit, the decision of President Ursula von Leyen to appoint for the first time a Vice-president of the European commission for strategic foresight and the recent OECD Recommendation of the Council on Policy Coherence for Sustainable Development (12.12.2019) to "use existing tools such as strategic foresight, scenario development and systems thinking approaches in the formulation and implementation of policies" confirm that we have been prescient.

The next step is to widen the experience of FRANCA in three different directions: repeat in other regions what has been done in the Autonomous Province of Trento; include a wider variety of natural risks such as fires, landslides, etc.; exploit more futures-based methods.

4. ADMINISTRATIVE PART

The **management process** was supported by two deliberative bodies: the Strategic Committee and the Action Leaders Meeting (ALM). The Strategic Committee comprised legal representatives of the partners, or their delegates. It met once every 12 months towards the end of the year and ratified the decisions taken by the ALM throughout the period. The ALM was formed by the leaders of each action. Since each Partner was responsible for one action, it was at the same time the de facto operational committee of the partners.

During the 40 months of the project, the project manager convened, organized and managed 31 Action Leaders Meetings (ALMs). ALMs were called and conducted by the Project Manager. All decisions involving multiple actions and partners were deliberated and taken at the monthly ALMs.

The agenda of each ALM was previously agreed with the Scientific Coordinator and circulated one week prior to the meeting.

Minutes of each meeting were drafted and circulated among all partners one or two days after the meeting, and at any rate before publication.

Required Actions listed in the previous meeting agenda were then reviewed at the subsequent meeting.

The first ALM took place on 2 November 2016, the last on 13 December 2019, as shown in the following table:

| ALM | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2016 | - | - | - | - | - | - | - | - | - | - | 2 | 7 |
| 2017 | 18 | 8 | 8 | 5 | 3 | - | 12 | - | 6 | 4 | 6 | 6 |
| 2018 | 15 | 6 | 7 | 3 | 8 | 13 | 11 | - | 5 | 9 | 16 | 19 |
| 2019 | 29 | 27 | 26 | - | 2 | - | 10 | 28 | 23 | 25 | - | 13 |

All agendas, minutes, presentations and relevant documents pertaining to each ALM are visible on the Project's Drive repository at the following address: <u>https://drive.google.com/drive/folders/0B2IYcPEBeFdlcmgyUW44V3h2VU0</u>

Communication with Laura Giappichelli EASME and Roberto Ghezzi of NEEMO took place through the Project Manager, in cooperation with the Scientific Coordinator. Annual review meetings took place regularly, and letters were exchanged to address irregularities and complete insufficient or information. No points remained open by the end of the project.

Two organizational changes caused **amendments of the Grant Agreement**, none of which impacted on the schedule of deliverables:

- 1) A change of ABA name and nature has been announced: ABA has changed its name and domain from Autorita' di Bacino dell' Adige to Distretto delle Alpi Orientali All activities, individuals, and resources have been transferred from a previous department of the Ministry of the Environment (ABA) to an independent legal entity, reporting to the same Ministry (ADAO). That change has been reported in an AMENDMENT issued in December 2018.
- 2) Responsibility for the D1 action: Monitoring was transferred from Francesco della Porta to Rocco Scolozzi, both of UNITN

5. TECHNICAL PART (MAXIMUM 25 PAGES)

5.1. ACTION A1 DATA ORGANIZATION AND REVIEW

NOTE: as the A1 action was concluded in 2017, this is a copy of the report already included in the mid-term report of May 2018

| Foreseen start date: Ju | ul 2016 | Actual start date: | Jul 201 | 6 |
|-------------------------|----------|-------------------------------|---------|----------|
| Foreseen end date: J | lun 2017 | Actual (or anticipated) end d | ate: | Jun 2017 |

Action A1 includes the following sub-actions:

- A.1.1 Visual Flood Risk Communication
- A.1.2 Hazard Data and Information
- A.1.3 Stakeholder Analysis

What has been done:

Deliverable for the A14 Visual Flood Risk Communication action was regularly issued in December 2016. Within this deliverable, more than 40 risk notification initiatives have been listed, reviewed and categorized, not just in Italy, with emphasis on visual communication.

The Hazard Data and Information Group (sub-action A.1.2) has developed a numerical code for the automatic analysis of climatic records (precipitation, in this case), the identification of events exceeding an intensity threshold and their synthesis in statistical parameters.

The Stakeholder analysis research group (sub-action A.1.3) has identified the interest-bearing individuals on the ground of roles and competencies for the research themes, as well as on their ability to influence public opinion. Five categories of stakeholders were identified: (a) public servants and elected officers; (b) heads of technical public services; (c) leaders of civic organizations; (d) principals of schools and vocational training institutes; (e) media editors-in chief.

An original list of 180 individuals, subsequently reduced to 149, covered the three pilot areas. Contacts were established in two steps, the first quantitative and the latter qualitative.

A web questionnaire consisting of 10 closed questions (plus personal and social information) was distributed. Its aim was to assess the stakeholders' knowledge about flooding, their opinions about prevention and handling of emergencies, and about behaviours that should be encouraged or discouraged in order to reduce flooding damage. As the web response rate was fairly modest, we decided to distribute further questionnaires following the Cati method. All in all 59 responses were collected (40% of the original list).

The overwhelming majority of refusals was explained by lack of specific interest for the subject matter: this data is obviously part of the research results. For the second step, 54 of the 59 respondents to the questionnaire (92%) were subsequently interviewed in-depth (see Table 1 below).

| professional | Public | Head of | Leader of | School | Media | total |
|--------------|-------------|---------|------------|-----------|-----------|-------|
| status | servant | Tech. | civic org. | principal | editor in | |
| | and elected | public | | | chief | |
| | officer | service | | | | |
| Trento | 8 | 9 | 5 | 4 | 4 | 30 |
| Borgo | 17 | 15 | 10 | 7 | 5 | 54 |
| Valsugana | | | | | | |
| Strembo and | 6 | 2 | 2 | 1 | 0 | 11 |
| Bocenago | | | | | | |
| Total | 31 | 26 | 17 | 12 | 9 | 95 |

Table 1 Qualitative interviews by professional category and geographical area Stakeholders'

Tracks of in-depth interviews were adjusted to match stakeholders' category and geographical area. In general, all interviews included these topics:

(a) specific role of the interviewee with regard to flooding events;

- (b) viewpoints and evaluations about flooding events;
- (c) perceived risk;
- (d) prevention;
- (e) role of the media.

The field survey was conducted by two researchers hired through specific call on a six-month contract. Summary results, analytic results, and the tools employed have been described in documents attached to this report (in Italian).

Subsequent steps: Action completed.

Four deliverables have been attached:

A11 Map and analysis of flood risk stakeholders;

A12 Reports and updated flood risk maps about the 3 study areas;

A13 Reorganized flood data archive;

A14 Review of visual flood risk communication.

Three milestones have also been achieved:

A15 Report and presentation on stakeholder analysis to the partners;

A16 Report and presentation of risk communication review to the partners;

A17 Report and presentation of flood data structure to the partners

Problems - Solutions - Delays:

No major problem was detected. Timetable: Action A1 has followed the established time schedule, without delays.

A1 PROJECT DELIVERABLE PRODUCTS

A14 Review of communication practices and guidelines for the development of Portal: Review of visual flood risk communication, published December 31, 2016 A11 Map and analysis of flood risk stakeholders June 30, 2017 A12 Reports and updated flood risk maps about the 3 study areas June 30, 2017 A13 Re-organized flood data archive June 30, 2017 A1 PROJECT MILESTONES

A16 Report and presentation of risk communication review to the partners March 31, 2017 A15 Report and presentation on stakeholder analysis to the partners June 30, 2017 A17 Hazard data and information Report; Presentation of flood data structure to the partners June 30, 2017

5.2. ACTION C1 SCENARIO BUILDING

| Foreseen start date: | Jan 2017 | Actual start date: | Jan 2017 |
|----------------------|----------|-----------------------------------|----------|
| Foreseen end date: | Dec 2019 | Actual (or anticipated) end date: | Dec 2019 |

Activities undertaken and outputs achieved

The main outcomes of this action are (1) the production of a set of strategic scenarios for each of the selected case studies, and (2) the conduction of a series of Three Horizons exercises with citizens, decision-makers and technicians.

5.2.1. STRATEGIC SCENARIOS

A set of four scenarios have been developed with different groups of stakeholders at three study areas. Such areas have been selected in the Trentino Province with the aim to include a variety of flood hazards, and a variety of socio-economic characteristics, as described in the following table.

| Study site | Main flood | Population | Extension | Territory | Economy | | |
|------------|-----------------|------------|---------------------|-----------------|---------------|--|--|
| Study site | hazard | (approx.) | (approx.) | (main land use) | (main sector) | | |
| Trento | Fluvial flood | 120'000 | 157 km ² | Urban | Services | | |
| Borgo | Fluvial flood / | 7'000 | 52 km^2 | Cropland | Manufacture | | |
| Doigo | flash flood | / 000 | 52 KM | cropiana | manaraotaro | | |
| Bocenago- | Flash floods / | 1,000 | $47 \rm km^2$ | Mountain | Tourism | | |
| Strembo | debris flows | 1 000 | 4/ KIII | wioulitalli | TOULISIII | | |

Table 1: Main natural hazards and socio-economic features of the three study sites.

The participatory building of strategic scenarios relied upon a technique created by Pierre Wack in the 1970s and popularized by Schwartz² and Van der Heijden³; also called "Shell method". This approach is based on a matrix with two uncertainty axes and results in four scenarios (Figure 1). The process of scenario building consisted four 3-hour meetings for each case, following the procedure sketched in the Figure 1 below.



The three working groups included about 10 participants each; for the Borgo and Rendena the Mayor himself actively participated, while for Trento only a small delegation of municipality representatives collaborated on behalf the mayor.

Participants covered a variety of back grounds, but only a few held specific competences in flood management. Besides, some representatives of the project partners also participated, providing a balance between flood risk experts and non-experts.

² Schwartz, P. (1991), The Art of the Long View, Doubleday/Currency, New York, NY

³ Van der Heijden, K. (1996), Scenarios: The Art of Strategic Conversation, John Wiley & Sons, New York, NY

The working groups identified several uncertainties, many in common to all tree groups; the most mentioned were: changing population (including immigration), governance ("Commitment to sustainability", "Risk management by public institutions"), individual attitudes towards the common good (individual behaviour or "Civic Attitude", "Territory Watchers"), communication, and, secondarily, the climate, the territory (in terms of spatial planning and land use).

Each group sketched four scenarios, resulting from the combination of extreme values for the most uncertain and relevant factors. The table below shows the value extremes used to compose the "scenario quadrants".

| | | · 0 1 | | |
|----------------------|--|---|--|---|
| | SCENARIO 1 | SCENARIO 2 | SCENARIO 3 | SCENARIO 4 |
| Bocenago- Strembo | Knowledge of the territory and focus on new protective structures | Lack of knowledge of territory and focus on maintenance of the existing structures | Lack of knowledge of territory and focus on new protective structures | Knowledge of the territory and focus on maintenance of the existing structures |
| Borgo | Adequate resources available to an integrated management | Adequate resources available to a conflictual management | Inadequate resources available to a conflictual management | Inadequate resources available to an integrated management |
| Trento | Participation with abundant profitable precipitation | Delegation and complaining with abundant profitable precipitation | Delegation and complaining with scarce rainfall | Participation and interest with scarce precipitation |

Table 1 The twelve scenarios, as named by the groups.

Each scenario consists of a narrative and qualitative description of the specific combination of plausible states for the selected variables (uncertain and relevant for risk management in the future); Deliverable C1.1 gives a complete description of these. The scenario narrative reports a typical day of a mayor of 2040 who faces environmental problems and plausible environmental-social dynamics in the specific scenario. Such narration served the group to imagine (anticipate) future problems and opportunities, future "friends" and "enemies", finally, possible "robust" flood risk management strategies, functional in all scenarios.



Figure 2 Extract of the scenarios developed for Trento.



Figure 3. Possible trajectories of the situation in Trento and preliminary list of strategies to move the present towards the desirable scenario.



Figure 4 . Possible trajectories of the situation in Borgo Valsugana.



Figure 5. Possible trajectories of the situation in Bocenago Strembo.

The strategic scenarios from the three cases was merged into a comprehensive version (communicated in public events in collaboration with MSUE).



Figure 6 The aggregated version of 12 strategic scenarios.

The scenarios and related narratives supported insightful discussions within each group. The groups identified the closest scenarios to the occurrence, the most important issues that would require attention from now on, but also the possible changes that could turn into opportunities if well prepared to welcome them. Interesting were the definitions of placeholders, or indicators whose dynamics indicate the approaching or realization of one scenario rather than another. A couple of examples: the dynamic of municipal and provincial budget for maintenance for Bocenago-Strembo may indicate the directions of local policy about the protective structures. The dynamic of N° volunteers of the Civil Protection for Trento may indicate an evolution towards the scenarios characterized by lacking Civic Attitude, then a development towards a community of citizens more selfless and complaining.

Beyond the specific results, the scenario building process promoted a deeper awareness, among the participants about the uncertainties and the possible future dynamics associated with the management and communication of risk.

5.2.2. THREE HORIZONS EXERCISES

Over the course of two years 2017-2018 we organized 43 focus groups involving 461 individuals. Given the wide range of possible futures expected from our sample, we decided to employ the Three Horizon framework⁴ (3H), adapting it as a facilitation tool for focus groups. Our intent was to gather perceptions and opinions about possible crisis elements in the current systems of risk communication and management by local communities. The focus groups have provided a wealth of qualitative elements describing desirable future systems, suggestions about innovations, and actions that should be entertained for approximating those desirable futures.

Each focus group lasted about 3 hours in which at least 6-7 people were invited for each session, the number of participants varied from 2 to more than 20. This was not under our control.

At the end of their presentations, participants were invited to vote on the most important or urgent concerns (elements of H1), placing 3 sticky dots (each person) on the corresponding

⁴ Curry and Hodgson, 2008. "Seeing in Multiple Horizons: Connecting Futures to Strategy". Journal of Futures Studies <u>https://jfsdigital.org/wp-content/uploads/2014/01/131-A01.pdf</u>

post-its, and on the most promising innovation or ally (H2) that could help us to reach the H3 as described by group (with 3 additional sticky dots).



7. The "Three Horizons" framework and an example of focus group result (a "3H map").

Due to the interest on the method focus groups were requested and organized outside the Trento Province in collaboration with other institutions or project (Orvieto, Cagliari, Venice, Verona, Vicenza).



Figure 8. Participant categories in the focus groups.

All post-it notes (>2000) produced in the 43 focus groups have been entirely transcribed in an excel sheet and then coded into three sets of categories (one for each Horizon).



Figure 9. Extract of focus group results: category of concerns about the possible crisis in the near future..

Beyond the results, all participants were enthused by the used approach, finding a total novelty thinking about possible futures, in groups, sharing concerns and aspiration, and trying to identify their role and allies in the responsibility for better futures and resilient communities. Many were inspired to replicate the approach for other issues (such as visioning and planning in schools, volunteer organizations, municipal government, territorial management).

5.3. ACTION C2TOOLS (WEBSITE)

Action C2 ended in February 2018 in accordance with the project gantt schedule established. The Leading of this Action was Trilogis srl, in the person of Stefano Piffer (Chief Operating Officer and Technical Manager). The activities of Action C2 (Webgis tool of the Portal/Website) consisted of the following:

During the last two months of 2016, the team of Trilogis carried out a series of technical meetings with PAT's technicians to verify the quality and characteristics of databases (opendata maps and flood risk maps) that then technicians used within the Tool to provide information on categories of hazard, level of hazard, of risk and susceptibility (Report on geodatabase structure and data accessibility). In December2016, the Portal's Beta version was released, visible only for the Life Franca working team (Published online the beta version of Flood Risk Portal).

During the first semester of 2017 the working group identified the three main Tools that has to be included in the Portal:

- Geografical visualization of various maps layers and thematic maps;
- 3D maps visualization;
- Semantic research by keywords;

The details of the graphical user interface, as well as disposition of the various commands have been improved always in agreement with PAT. Non-authenticated users (e.g. citizens and other laypeople) can visualize a set of publicly available data, navigate over the 3D terrain, explore areas of interest, access documents related to given information. Virtual billboards, flying above the virtual 3D terrain, can be used to identify point of interest or specific features worth highlighting. Upon registration, users can be able to provide the system with additional information.

The following improvements were developed before the last release of the Tool:

- Login's activation with three customized views: PUBLIC/CITIZEN (open) with the declaration option of classes (identified/used in the A1 action), EXPERT/TECHNICIAN (with username and password), and INSTITUTIONS (with username and password).
- The webgis section was re-activated with new themes and databases (selected by PAT Bacini Montani)
- Upgrade of the reporting section with the categorization of the request's object and the possibility to insert georeferenced images/video.

General Description of the Architecture of the Solution

The entire architecture of the Tool has been designed according to the classic multi-tier system (layer) with a communication paradigm based on service-oriented architecture, where each software component (service), interacts with the others through a series of messages written in a standard format. By the term service we mean not only each of the three layers but also all the components within them, which allow the integration of several computational units within a single system.

The lowest level is the Data Layer, where reside and all the different datasets (both static and as a result of the processing) within the Life-Franca Tool infrastructure. Data archives can be managed also in different ways (filesystem and database) and may reside on different machines physicists.

Moving to a higher level (from the software point of view), we find the so-called Middleware Layer; Life-Franca Tool provides a series of web services that can expose data and processing capabilities in an interoperable way through the use of a CMS manager and map server (for the supply of geographical data). The last layer of the architecture is the Layer Application; it includes the set of applications useful to access the data and services, which in Life-Franca Tool, is identifiable with the web portal and the WebGIS subcomponent. A WebGIS is basically composed of three different systems that interact with each other to allow even non-specialist users to view and interact with geographical information in a simple way, without the need for knowledge domain specifications



Tool's Architecture

It is important to note that the services are based on a number of software components heterogeneous. Most of the components are existing software solutions developed in Java, others include ad-hoc developments in C + + and Python.

General Description of the Webgis Tool

The Maps included the Webgis Tool represent the primary section of visual risk communication. An user-friendly interface facilitates its use also to non-expert users, providing qualitative and technical information on flood hazards, and the possibility, after registration, to have further information such as historical events reports, the location of the defence works, the development of the water network, the flood hazard mapping. Thanks to the available layers in background and the legends, users can easily locate the hazard areas, their hazard category and their extension on the territory.

The Webgis Tool (link to the 2D version https://wglifefranca.provincia.tn.it/lifefranca-2d/) is not just a place for consultation of technical database, maps, historical material. The citizens are actively involved in land protection and can actively contribute to the monitoring of the territory. For this reason, a "geo reporting" service is active, where citizens can report the occurrence of floods, critical events, and damages to hydraulic structures. Technicians, passionate and all citizens are therefore encouraged to visit the Portal, to explore its contents and to actively contribute to deepen the knowledge of the territory. In the medium to long term, the challenge is to raise awareness of the social community about flood hazard and to encourage people to participate more actively in prevention activities.







Tool Interfaces (Front End – Back End)

5.4. ACTION C3 PORTAL AND GUIDELINES FOR FLOOD RISK COMMUNICATION

The Service of torrent control of the Autonomous Province of Trento was the leader of the Action C3 with the support of the project partner Trilogis SRL for the integration of the outcomes of Action C2 in Action C3.

5.4.1. ACTION C3.1: PORTAL

Action C3.1 started in June 2016 and ended in June 2019 with some months of delay compared with forecasts (December 2018).

The province of Trento is a mountain region where natural phenomena frequently occur, shaping the territory. In this context, communities have to learn and understand that our territory has a natural predisposition for instability and the related hazard cannot be totally suppressed.

Website is a key vehicle for communicating with the citizens. In this contest, the flood risk portal, developed as part of the Life FRANCA project, will become the principal tool for floods risk communication in Trentino province and to provide an access-point for people interested to search for and share information on flood risk and its management. Through the *Portal*, a shared web space was created to improve two-way information communication and dissemination: technicians and decision makers can find validated and documented information to develop scenarios for understanding the evolution of the territory and, at the same time, citizens can deepen the theme of floods and can acquire knowledge about how to behave in pre- and post-emergency. This last point is decisive in order to train resilient communities able to actively participate in alluvial risk prevention policies.

Development of the flood risk portal began through the elaboration of a first 'site map', identifying some minimum requirements which the Portal should meet, considering its longevity and duration also after the project's end. A draft version of flood risk portal was organized starting from a careful revision of existing web-site by focusing on traditional 'web-site' pages (meaning with 'web-site' static informative pages) and on WebGIS oriented tools. The flood risk portal's organization and contents have been revised and integrated in order to fulfil requirements highlighted by actions A1.3 and C1, which will have been helpful in individuating stakeholders' needs. In order to facilitate the integration of the *Portal* in the Autonomous Province of Trento's data-centre, meetings were arranged involving both project's partner responsible for action C2 and referents for Autonomous Province of Trento's 'Servizio Supporto alla direzione generale e ICT'.

A first version of the *Portal* was released on-line at the end of December, 2017 (https://portal.lifefranca.eu), but it was found to be insufficiently user-friendly. The architecture of the website was therefore completely revised. The reorganization of the website content and the development of new tools, for enhancing the user experience, was done with the help of an external company specialized in web application development and system integration and communication. At the same time, the platform was updated with the last version of the institutional template ensuring the respect of the institutional-websites standards. The decision to involve a specialized company has been crucial: the architecture of the new version, available on-line from February 2019, is simple and the contents are well organized and simply explained (Figure 1).

Users can be registered on the *Portal* with different roles: citizen, freelancer technicians/company or internal technicians. According to the role, registered users have access to additional tools, data and functionality on the *Portal*, such as uploading of *Curriculum Vitae*, uploading of Publication and Research, downloading of studies and related data. Each role also gives access to different layers of information in the WebGIS.

By surfing the *Portal*, users can now easily find useful information and tools to increase their awareness and their ability to adapt to flood hazards. Many of these tools use the visual communication to facilitate user experience and generate curiosity. For example, graphs and interactive maps (Figure 2), have been developed and integrated to allow users to consult the information collected and shared by the Autonomous Province of Trento. At the same time, data are valued. In December 2019, during a public press conference, announcing the end of the Life FRANCA project, the *Portal* has been present as the new website of the Service for torrent control and, for this reason, it is now also available at the official address of the Service (<u>https://www.bacinimontani.provincia.tn.it</u>).

The WebGIS developed by the project partner Trilogis SRL has been integrated In the *Portal* acknowledging the importance of maps in visual risk communication. A user-friendly interface facilitates the use of the WebGIS to non-expert users. They can easily locate the hazard areas, their hazard category and their extension on the territory. WebGIS, indeed, collects technical spatial data on the flood theme and the possibility, after individual registration, to access to further information, such as the historical events notices, the location of the defence works, the development of the water network, the floods hazard zoning. In order to improve the two-way communication, it is important that the citizens are involved, and feel involved, in land protection and actively contribute to the monitoring of our territory. For this reason, a 'geo reporting' service of flood and/or critical events has been activated in the WebGIS. In this way, citizens become custodian of the territory in which their live.

In the medium to long term, the challenge is to raise awareness of the social community about flood hazard and to encourage people to participate more actively in prevention activities.



Figure 1. Home page of the Portal



Pagina pubblicata Martedi, 27 Novembre 2018 - Ultima modifica: Lunedi, 22 Luglio 2019

Figure 2. Interactive map and graph for the visualization of historical events on the 'Portal'.

5.4.2. ACTION C3.2: GUIDELINES FOR FLOOD RISK COMMUNICATION

Action C3.2 ended in May 2019 with some months of delay compared with forecasts (December 2018).

Nowadays, risk communication is considered as a strategic activity that has become a fundamental part of risk management. Effectiveness of communication depends not only on the accuracy of the message but also on the ease with which it is expressed and the quality of the relationship established between the actors. In order to establish a trustworthy relationship between public authorities and citizens, the communication must be transparent (i.e., risks and the related uncertainties cannot be hidden or omitted) and dialogical (i.e., open to listening and discussion). This is required to bring the institution closer to the public, thus allowing the institution to better understand the needs of citizens, plan a more effective communication strategy, promote a relationship based on trust and cooperation, and induce changes in people's behaviour.

The previous results of Life FRANCA project suggested that in the Autonomous Province of Trento the activities of flood risk communication should be improved, in particular during 'peace time'. This highlighted the need to revise the current communication strategy, making it more effective and organized. In Autonomous Province of Trento the main activities related to flood risks management and communication are carried out by the Service for Torrent Control.

Acknowledging the importance of communication and the need to train the staff, the Service for Torrent Control has written the Guidelines of risk communication with the support of an external expert on this theme, dr. Giancarlo Sturloni. For this purpose, a working group for the communication has been established within the Service. The preliminary step was the identification of the key topics and the target groups, through the segmentation of the audience into homogeneous subgroups. Knowing the profiles of the target audience is in fact required to set up the most appropriate communication strategy for each topics in terms of messages to give and communication tools to use. Risk communication should be indeed differentiated based on the type of audience. In the case, the following main categories has been considered: 1) public administrators, 2) residents in risk areas, 3) economic actors in the risk areas, 4) tourists staying in risk areas, 5) journalists, 6) technicians, 7) educators, 8) students, 9) citizens that do not live in risk areas but that spend part of their time there. The Guidelines provide useful and practical information for the non-expert members of the group, in order to improve the communication strategies of the Service.

The writing of Guidelines has been completed in April 2019 and it will support the Autonomous Province of Trento in developing a more effective communication about flood hazard and in better planning future mitigation interventions.

Another activity completed by the working group has been the realization of a short comic book with the aim to explain the activities of the Service in mitigation of floods risk; the target people to reach are students. An expert in risk communication, a scriptwriter and a comic artist have supported the working group.

5.5. ACTION C4: TRAINING AND EDUCATION

| Foreseen start date: | Jul 2017 | Actual start date: | Jul 2017 |
|----------------------|----------|-----------------------------------|----------|
| Foreseen end date: | Sep 2019 | Actual (or anticipated) end date: | Sep 2019 |

5.5.1. ACTIVITIES UNDERTAKEN AND OUTPUTS ACHIEVED

The Action C4 has been coordinated by the University of Trento - DICAM/CUDAM unit (Department of Civil, Environmental and Mechanical Engineering – University Centre for Advanced Studies on Hydrogeological Risk in Mountain Areas) and it has aimed to provide basic training on several hydrogeological hazard aspects (i.e. phenomenological, managerial, communicative, social and legal) and to analyse some risk communication features. In order to achieve these objectives, the main activities of this action have been the organization, management and deliverance of training sessions addressed to three groups of stakeholders: professional technicians, journalists, and policymakers.

In general, all the courses have been structured in order to provide a multi-disciplinary view on the hydrogeological risk involving speakers belonging to different professional fields (technicians, journalist, mayor, judge, jurist, risk communicator, sociologist ...). In particular, the main analysed topics have been:

- ✓ hydrogeological phenomena;
- ✓ how the risk events are managed (hazard mapping and planning);
- ✓ what happens during events (emergency planning and mayor's experiences);
- \checkmark the legal aspects (a judge point of view and the environmental laws);
- ✓ the communication of the natural hazards and the LIFE FRANCA portal;
- \checkmark description of the strategic scenarios.

First, a two days seminar has been organized at the Department of Civil, Environmental and Mechanical Engineering of the University of Trento, on February 7th and 15th, 2018. Concurrently, on the afternoon of the first day, we have also organized a public conference in order to reach all people interested in hydrogeological hazard not part of project stakeholders' groups. A realistic simulation of an emergency management has been one of the key elements of this seminar. The main goal of the simulation activity has been to make the stakeholders acquainted with the Civil Protection plan. We have produced ad-hoc documents including



Figure 10 The two days seminar at the Department of Civil, Environmental and Mechanical Engineering of the University of Trento held on February 7th and 15th, 2018.

maps, instruction cards, directions and all the ancillary elements to make the simulation more

realistic. For this first course edition, the poor winter weather prevented the realization of a planned fieldtrip, which was therefore postponed.

See Other Annexes C4.3 "Locandina del corso DICAM" and C4.4 "Locandina della conferenza DICAM" for a complete overview of the seminar. Videos of the presentations are available to <u>http://abouthydrology.blogspot.it/2018/02/conoscere-comunicare-gestire-il-rischio_7.html</u>. For slides see annexes C4.1.

Then, in order to reach as many people as possible, three series of "Risk Days" (RD) has been held on the Province of Trento territory, namely at Borgo Valsugana, Moena and Malè municipalities.

Borgo Valsugana municipality (TN) has been chosen as course location due to the presence of many flood protection structures. Indeed, this area is affected by a significant flood risk caused by the Brenta river. The course has been held on October 12th, 2018 and the field trip to some protection structures, organized in collaboration with the Autonomous Province of Trento - Servizio Bacini Montani, have made possible to contextualize the provided information. In addition, during the field trip, a firemen's simulation of a flood emergency management has been extremely instructive. The programme of Borso Valsugana course is shown in Other Annexes C4.6 "Locandina corso Borgo Valsugana".



Figure 11 The Borgo Valsugana course and field trip held on October 12th, 2018.

The intense debris flow event that has affected Moena (TN) on July 3rd, 2018 has been the reason why this municipality has been chosen as second location for the risk days. The course, held on November 23rd, 2018, allowed to analyse the hydrogeological risk with explicit reference to the occurred event. The field trip to the affected areas and to the slit-check dam, organized in collaboration with the Autonomous Province of Trento - Servizio Bacini Montani, has made possible to describe the causes and the effects of the occurred event directly where it has happened. Training credits from professional orders / boards (i.e. Order of Agronomy and Forestry of the Trentino - Alto Adige region, Order of Geologists of the Trentino - Alto Adige region and Board of Industrial Engineers and Graduates of the Autonomous Province of Trento) have been requested for this course. The programme and slides of Moena course are respectively reported in Other Annexes C4.7 "Locandina corso Moena" and C4.9 "Presentazioni corso Moena".



Figure 12 The Moena course and field trip held on November 23rd, 2018.

On October 2018, the province of Trento has been affected by an intense rainstorm that caused hydrogeological events throughout the territory. Since Sole Valley has been one of the most affected area, the municipality of Malé (TN) has been selected for the third risk day. During this last course, held on September 13th, 2019, the hydrogeological risk has been analysed with reference to the events that were occurred in the area. A field trip to the affected area, organized in collaboration with the Autonomous Province of Trento - Servizio Bacini Montani, has allowed the participants to better understand the hydrogeological phenomena that has affected the area. Training credits from professional orders (i.e. Order of Agronomy and Forestry of the Trentino - Alto Adige region and Order of Geologists of the Trentino - Alto Adige region) have been requested for this course. The programme and slides of Malé course are respectively reported in Other Annexes C4.7 "Locandina corso Malé" and C4.10 "Presentazioni corso Malé".



Figure 13 The Malé course and field trip held on September 13th, 2019.

For all the above-mentioned courses, we have carried out a dissemination activity (see Other Annex C4.2 "Disseminazione progetto LIFE FRANCA") that has involved all the Trentino region. The courses have been advertised through emails (addressed to all the potential stakeholders), brochures, Facebook posts, LIFE FRANCA website and portal.

In addition, on May and June 2017, we also supported Action C1 (Strategic Scenarios) in Val Rendena, one of the three pilot areas of the FRANCA project. A member of DICAM joined each of the three groups of stakeholders, during several exercises whose aim was to develop strategic scenarios. That preliminary experience provided a good understanding of anticipation techniques, as well as of the interaction with those stakeholders.

We have also collaborated in the organization of the course addressed to journalists and bloggers organised by MUSE on September 7th, 2018 at Borgo Valsugana and Trento municipalities.

5.5.2. RESULTS

The courses have provided comprehensive and specific training on hydrogeological risk analysing it from technical, managerial, emergency, legal, communicative and social points of view. The presence of speakers representing a variety of standpoints has allowed to analyse the topic from various points of view. These multi-disciplinary views have resulted in proficient interactions between stakeholders and speakers that have focused mainly on peacetime and emergency phase criticalities. The emergency experiences reported by mayors have highlighted the difficulties related to flood risk management especially for small municipalities. Usually, policymakers are unaware of their responsibilities related to the emergency management (in Italy, the mayor is the Civil Protection authority in his/her municipality), and they are not prepared to deal with extreme events. These criticalities have emerged and discussed in all courses.

The fieldtrips have been fundamental to contextualise the provided technical information, to describe the causes and the effects of the occurred hydrogeological events (mainly at Moena and Malé) and to analyse the protection structures present on the territory.

5.5.3. INDICATORS

The number of participants is the main performance indicator for this action. The courses organized within this action have been 136 participants subdivided as follow:

- ✓ 117 practitioners;
- ✓ 12 policymakers;
- \checkmark 5 citizens;
- ✓ 2 journalists.

As evident, the courses have involved primarily municipal administrators and technical professionals. Journalists have shown low interest to the course and we have not been able to involve them. The Moena and Malé courses have the largest number of participants because of the recently occurred hydrogeological events and the training credits from professional orders / boards.



Figure 14 Percentages of participants subdivided by stakeholders' type and course

5.5.4. BUDGET CHANGES

No budget changes.

5.5.5. MAJOR PROBLEMS/ DELAYS /CHANGES

Contrary to what was written in the Grant Agreement, we have decided, after several meetings with stakeholders, to organize courses addressed to all types of stakeholders. That decision was predicated on three arguments (i) at this early level of information there is no real content differentiation among different categories; (ii) we did not have a high enough participation rate to justify the organization of separate classes; (iii) the co-presence of different stakeholders results in productive interactions mainly between public administrators and professionals.

In addition, no course was organized in 2017 due to organizational problems and because of health problems by a DICAM member. The winter weather has prevented the realization of the fieldtrip for the first edition of the courses. However, the other courses have been characterised by fieldtrip

5.5.6. COMPLEMENTARY ACTION

No complementary action.

5.5.7. Perspective for continuing the action after the end of the project

The activities of the action C.4 have been designed to continue after the end of LIFE FRANCA project. The deliverable C4.1 "Course materials and logistic organization for seminars" has been specifically redacted to describe, in a detailed way, the material and the organization of the course in order to reply it in the future. The replicability of this action is also reported in the After LIFE Plan. Other courses and seminars addressed to professionals and students will be organized.

1. Annexes

- C4.1 Presentazioni corso e conferenza DICAM
- C4.2 Disseminazione progetto LIFE FRANCA;
- C4.3 Locandina del corso DICAM;
- C4.4 Locandina della conferenza DICAM;
- C4.5 Foto dei corsi;
- C4.6 Locandina corso Borgo Valsugana;
- C4.7 Locandina corso Moena;
- C4.8 Locandina corso Malé;
- C4.9 Presentazioni corso Moena;
- C4.10 Presentazioni corso Malé.
- •

5.6. ACTION D1 MONITORING

| Foreseen start date: Jun 2016 | Actual start date: | Jun 2016 |
|-------------------------------|-----------------------------------|----------|
| Foreseen end date: Dec 2019 | Actual (or anticipated) end date: | Dec 2019 |

Action D1 covers the entire project period with the main objective of monitoring and verifying the impacts of the project. Monitoring is defined by an informal working group (Monitoring Committee) that involves the project manager, the project coordinator and the referents of each partner.

Action D1 was in charge of collecting Performance indicators. They are described at section 6, below.

The set of key performance indicators on public information and awareness raising includes a survey on flood risk awareness of citizens and stakeholders (code 11.3 in Deliverable D1.4). The success goal of criterion 11.3 was to reach 2000 people by 30 November 2019. The objective was almost achieved with the collection of 1969 completed questionnaires. The questionnaire, consisting of 11 questions, had multiple objectives:

- gather information on the perception of flood risks from the five target groups, beneficiaries of the project: citizens, teachers and students, professional technicians, administrators and journalists.
- disseminate information regarding flood risks and helping the respondents think about it.
- try to catch some differences during the project between the answers at the beginning and at the end of the project, and between the lay people and experts, with the idea of partially verifying the effectiveness of the project in terms of communication and awareness raising.

The questions were organized and proposed by an online form published on the home page of the project site and proposed in the most of public and educational events of the project dedicated to population of Trento Province.

The most of respondents are young (62% is 16-30 year old), belong to groups "students and teachers" and "citizens" (not included in professional, administrator, or journalist groups), work or study in Trento, (while the remaining work or study in 172 municipalities), have a relative high level literacy (>80% with diploma or degree or higher qualification). Many of these are not working but are still studying. Among the interviewees the gender is fairly balanced (47% men, 53% women).

The most belief that floods are a real danger for Trentino and related events will become more frequent, they think that the others generally have few tools and little awareness for dealing with risks.

The respondents think that Servizio Bacini Montani and Civil Protection are the most responsible for the prevention of flood risks, while the less responsible are the citizens. Civil Protection is considered to be the most responsible for the management of flood risks, with an important role of the local Mayor and Municipality government.

About 60% of respondents had some experience with recent floods, the most mentioned was the Vaia storm, that has been in the news for weeks and has hit many valleys in the province of Trento.

The flood consequences most mentioned were damage to property and to agriculture activities, the inundation of common areas and interruption of water or energy supply.

Building close to waterways, poor maintenance of waterways and soil sealing were recognized as the most relevant factors entailing an increase the flood risks.

The most important actions to enhance the response to flood events are considered to be: dissemination of flood risk knowledge, training the citizens, pupils and families on what to do or not to do in case of flood, monitoring of smaller rivers and streams and mapping the danger on the territory.

The actions or behaviours recognised should be avoid in case of heavy rainfall include ignoring forecasts, stop near the waterways, ignoring the danger areas, moving through the valley as usual.

About 200 people, among the almost 2000 respondents to the questionnaire, personally experienced the calamitous events or provided voluntary services in the emergency services associations (firefighters, red cross, civil protection).

In case of evacuation 38% of respondents would have no difficulty in finding a temporary accommodation, while 59% would have some o considerable difficulty.

In the event of an order from the mayor to evacuate the area, 77% of people would respond promptly, 23% only after having personally assessed the situation.



Figure 15 Respondents distributed in target groups.





Figure 16 Age and gender of respondents.



Ease of finding temporary accommodation for the night in case of evacuation



Willingness to evacuate from your home in the event of an order from the mayor



5.7. ACTION E1 EDUCATION AND COMMUNICATION

| Foreseen start date: | Jul 2016 | Actual start date: | Jul 2016 |
|----------------------|----------|--------------------|----------|
| Foreseen end date: | Dec 2019 | Actual end date: | Dec 2019 |

This action proceeded overall according to schedule. MUSE was responsible for its implementation, but to ensure accuracy and reliability of the outcomes, all project partners were involved to provide scientific and technical support.

Several activities and events addressed to citizens, far more than what initially planned or than what it is mandatory to LIFE projects, were realized. Moreover, some of these activities have been included in the MUSE's permanent educational and dissemination programmes.

We had indeed a positive feedback from citizens and schools and we realised that people are keen to know about hydrogeological risks and to be engaged in the discussion about this topic. The action of Education and Communication consists of the three sub-actions:

- <u>Website</u>, local radio/video web campaign and dissemination pack
- Cultural dissemination inside and outside MUSE
- Education at school

5.7.1. ACTIVITIES UNDERTAKEN AND OUTPUTS ACHIEVED

Website, local radio/video web campaign and dissemination pack

An external graphic and web agency was selected to develop, under the coordination of MUSE, all the communication materials: visual identity, website, promotional and informative materials (logo, graphic style, promotional project brochure, noticeboards, posters etc.) and exhibition panels (Annexes: E1.1_Visual Identity LifeFranca.pdf, E1.2_Flyer LifeFranca_ita.pdf, E1.4_Flyer LifeFranca_eng.pdf).

The website was published online on November the 30th 2016 (Milestone E1.1 Project website published on line) and since then it has been regularly updated with upcoming events, relevant documents and the project progresses. The Facebook page of the project has 376 followers and it has been regularly updated with project progresses, upcoming events and relevant news.

All project partners placed a noticeboard describing the project in their offices (Annex E1.3_Noticeboard placement.pdf) and they all received a rollup banner describing the project, easy to place during every activity connected to LIFE FRANCA.





We realised a traditional press kit and gadgets connected with the project themes. All the materials produced display the LIFE FRANCA and LIFE programme logos and a reference to the financial support given by the EU. These materials were distributed to project partners, journalists, students and participants in training courses and in focus groups.

Three press conferences have been organised: the first one presenting the project on the 16th of November 2016 (Deliverable E1.1 First national press conference), the second one describing the project progresses on November the 10th 2017 and the last one presenting the main results of

the project on the 2nd of December 2019. Eight press releases were sent in occasion of the most relevant events to local press agencies, broadcasting companies, newspapers. Overall, the media

coverage of the project includes 13 articles on newspapers, 31 on websites, 10 radio and tv pieces (see the website at <u>https://www.lifefranca.eu/it/ufficio-stampa/</u> and the annex E1.17 LIFE FRANCA Press Review.xls).

The official presentation of the project to the public took place at the MUSE on the 24th of November 2016 (Deliverable E1.2 First public event as launch of the project) during the conference "Hydrogeological instability. Manage what can be avoided, avoid what cannot be managed: overview of Italy and Trentino". The event was free of charge and was attended by 158 people, among them there were many professionals (engineers, geologists, architects, journalists). Furthermore MUSE presented LIFE FRANCA in fairs and big events such as "We are Europe" (Trento, 13th - 14th May 2017) and "The European researcher's night' (September 2017, 2018, 2019): overall during these events more than 9000 people got in touch with the project themes. A description about the project progresses was published on December 2017 and 2018 in the MUSE yearly periodical "Strenna" (Annexes: E1.12_Strenna MUSE 2017.pdf; E1.22_Strenna MUSE 2018.pdf).

Ten video were produced (Milestone E1.2 First educational video published on line), describing flood hazard maps, the flood risk perception among citizens and technicians, the flood hazard characteristic of the three study areas, the approach of anticipation, future flood risk scenarios and a snapshot of the project activities. These videos were published on LIFE FRANCA YouTube channel (<u>https://www.youtube.com/channel/UC_L3eSuZ-1zyHOngmkLH1IA</u>), on the project website and some of them were linked on the Flood risk portal as well. The videos have often been shown in different occasions such as seminars, conferences and fairs.



Figure 2. Fire Department Volunteers demonstration in Borgo Valsugana

with the support of the Service for Torrent Control.

The educational visit "Communication of hydrogeological risk: defence against floods in an Alpine region", addressed to journalists and blogger, took place on 7th September 2018 (Deliverable E1.7 logistic Material and for educational visit; Annex E1.19 Educational visit for journalist programme). The visit was organised in collaboration with the University of Trento and

The Layman's Report, in agreement with monitor Roberto Ghezzi, was relased at the end of the project, instead of June 2019; this decision allowed us to describe all the project results (Deliverable E1.10 publication of layman's report ITA and ENG). It was produced both in Italian and English. 2500 printed copies (2000 in Italian and 500 in English) have been distributed to all project partners and in the municipalities of the three study areas.

The eletronic versions are free to download from the project website.



Figure 3. Introductive pages of Layman's Report

5.7.2. Cultural dissemination inside and outside MUSE

MUSE developed 3 original activities related to LIFE FRANCA themes:

- Flood warning and earthquake emergency, let's be ready
- *Floods & co.* (Annex E1.8_SOS Alluvioni&co project.pdf)
- *Geoshow: water, earth, fire*

They are all addressed to the general public and make use of museum exhibits.



F Figure 5. Flood warning: let's be ready

Flood warning and earthquake emergency was proposed to museum visitors in the exhibition gallery "Environmental risks and civil defence": it is an interactive show and role-play exercise about how to react to natural risks.

Floods & co and *Geoshow* use both the multimedia exhibit SOS Science on a Sphere of the MUSE, developed by the Noaa – National Oceanic and Atmospheric Administration. *Floods and co* was developed using both existing datasets and 7 new layers specifically designed: it is a science talk about hydrogeological risks, meteorology and hydrology, in a virtual journey from global to local issues.

All these activities took place throughout the project duration: overall, more than 22.000 museum visitors attended the talks.

MUSE developed also a series of three educational travelling exhibitions (E1.5 Preliminary program for three instant-itinerant exhibitions, E1.9 Project for three instant – itinerant exhibitions.) entitled "Nature in motion" and the related cycles of science café events (E1.6 Preliminary programme of science cafés, E1.8 Programme of science cafés), on the topics of knowledge, prevention, and anticipation of hydrogeological phenomena:

 Nature in motion. Avalanches, landslides and floods: knowing is preventing (Annexes: E1.15_NaturaInMovimento flyer.pdf, E1.16_NaturaInMovimento1 A3.pdf, E1.18_La Natura In Movimento1_panels.pdf).
 Nature in motion. Let's defence ourselves by floods (Annexes: E1.24_NaturaInMovimento2-exhibition_flyer, E1.25_La Natura In Movimento2_panels.pdf, E1.20_NaturaInMovimento2-science cafè_flyer.pdf, E1.21_NaturaInMovimento2-science cafè_A3.pdf).
 Nature in motion. Let's anticipate ourselves by floods (Annexes: E1.26_NaturaInMovimento3_ flyer3.pdf, E1.27_NaturaInMovimento3_ A3.pdf, E1.30_La Natura In Movimento3_panels.pdf).

The first exhibition was installed at the MUSE on 28th April 2018 (Milestone Opening of travelling educational exhibition). From the MUSE the exhibitions travelled in the other two LIFE FRANCA intervention areas and, upon request, in other locations as well (e.g. Ferrara University, Geological Museum of the Dolomites – Predazzo).



Figura 6, 7. Exhibitions at the Geological Museum of the Dolomites in Predazzo and at the Ferrara University

The three exhibitions are still available to any Italian institutions that ask for them.

For each one, a cycle of three Science cafés was organised. During these events, experts on hydrogeological risks, prevention and anticipation met the public in the informal setting of the MUSE Cafè and described the themes illustrated in the exhibition. Some of these science cafés were organised in collaboration with "Trento Film Festival", "ASviS – Alleanza Italiana per lo Sviluppo Sostenibile – Italian Alliance for Sustainable Development" and the "Centro Servizi Culturali", the main theatre of Trento. Overall, 9 science cafés were organised with 328 participants.



Figure 8, 9. Poster for science cafés promotion and science café "Forecast and weather alert"

Several other seminars about hydrogeologic risk adressed to a non specialist audience were organized. A cycle of three conferences regarding landsides took place in autumn – winter 2017-2018, with 214 participants overall (Annex E1.11_Le grandi frane del Trentino A3.pdf). The public dialogue "Communicating natural risks. From climate change to floods", was organized in January 2019. The debate was about the topic of the book "The communication of risk", with the author and scientific journalist G. Sturloni. (Annex E1.A23_Comunicare i rischi naturali_A3).

We organised at the MUSE also two specific events with members of the Service for Torrent Control to present the new geo-portal to students and teachers.



Figure 10. LIFE FRANCA multimedia exhibit at MUSE

Moreover, a new permanent multimedia touch screen exhibit was installed in the MUSE exhibition gallery "Environmental risk and civile defence". This exhibit allows visitor to know more about flood risk and about the LIFE FRANCA project, by accessing the geo-portal, visiting the project website and watching all the educational video produced.

The project LIFE FRANCA ended with a big event addressed to the general public: the talk "The most endangered country in the world", held by the Italian well-known science communicator and geologist M. Tozzi. The

event involved more than 250 participants (Annexes: E1.A28_Final event flyer, E1.29_Final event_A3).





Figure 11. LIFE FRANCA closing event with M. Tozzi

5.7.3. EDUCATION AT SCHOOL

The educational programme developed within the project officially started during the MUSE open days for schoolteachers, in September 2017 (Milestone E1.3 Start of educational programme), involving 445 teachers. LIFE FRANCA educational programme was also included in the MUSE catalogue of all educational activities, sent to 8500 schools and teachers (see annex E1.10_MUSE educational programme.pdf).

The teacher training course "Hydrogeological risk: shifting from emergency to anticipation" took place in October 2017 with 42 teachers enrolled (Deliverable E1.4 Project and materials for teacher training course, Annex E1.9_Teacher's course_programme.pdf).

The course consisted of 7 lessons, each one lasting about 3 hours: 4 lectures indoor taken at the MUSE and 3 field trips. According to the analysis of the evaluation questionnaires filled up by teachers, the course was very much appreciated, especially the outdoor modules (Annex E1.13_Teacher's course report and evaluation.pdf)



Figure 12, 13. Teachers' course: indoor and outdoor modules

MUSE designed 3 experimental activities addressed to secondary school students, using for each one a different educational approach (Annexes E1.5_IBSE activity project.pdf, E1.6_PlayDecide activity project.pdf, E1.7_Arduino activity project.pdf):

• *Know your territory: is there any hazard?* Students find out about the hydrogeological hazards in an alpine valley and create the related flood hazard maps. The workshop lasts 2,5 hours and the methodology used is the IBSE approach (Inquiry-Based Science Education) • Flood: how to defend ourselves?

Students discuss and choose the most efficient strategy to manage flood risk. The activity lasts 1,5 hours and it is discussion game, using the PlayDecide format. The Play Decide discussion kit was upload on LIFE FRANCA websites.

• ArduRiver

Using Arduino technology, students built and test a device to measure the river parameters useful to forecast floods. This is a more complex activity constituted of 4 lessons of 3.5 hours each (3 indoor and 1 outdoor)



Figure 13, 14, 15. Educational activities: IBSE, PlayDecide, Arduino

We first tested these activities in October 2017, during the "UNESCO International Day for Disaster Reduction", an event specifically addressed to schools. In this occasion, two more activities were offered to students: the science talk *Floods & co* (specifically adapted for students) and *Anticipating floods*, a workshop about Futures Studies.

From October 2017 to April 2018 we proposed these workshops to other schools, involving in total 202 students. According to the direct feedback of museum educators and to the evaluation questionnaires, filled up by students and teachers (Annex E1.14_Educational activities Examples of questionnaire.pdf), the workshops were widely appreciated. Teachers gave also interesting advices that were accepted to improve the activities and asked us to repeat them the next year. That's why even though the education programme was effectively carried out, we kept on involving schools on activities and events related to the project and we included the workshop *Know your territory* in the MUSE's permanent educational programme.

Problems / Solutions / Delays

The action proceeded according to what declared in the application form. There was a minor change in the deliverables related to science cafés and exhibitions: we agreed with monitor R. Ghezzi and the project manager F. Dellaporta to modify and/or to reschedule these deliverables, in order to present more coherent and complete documents.

In 2017 we presented a preliminary programme of the science cafés and of the exhibitions (E1.5 preliminary programme of science cafés, E1.6 preliminary proposal for three instant-itinerant exhibitions), while in December 2019 we presented a comprehensive description of the actual programme of science cafés and the definite project of the exhibitions (E1.8 programme of science cafés and E1.9 Project for three instant – itinerant exhibitions.).

We had some difficulties in reaching a high number of website visitors, even though the web site is well structured (it has been mentioned by the LIFE programme as a good example of LIFE websites). Further measure were taken to increase the traffic, in particular promoting the website during all LIFE FRANCA events and sending a dedicated newsletter by MUSE press office to its own list of contacts.

Long term project results

- Educational videos
- Project documents of educational and dissemination activities
- Articles published on "Strenna of Muse 2017 and 2018"
- Panels of the three exhibition *Nature in motion*
- Multimedia exhibit in the MUSE's gallery "Environmental risk and civile defence".

Replicable results

- Educational videos
- Educational activity: *Know your territory: is there any hazard?*
- Discussion kit Flood: how to defend ourselves?

After LIFE FRANCA

MUSE will continue the action E1 as stated in the application form and described in the After LIFE Communication Plan, but more importantly MUSE will carry on with natural hazards education and information, as it is one of the relevant topic of the Muse science communication and as it pursues two of the goals of sustainable development, the 17 "Sustainable Development Goals", which the UN proposed to all nations in order to achieve a sustainable future in 2030 (no. 11Sustainable cities and no. 13 Communities and Climate action).

5.8. ACTION E2 NETWORKING

| Foreseen start date: | Jul 20167 | Actual start date: | Jul 2017 |
|----------------------|-----------|--------------------|----------|
| Foreseen end date: | Dec 2019 | Actual end date: | Dec 2019 |

5.8.1. ACTIVITIES UNDERTAKEN AND OUTPUTS ACHIEVED

Action E.2 - Networking has been coordinated by the National Authority of River Basin Adige (Autorità di Bacino del fiume Adige - ABA), changed afterwards to Eastern Alps river basin district (Autorità di bacino Distrettuale delle Alpi Orientali - ADAO). Its purposes were to exchange information and methodologies with other ongoing LIFE projects and interested institutions and spreading the knowledge of flood risk anticipation.

In order to attain these objectives, the main activities of this action were organization and management of:

- meetings with ongoing Life projects;
- six working groups with interested institutions;
- six focal points in the territory of competence of ADAO;
- one national and one international conference;

5.8.2. MEETINGS AND NETWORKING WITH OTHER LIFE PROJECTS

This sub-action was planned in order to share knowledge. Several meetings occurred with 6 Life Projects: RINASCE, RII, Primes, DERRIS, MASTER ADAPT, Interreg IT - FR Proterina 3Evolution. We reinforced the collaboration, sharing and discussing the innovative approaches to reducing flood risk.

During the meetings some win - win solutions were discussed to tackle both flood risk and water quality issues, how to involve stakeholders in the project process by using

participatory models or trough "Contratto di fiume" (River Contract). A River Contract is a legal protocol for the environmental regeneration of the water catchment area and its stream.

According to the definition given by the 2nd World Water Forum, the River Contract allows "to adopt a system of rules in which the criteria of public utility, economic performance, social value, environmental sustainability have an equal role in the planning of effective solutions for the redevelopment of a river basin".

One of the most discussed arguments was the approach taken by public bodies to facilitate the communication with citizens and stakeholders in general. This cover a key role either during peace periods (no alert for floods), in the emergency phase and also to engage the communities in early warning operations and flood risk prevention. For this purpose, one working group was organized on "**Bidirectional communication tools**".

In December 2017 the National Authority of river Adige (ABA) took part as delegate of FRANCA in a round table organized by ANCI (National Association of Italian Municipalities) to discuss the existing climate change adaptation strategies and to share the information and methodologies developed in the projects.

On 18th September 2018 Dr. Rocco Scolozzi (University of Trento) attended as delegate of FRANCA the final event of Derris which focused on the collaboration between public administration and small medium enterprises.

In September 2018 FRANCA project manager Francesco della Porta visited the "Servizio della Sostenibilità ambientale e sistemi informativi of Regione Sardegna". Regione Sardegna, the lead partner of MASTER ADAPT expressed interest in the communication of methodologies

applied by Franca to flood risk. They were also interested in risk mitigation procedures specific to hydrogeological risks which have become relevant in Sardinia during the past two decades, due to the increasing violence of natural events. Also discussed was the participation in the FRANCA conferences and the collaborations between the two projects.

5.8.3. OTHER NETWORKING ACTIVITIES

In November 2017 the European Research Area for Climate Service (ERA4CS) organized a networking meeting with other projects financed under Horizon 2020. FRANCA was invited to take part to this meeting with the aim to exchange experience and build new collaborations. FRANCA networked with:

- 1. IMPREX (<u>http://www.imprex.eu/</u>)
- 2. C3S SMHI-SWICCA (<u>http://swicca.climate.copernicus.eu/</u>)
- 3. SENSES (<u>http://senses-project.org/</u>)

From 25th to 27th May 2018Franca participated in the "**Siamo Europa Festival**". Two partners were present: PAT and ADAO. During the 2017 edition of "Siamo Europa" MUSE was at the stand. The festival main focus was the European politics and its awareness among citizens. During this festival we exposed posters of projects funded by the European Union inside Trentino Region.

The "Siamo Europa Festival" was organized by Europe Direct Trentino and Centro di Documentazione Europea with the collaboration of Alcide De Gasperi foundation and Villa Vigoni.

It allowed research groups to show the visitors (mostly local citizens) their research through a lot of stands. Life Franca had its own stand (see figure above) and could therefore exhibit and spread its results.

On June 8th 2018 Franca organised, together with Altascuola (www.altascuola.org) an event in Orvieto called "Governance H30". The event



took place, and focused on the performance of a "Three Horizon" future exercise. Particularly, two scenarios were treated, the first being the management of water excess and the second the criticalities related to lack of water resource.

In September 2018 and again in September 019 Franca participated in the "Notte dei Ricercatori", in Trento. Three partners were present: MUSE (Lucilla Galatà), UNITN (Marta Martinengo and Rocco Scolozzi)b, PAT (Sebastiano Piccolroaz and Tamara Michelini). The event is organised yearly by the University of Trento. It allows research groups to show to the visitors (common citizens) their research through a lot of stands located in the museum. Life Franca had its own stand and could therefore exhibit and spread its results.

On the 28th-30th of October 2018 MUSE participated in the UNESCO conference "**Great Rivers Forum**" in Wuhan (China). The participant was Massimiliano Tardio, who is an employee of MUSE not directly involved in Franca. However, in his talk, he also spoke about

the Franca project. The talk title was "Water inside and outside the museum - The MUSE Science Museum case history". <u>https://en.unesco.org/news/2018-great-rivers-forum-converging-rivers-civilizations-sustainable-future</u>

On the 22nd of September 2019 Franca participated at the **Trento Smart City Week** The event regards digital services (Apps, Skills, social media, online services or simply devices) so pervasive in personal relationships with the Public Administration and with companies that everyone, even those who think they are not, somehow are involved. Life FRANCA took part with the talk "The defence against floods in Trentino" in a meeting open to the citizens.

5.8.4. WORKING GROUPS

Working groups were essential to collect feedbacks mainly from Italian interested institutions (MATTM, Fondazione Lombardia Ambiente, EURAC, ARPAV, ARPA FVG, ARPA EM, National Authority of river basin Po) and discuss with them the incoming results of the project Life FRANCA. Other institutions, besides those already mentioned, took part to the working groups demonstrating the increasing interest in the project.

The working groups were held in the ADAO headquarters (it was also possible to participate via video conference) and covered the following topics:

| | WORKING GROUPS DONE | | | | |
|----------|--|--------------|--|--|--|
| Date | Title | Participants | | | |
| March | Behaviour of competent authorities in case of flood risk. | 17 | | | |
| 22,2018 | How certain information about flood risk should be | | | | |
| | distributed across stakeholders, taking into account the | | | | |
| | different reactions that stakeholders might have depending on | | | | |
| | their experience, knowledge, and sensitivity? | | | | |
| May | Bidirectional communication tools. | 18 | | | |
| 12, 2018 | Particularly the following topics were addressed: | | | | |
| | • what bidirectional communication tools are being used or | | | | |
| | are under development in Italy? | | | | |
| | • what are their strengths and weaknesses? | | | | |
| | what further developments are needed? | | | | |
| May | Experiential communication | 8 | | | |
| 30, 2019 | how it can ensure that important ideas are correctly heard in | | | | |
| | a world of misinformation, distracted audiences and | | | | |
| | alternative facts? | | | | |
| May | After Life | 8 | | | |
| 30, 2019 | The discussion focused on actions that will be taken after the | | | | |
| | end of the Life project. | | | | |
| October | Participatory modeling of the socio-technological issues of | 8 | | | |
| 23, 2019 | risk anticipation | | | | |
| | Through participatory modeling and the approach to Systems | | | | |
| | Thinking, participants were invited to explore some desirable | | | | |
| | and undesirable techno-social dynamics related to | | | | |
| | anticipating flood risks. | | | | |
| November | Replicability and transferability of actions and best | 7 | | | |
| 29, 2019 | practices of the Life FRANCA | | | | |
| | The event was planned to briefly present the main outcomes | | | | |
| | and best practices of Life Franca to the interested institutions | | | | |

| and to verify the real possibility of replication of the Life | |
|---|--|
| FRANCA project actions | |

5.8.5. FOCAL POINTS

Focal points were set as permanent laboratories of participation during the preparation of the flood risk management plan (FRMP), as provided for by the Flood Directive 2007/60/EC. They acted as divulgation and consultation events and allowed the different stakeholders to acquire information about, and participate in the plan preparation. ADAO was thus able to collect a feedback about the plan. These focal points fit in the scope of Franca project, which is to promote a culture of hydraulic hazard anticipation involving citizens, experts, and administrators. It was hence decided to organise the focal points again, using the same locations and inviting the same participants as during the preparation of FRMP.

In order to reach an audience as large as possible, the focal points were always held in the afternoon (14:30 - 18:00) with the following schedule:

- 14.00-14.30: Arrival and registration of participants
- 14.30-15.15: Directive 2007/60 and Monitoring of Flood Risk Management Plan Measures.
- 15.15-16.45: **3 Horizon Exercise Esercizio di futuro 90' (dott. Scolozzi Università di** Trento)
- 16.45-17.15: FRANCA: first results and perspectives (dott. Scolozzi Università di Trento)
- 17.15-18.00: Discussion and conclusions



Figure 17 Example of focal point program.

| | FOCAL POINTS DONE | |
|----------------------|---|--------------|
| Date | Location | Participants |
| November | Verona | 19 |
| 28, 2018 | | |
| | NOTION IN TRACE LITTLE CONTINUES OF THE | |
| | | |
| November 13, 2018 | Vicenza | 29 |

| | | FOCAL PO | INTS DONE | |
|---|---|---|--|---------------------|
| Date | Location | | | Participants |
| Control of the second sec | boold of the second of th | | | |
| April 9, 2019 | Padova | | | 18 |
| | Exercise of the second | | CONTRACTOR OF CONTRACTOR | |
| April 18, 2019 | Belluno | | | 21 |
| | | Bit Bit <td></td> <td></td> | | |

| | FOCAL POINTS DONE | |
|-----------------|-------------------|--------------|
| Date | Location | Participants |
| May 22, 2019 | <image/> | 12 |
| May 25, 2019 | Palmanova | 17 |

| FOCAL POINTS DONE | | | | | | | |
|-------------------|----------|--------------|--|--|--|--|--|
| Date | Location | Participants | | | | | |
| | <image/> | | | | | | |

First National Conference (FNC)

The FRANCA First National Conference (FNC) took place April 18-20 2018 in Trento. Overall **104 participants** attended the conference that covers two full days (18,19) and half a day (20).

Speakers were the partners of Life Franca project as well as other Life projects. Several talks were also given from speakers of other institutions, as ENEA, CNR, Cineas, Consiglio dei Ministri, Civil protection. Their presentations are available on the project web site: https://www.lifefranca.eu/it/evento/convegno-2018/

Second International Conference (SIC)

The FRANCA international Conference (SIC) took place from the 21st until the 22nd of October 2019 at the Department of Sociology and Social Research of Trento University. Overall **50 participants** registered to the event.

Speakers were the partners of Life Franca project as well as speakers of other institutions, and universities as Middlesex University London (www.mdx.ac.uk), CMCC (www.cmcc.it), EURAC (http://www.eurac.edu/), OGS (www.inogs.it), ETH Zürich (https://ethz.ch/de.html), CIMA Foundation (www.cimafoundation.org).The presentations are available on the project web site: https://www.eurac.eu/it/evento/convegno-2019/

Conference attended by FRANCA partners

As reported in the "Technical Application Forms, Part C - detailed technical description of the proposed actions", FRANCA had planned to attend several conferences. The table below summarizes the conferences to which the different partners of the project took part, the additional conferences where the project FRANCA was presented (also if not required by the Action E.2 Networking).

During the period 2017-2019, 27 conferences were attended; application to some conferences was not successful because the subject was deemed not pertinent.

Additional two conferences will be attended in the 2020, first year of the After Life (Table 2 and Figure 1).

| | CONFERENCES | | | | | | | |
|----|-------------|--------------------|---|---------|-------|----------|--|--|
| ID | Partner | Date | Title | Planned | State | Note | | |
| C1 | UNITN | Mar 13-14, 2017 | EUSALP Building green infrastructures for an integrated/sustainable water management | NO | IT | Attended | | |

| | CONFERENCES | | | | | | | |
|------------|-------------------|--------------------|---|---------|-------|--|--|--|
| ID | Partner | Date | Title | Planned | State | Note | | |
| C2 | UNITN | Mar 29-30, 2017 | Fondazione Museo storico del Trentino Difendersi dalle alluvioni - Dalla storia alla gestione dell'emergenza | NO | IT | Attended: talk by Scolozzi "Comunicazione e anticipazione del rischio per una gestione condivisa" | | |
| C3 | MUSE | Apr 7, 2017 | University of Camerino CONVENTION: Exposure of the Italian cultural heritage to environmental risks | NO | IT | Attended: talk by Dr. Lanzinger "Environmental risks as a mean of knowledge, awareness and development of a new territorial identity tale" | | |
| C4 | PAT | May 4-5, 2017 | ICECC 19th Int. Conference on Environment and Climate Change | YES | UK | Submitted but not accepted because the subject was non pertinent. | | |
| C5 | UNITN | May 24, 2017 | Climate Change Adaptation: le esperienze e le opportunità dei progetti LIFE in Italia | NO | IT | Attended | | |
| C6 | Trilogis UNITN | Jun 01, 2017 | Order of the Engineers of Trento Training Day | NO | IT | Attended | | |
| C 7 | MUSE | Jun 17, 2017 | ECSITE ANNUAL CONFERENCE The European network of science centres and museums | NO | Р | Attended: panel "Natural History: make a difference in local and global debates" | | |
| C8 | UNITN | Jun 21-22, 2017 | LIFE Platform Meeting Climate Action in Urban Areas | NO | ES | Attended | | |
| C 9 | UNIPD | Jul 20-21, 2017 | ICFRIR 19th Int. Conference on Flood Recovery, Innovation and Response | YES | USA | Submitted but not accepted because the subject was non pertinent. | | |
| C10 | Trilogis | Sep 11-12, 2017 | OGC Technical Committee of the Open Geospatial Consortium | YES | | Submitted but not accepted because the subject was non pertinent. In 2018 the OGS conference wasn't organized; for this reason, was replaced with the conference C13. | | |
| C11 | UNITN ABA | Oct 27-28, 2017 | Fondazione E. Mach, Hub Innovazione Trentino, Centro Agricoltura, Alimenti e Ambiente - C3A, LIFE- FRANCA CLIMATHON Trentino | NO | IT | Attended | | |
| C12 | UNITN | Nov 8-10, 2017 | ICA - II Int. Conference on Anticipation - II | YES | UK | Session 7 - Model of the future Presentation titles (Poli) : Where internal model come from? Session 14 - Anticipation, Public Crisis and the Voice of the Past Presentation titles (Scolozzi) : System thinking and future thinking about the commons at school: a research action on | | |
| C13 | Trilogis | Nov 29-30, | GICases | VES | Т | Attended. During the GICases meeting, a new conference in which FRANCA project will be presented was proposed. | | |
| 015 | THOEIS | 2017 | Greases | 115 | 11 | This conference took place in Lisbon on May 28-29, 2018 (C15 in this table) | | |
| C14 | Trilogis UNITN | May 18, 2018 | MHYMESIS | NO | IT | Final conference of the MHYMESIS project | | |
| C15 | Trilogis | May 28-29, 2018 | GiCases | NO | РТ | Attended | | |
| C16 | Trilogis | 2018 | ECbN Europe Challenge by NASA | YES | IT | Not attended because the subject was deemed non pertinent. | | |
| C17 | FRANCA | Mar 13-14, 2018 | LIFE Platform Meeting Climate Change Adaptation in | NO | SP | Not attended | | |

| | CONFERENCES | | | | | | | |
|-----|--------------|--------------------|--|---------|-------|--|--|--|
| ID | Partner | Date | Title | Planned | State | Note | | |
| | | | Agriculture in the Mediterranean Region | | | | | |
| C18 | UNITN | Sep 12, 2018 | 8th International Conference on UNESCO Global Geoparks | NO | IT | Attended: talk by Scolozzi: "Futures exercise with local community: approaches and first results of the project LIFE FRANCA | | |
| C19 | PAT | Sep 19-21, 2018 | ESONDA | NO | IT | Attended: talk by Valentinotti "European Life Franca Project: Strategies for flood defense in Trentino: an internet portal for the citizens" | | |
| C20 | UNITN ABA | Oct 27-30, 2018 | 2nd International Conference Citizens Observatories for natural hazards and Water Management - COWM | NO | IT | Attended: talk by Scolozzi "Community-based development and use of strategic scenarios to anticipate and communicate flood risks: the case of LIFE Project FRANCA" | | |
| C21 | MUSE | Oct 28-30, 2018 | UNESCO 2018 Great Rivers Forum: Converging Rivers Civilizations for a Sustainable Future | NO | RC | Attended: talk by Tardio "Water inside and outside the museum -The MUSE Science Museum case history" | | |
| | | | Symposium on "Climate | | | attended with the talk "Communication and anticipation of flood risk at community level: innovative aspects of the LIFE project FRANCA" | | |
| C22 | UNITN PAT | Feb 25-26, 2019 | Coping with and managing hazards in the context of a changing climate" | NO | IT | The presentation reflected on the uncertainty of the use of depth–duration–frequency curves, based on historical ground observations of precipitation, to estimate the return period of short, intense and localized rainfall events. In particular, considering the ongoing climate change. | | |
| C23 | UNITN | Jun 12-13, 2019 | Constructing Social Futures – Sustainablity, Responsibility and Power | NO | FI | Will be attended with the talk: "Three Horizons" for community anticipation of flood risks | | |
| C24 | MUSE | Jun 12-15, 2019 | 3rd International Conference of UNESCO's Global Network of Water Museums | NO | SP | Attended: talk by Lucilla Galatà "Changing the World with Water Awareness Education". How WAMU-NET can support water museums to disseminate SDGs" | | |
| C25 | UNITN | Jul 1-3, 2019 | Marchi Lecture and PhD Days 2019 | NO | IT | Attended: talk by Marta Martinengo "The project LIFE FRANCA" | | |
| C26 | UNIPD | Jul 8, 2019 | Summer Institute on Sociohydrology and Transboundary Rivers | NO | China | Talk by Prof. Marco Borga | | |
| C27 | TRILOGIS | Jul 31, 2019 | Final Conference Interreg project CLEVER CITIES | NO | RO | Attended: talk by Andrea Revolti "General presentation of LIFE FRANCA PROJECT" | | |
| C28 | UNIPD | Sep 25, 2019 | Summer School on extreme events and energy transition JRC – ISPRA | NO | IT | Attended: talk by Prof. Marco Borga " Defining space-time dynamics of social and physical processes in high impact weather events " | | |
| C29 | PAT | Oct 24, 2019 | Le Mappe di Pericolosità e Rischio. Tra nuove conoscenze e nuove incertezze. | NO | IT | Presentation of the evolution of the management and the regulatory framework concerned flood hazard in Trentino. The change from the defence centered philosophy to the new land-use planning approach was presented. In particular, the at-tention was put on the flood hazard classification and its repercussions for the Floods Directive (2007/60/EC) implementation. | | |
| C30 | PAT | Oct 29, 2019 | La tempesta Vaia in Trentino, un anno dopo. Eventi, interventi, insegnamenti. | NO | IT | Presentation of the response of the alveo-slope system to the flood of end of October 2018, which has severely affected Trentino, focusing on the concepts of prevention, thus on the activities of land use management and communication. | | |
| C31 | UNIPD | Oct 30, 2019 | New Generations Festival | NO | IT | Attended: talk by Prof. Marco Borga | | |
| C32 | UNITN | 2019 | ICA - III Int. Conference on Anticipation - III | YES | | Attended: talk by Prof. Roberto Poli and Rocco Scolozzi | | |

Table 2: conferences attended (or to be attended) by Franca partners.

| | FUTURE CONFERENCES | | | | | | | | | | |
|----|--------------------|-------------|--|---------|-------|--------------------|---|--|--|--|--|
| ID | PARTNER | DATE | TITLE of the EVENT | PLANNED | STATE | PARTECIPANT | NOTE | | | | |
| C1 | UNITN | Jan 23 2020 | CLICCS Convent Anticipating Changes: Flood Risk Anticipation and Communication in the Alps | NO | DE | Prof. Poli Roberto | Will be attended | | | | |
| C2 | UNITN | Mar 7, 2020 | Master Governance delle reti di sviluppo locale | NO | IT | Prof. Poli Roberto | Percezione e comunicazione del rischio alluvionale - Il caso del progetto europeo LIFE FRANCA " | | | | |

Table 3: conferences to be attended in the year 2020, first year of After Life.



5.8.6. RESULTS

FRANCA networked with other projects, organizing specific moment of networking and attending the meetings organised within those projects with presentations or poster of FRANCA.

Through the working groups FRANCA was able to collect suggestion and strengthen the collaboration with other institution, Life and Interreg projects and public bodies.

The "Guidelines for regional strategies for adapting to climate change", developed by the Sardinia region in the context of Life project MASTER ADAPT, reports the mainstreaming of anticipation methods (proposed by Life FRANCA) in the future governance of climate extremes: https://masteradapt.eu/?smd_process_download=1&download_id=1508, p. 47

. On 27 November 2019 the Environment Councilor of Sardinia Region, as national coordinator of the Environment and Energy Commission, brought to the national political meeting a report on the above-mentioned Guidelines. All the present Regions (Sardinia, Lombardy, Emilia Romagna, Veneto, Friuli VG, and Piemonte) have shared the proposal considering it useful in the future development of the National Plan for Adaptation to Climate Change. Through the collaboration with the Sardinia Region, the best practices of Life FRANCA could support the development of the National Plan for Adaptation to Climate Change.

On Friday 29 November the last meeting of the collaboration network was organized. At the meeting, held at the Eastern Alps River Basin District, were present the Autonomous Province of Bolzano, the National Civil Protection besides the partners of the Life FRANCA. The event was planned to briefly present the main outcomes and best practices of Life Franca to the interested institutions. The **Province of Bolzano** has expressed interest in a further collaboration within the Interreg Italy - Austria project RiKoST. The representative of the **National Civil Protection** proposed to organize a divulgation event at the headquarters. For more details see the E2.6 deliverable.

Other future results could be the strengthen of the collaboration between interested institution mentioned in the above paragraph nr 3 and the partners of Life FRANCA.

1.1.1. BUDGET CHANGES

No budget changes.

1.1.2. MAJOR PROBLEMS/ DELAYS /CHANGES

During the first year of the project (2017) an internal reorganization of the National Authority of River Adige has prevented the organization of the firsts working groups. This delay was recovered during the years after (2018 - 2019).

1.1.3. COMPLEMENTARY ACTION

No complementary action.

1.1.4. Perspective for continuing the action after the end of the project

A Replicability and Transferability Plan was defined for the project and its actions (E2.8) comprehensive of Memorandum of Understanding which could be signed by the interested institutions and public bodies.



5.9. ACTION F1: MANAGEMENT

Action F1 ends in March 2020 with the delivery of this report. It was supposed to start on September 1, 2016 but was delayed by a couple of months because the Manager had to be hired. Action F1 started effectively in October 2016. Actual Hours spent on the action were 62% of budgeted hours.

Leading contributors to the Action have been Roberto Poli (scientific coordinator) and Francesco della Porta (project manager and action manager).

The activities of Action F1 (Management) consisted of the following:

- a) Coordination of relations between the UNITN project leader and its partners and among the partners themselves.
- b) Coordination of all relations between the project leader, the committee, the External Monitor (Roberto Ghezzi at NEEMO) and the project's responsible at EASME / LIFE (Laura Giappichelli and Angelo Salsi)
- c) Official communication with the Commission including project amendments
- d) Solicitation, timely collection and final review of drafts of all the deliverables created by the partners
- e) English-translation of some of the partners' deliverables
- f) Assistance in the organization of project events
- g) Interaction with the partners for financial and resources reporting issues
- h) Collection of records and documentation of the human resources employed
- i) Authoring of progress and final reports and of the AFTERLIFE PLAN

Overall, all projects' objectives have been met on time. At times the project has run behind schedule. For instance there have been some glitches in the publication of the Portal, which required one additional year, as well as in the collection of data entry from citizens. However, by the end of the project all required data was collected and the relevant web tools were published according to specifications.

The portal developed by TRILOGIS and SERVIZIO BACINI MONTANI (PAT) during the project <u>https://portal.lifefranca.eu/</u> has become the official portal of the of the Trento Autonomous Province for Flood risk management. At this link it is possible to find a complete report of the project activities, prepared by the Servizio Bacini Montani, as well as the complete list of communications between citizens and the institution.

The website that MUSE has built for the <u>www.lifefranca.eu</u> project has been mentioned by EASME as an example of good practice in 2019.

In the dealings with the Commission and the External Monitor, the project manager organized and drafted the almost totality of contractual and technical communication in the first place. The scientific coordinator Roberto Poli reviewed edited and signed each official document. Elena Erbi of UNITN was responsible for the financial part. All reports describing work in progress have been written by the project manager

A particularly time-consuming activity for the project manager was the management of the timesheets of UNITN participants. At first the Commission did not accept the timesheet format adopted by UNITN. On the other hand, UNITN did not consent to a change in its format. Therefore, each contributor's timesheets, every month, have been manually transposed into a

format acceptable to the Commission. At the end of a long diatribe, the Commission accepted the UNITN timesheet format.

Responsibility for the timely transmission and correct compilation of the timesheets of the many UNITN contributors remained in the head of the project manager for its entire duration The accounting of the resources used per action by UNITN contributors and other partners was another responsibility of the project manager.

The project manager's contract in question ended on 31 December 2019. Some reporting and reporting activities will continue until March 31, 2020. The project manager will participate on a voluntary basis in the closing activities in times and ways compatible with his other activities and logistical commitments.

5.9.1. MAIN DEVIATIONS, PROBLEMS AND CORRECTIVE ACTIONS IMPLEMENTED

The main **Technical issue** was a delay in the publication of the FRANCA Portal and the collection of messages from citizens. The former occurred because servers and bandwidth were not provided from the Provincia di Trento administration in time to meet FRANCA's timeline. Furthermore, impending political elections (resulting in a change of political leadership) have delayed the authorization to release the regional hydrogeologic risk maps. As a result, the entire interactive section of the project was delayed, but not reduced in scope. Some related deliverables and actions were delayed as well.

C3.2 has been renamed: The new title is Guidelines for communication, rather than Guidelines for risk mapping. In fact, that was the intended meaning from inception.

E1.10. Training (action C4) has been produced and tailored for diverse audiences.

Deliverables and Milestones have been completed according to plans and, with a few exceptions, all deliverables were on time.

The main **Financial issue** is a minor reshuffle between personnel expenses and external costs. Expenses for Travel, External Assistance and Other Costs were lower than budget, while personnel costs were higher than budget. Here are the differences in EUR, and the percent value of changes (within each class of cost). Overall costs were 9,724 EUR higher. The 2% rule was not infringed by the change.

| personnel cost | 4.7% | € 39,530.39 | | | |
|------------------|------|---------------|--|--|--|
| other costs | -21% | € (30,421.40) | | | |
| Overheads | 1% | € 615.59 | | | |
| total difference | 0.9% | € 9,724.58 | | | |

The partners most contributing to the changes were:

- a) ADAO, with a <u>reduction</u> of personnel cost of EUR 22,000 due to the late hiring of an external engineer. ADAO also underspent by EUR 7,620 in the organization of conferences.
- b) All other partners together overspent in personnel EUR 61,088.

Increased number of hours by non-employed personnel was the leading cause of deviation. Overall cost of labor non-employed was lower than budget. Increase of unit cost of labor employed was negligible, as was the increase of time by employed personnel.

In other words, it appears that partners choose to internalize activities that were originally meant to be outsourced by hiring additional temporary manpower, at an hourly cost comparable to budget. Here is a comparison of personnel cost per action (actual to budget). Fully detailed calculations are available upon request.

| Personnel Cost per action DIC 31 2019 | BUDGET TOTAL | | | actual as of DECEMBER 31, 2019 | | | |
|--|--------------|------|-------|--------------------------------|-----------|------|-------|
| | EUR | DAYS | HOURS | | actual | % of | % of |
| Action number and name | | | | actual EUR | hours | EUR | HOURS |
| Action A1 Data Organization and review | 110,963 | 565 | 4520 | 136,502.70 | 5,504.20 | 123% | 122% |
| Action C1 Strategic Scenarios | 126,311 | 781 | 6248 | 124,474.76 | 3,691.20 | 99% | 59% |
| Action C2 Tools | 39,821 | 180 | 1440 | 35,296.37 | 1,398.61 | 89% | 97% |
| Action C3 Portal | 72,489 | 394 | 3152 | 98,618.28 | 3,697.13 | 136% | 117% |
| Action C4 Training and Communication | 108,598 | 602 | 4816 | 91,671.97 | 4,528.30 | 84% | 94% |
| Action D1 Monitoring of impact | 47,413 | 238 | 1904 | 25,862.94 | 955.08 | 55% | 50% |
| Action E1 Education and Communication | 94,022 | 486 | 3888 | 138,529.71 | 6,067.00 | 147% | 156% |
| Action E2 Networking | 103,712 | 532 | 4256 | 93,134.17 | 3,470.99 | 90% | 82% |
| Action F1 Project Management | 138,906 | 845 | 6760 | 137,674.49 | 4,284.45 | 99% | 63% |
| TOTAL | 842,235 | 4623 | 36984 | 881,765.38 | 33,596.95 | 105% | 91% |

The actions reporting overcommitment of hours are highlighted in the table above. They are:

- a) Action A1 Data Organization and review: Actual hours: 5,504 Budget hours: 4,520. The additional cost in EUR is 25,500
- b) Action C3 Portal Actual hours: 3,697 Budget hours: 3,152. The additional cost in EUR is 26,100
- c) Action E1 Education and Communications: Actual hours: 6,067 Budget hours: 3,888.00The additional cost in EUR is 44,500. The action leader, MUSE, replaced 15,300 EUR of External Assistance with in-house labor.

All other Actions were at or below budget.

The main **Organizational issue** was the change of name and legal status of ABA, which became ADAO, as reported above in section *5 administrative part*

Neither the Organizational issues, nor the Financial or Technical issues impacted on the final outcome of the Project.

6. EVALUATION OF PROJECT IMPLEMENTATION

Three actions are significant for the novelty or impact of the methods employed: C1 Scenario Building, C3 Portal, and E1 Communication.

Within C1 numerous categories of citizens were engaged in two kinds of future exercises: Scenario Building and Three Horizons. Overall, techniques developed in the realm of future studies were found to be congenial to raising citizens' awareness towards hydrogeologic risk. The exercises performed attracted interest by neighbouring regional administrations. A number of enquires has been received for the replication of future exercises, as the tools were deemed particularly well suited to involve and prepare the public for high impact events whose occurrences are difficult to predict.

C3 required the creation of a portal for interactive communication between the public and the local government agency in charge of hydrogeologic risks, named *Servizio Bacini Montani*. The FRANCA portal has now been adopted by *Servizio Bacini Montani* as the institutional digital tool for communicating to and interacting with the citizens of Trentino.

E1 One main finding of the project was that risk information should be tailored for different audiences. A taxonomy of audiences has been developed by Action A1 and a communication manual has been provided by action C3 (the Guidelines for flood risk communication). The Communication Action E1 has generated and experimented a number of tools geared towards multiple audiences. Action Leader MUSE, a science museum, was well equipped for the task.

Results achieved in those actions were in line with expectations or were better than expected. Most of the results were visible during the project's life, as they translated into public policy within the Autonomous Province of Trentino. In particular, the FRANCA Portal became the official portal of Servizio Bacini Montani, and the *Carte del Pericolo* (maps of flood risk) have been released by the regional government and are no accessible online.

7. ANALYSIS OF BENEFITS

7.1. ENVIRONMENTAL BENEFITS

As FRANCA was a project on communication, there are no benefits measurable through Key Project-level Indicators (KPIs). However, all KPIs were met.

7.2. ECONOMIC BENEFITS

In the long term a more careful management of the territory with the participation of more active citizens will result in cost savings from reduced damages of hydrogeologic events. It is very difficult to estimate whether those savings will offset the increase in number and size of extreme events due to climate change. It is however highly plausible that damage resulting from hydrogeologic events will be higher, should the local agencies not implement the methods studied and proposed by FRANCA.

It is foreseeable that additional tasks in the Servizio Bacini Montani will generate new Full Time Equivalent.

Partner Trilogis, which was in charge of developing 2D and 3D risk interactive maps is a private for-profit software company. Thanks to the experience and the reference of FRANCA> Trilogis will be able to offer similar rsik interactive maps to other regional governments in Itay and abroad.

7.3. SOCIAL BENEFITS

Active involvement of old and new members of the community in managing hydrogeologic risks will strengthen social cohesion, and educate citizens to listen and debate each other's opinion, therefore advancing practices of deliberative democracy. In addition experimenting direct communication between citizens and public administrators will reinforce trust, and will improve efficiency along the administrative chain of responsibility.

One notable result of the future exercises was finding that the mayors's legal responsibility for the management of alerts and emergencies is non protected by the judicial. That may distort the mayors' behaviour, for instance generating risk aversion towards false positives, resulting in systematic underestimating the probability of dangerous events. A better

7.4. REPLICABILITY, TRANSFERABILITY, COOPERATION

The project is highly replicable.

After Life plan lists some opportunities for replicability and cooperation with other regional Governments. In particular, MUSE is very interested in carrying on the outreach activities developed within the LIFE FRANCA project and in fostering cooperation with other institutions. The mission of MUSE is to communicate science and to engage with climate change related issues, with particular attention to the *UN Sustainable Development Goals*".

Two private companies will have an opportunity to benefit from replicas of the project, thereby inheriting the knowledge developed by FRANCA: Trilogis and Skopia. Trilogis is the FRANCA partner that developed the risk maps onlie. Skopia is a startup of the University of Trento, led by FRANCA's scientific coordinator Prof. Poli. Skopia specializes in future studies, and is particularly versed in applying the FRANCA methods (such as scenario building and the Three Horizons) to a multiplicity of risk environments.

7.5. BEST PRACTICE LESSONS

The interaction among various members of the public (administrators, experts, voluntary services, citizens) and government agencies might benefit from the experiences of FRANCA. Although the experience is probably a long way from being a best practice, it is certainly a good foundation.

7.6. INNOVATION AND DEMONSTRATION VALUE

Although the use of future exercises for the analysis of perceived hydrogeologic risk, and to raise citizens' awareness is probably not new, the methods employed by FRANCA are certainly innovative for Italy. Partners in other LIFE projects have expressed an interest for the approach used by FRANCA and the experimentation with scenario building and three horizons exercises.

7.7. POLICY IMPLICATIONS

The experimentation conducted by FRANCA involved a number of government administrative agencies but is probably below the threshold of legislative initiative. Nevertheless, Interaction with the Government of Trentino has demonstrated the need to involve elected representatives in the development of risk management and risk prevention projects, particularly in light of the change of political representation during the government.

One important finding of the project has to do with the personal legal liability of mayors who are in charge of communicating emergencies and coordinating intervention. Policy action should be taken to encourage new legislation that would limit the legal responsibility of mayors, in order to encourage them to take full frontal responsibility in the coordination of public action in emergencies.

8. Key Project-level Indicators

Here below the state of the art of KPI at December 31st 2019 is presented, using the new and previous codes, for further details see the related Deliverable.

| key indicators | New Code (KPI 2.0) | Old Code (V.2015) | descriptor | 12/31/2019 | planned at the end of project |
|---|-----------------------|----------------------|--|------------|-------------------------------------|
| Duty holders covered | 10.1.1 | 11.1.1 | no. of subjects involved in project objectives | 13 | 12 |
| Supervisory/enforcement bodies involved | 10.1.2 | 11.1.2 | no. of institutions | 2 | 2 |
| Risk-based compliance/enforcement system put in place/completed | 10.1.3 | 11.1.3 | no. of systems | 1 | 1 |
| Involvement of non-governmental organisations (NGOs) and other stakeholders in project activities | 10.2 | 11.2 | number of stakeholders involved | 9 | 2 |

Table 4. KPI concerning the Governance.

Table 5. KPI concerning the information and awareness

| key indicators | New Code (KPI 2.0) | Old Code (V.2015) | descriptor | 12/31/2019 | planned at the end of project |
|-------------------------------|-----------------------|---|---|-----------------|-------------------------------------|
| No. Downloads | | 12.1.3 | number of visualizations for web audio and video | 2.422 | 2.000 |
| No. of individuals | | 12.1.2 | number of unique visitors | 4.396 | 2.000 |
| No. of unique visits (clicks) | | | number of page visualizations | 26.068 | 20.000 |
| | | | Facebook followers @ | 376 | |
| Events/exhibitions | | 12.1.4; 12.1.9; 12.1.10; 12.1.11 | (*only refers to journalists in press conferences) | 62.535 (*88) | 50.000 (*20) |
| Surveys regarding awareness | 11.3 | | number of respondents | 1989 | 2.000 |

Table 6. KPI concerning the capacity building

| key indicators | New Code (KPI 2.0) | Old Code (V.2015) | descriptor | Beginning of project | December 31, 2019 | (planned) End of project |
|------------------------------------|-----------------------|----------------------|---|-------------------------|----------------------|--------------------------|
| | 12.1 | 12.1.6 | participants | 0 | 689 | 1000 |
| Networking (mandatory) | | | N ° of conference in which the project was presented | 0 | <mark>14</mark> | <mark>16</mark> |
| | 12.2 | | participating professionals | 0 | 625 | 1.400 |
| | | 12.1.5 | Field trips for journalists | 0 | 13 | 20 |
| Professional training or education | | | Seminars (Science cafè) | 0 | 328 | 500 |
| | | 12.1.11 | School oriented activities | 0 | 8535 | 10.000 |
| | | | Other training or educational events for teachers | ND | 489 | ND |