THEMATIC SUB-CLUSTER 2.2
RISK PREVENTION AND DISASTER RESILIENCE
D.M.5.5 SHARED PROJECT PROPOSAL

Lead Institution	National Research Council of Italy (MUHA project 952)
Reviewers	Giulia Marzani (ADRISEISMIC), Angela Santangelo (ADRISEISMIC)
Lead Authors	Emanuele Romano (MUHA), Anna Bruna Petrangeli (MUHA), Jessica Amadio (MUHA)
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Contributors – name and surname	Institution
Giulia Marzani, Angela Santangelo, Lorenzo Stefanini, Giorgia Predari	UNIBO
Emanuele Romano, Anna Bruna Petrangeli, Jessica Amadio	IRSA - CNR
Athanasios Kalogeras, Christos Anagnostopoulos	ATHENA Research Center
Gino Verrocchi	COPE

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Contents

1. Introduction

The Thematic Cluster Coastal and Marine Environment management is composed of three sub-clusters of which the n. 2.2 is focused on risk prevention and disaster resilience.
The aim of this sub cluster is to take advantage and share the experiences gained from the ADRION projects involved, which are MUHA, ADRISEISMIC and TransCPEarlyWarning (Figure 1), in order to improve the risk prevention and increase disaster resilience in the Adriatic Ionian area.

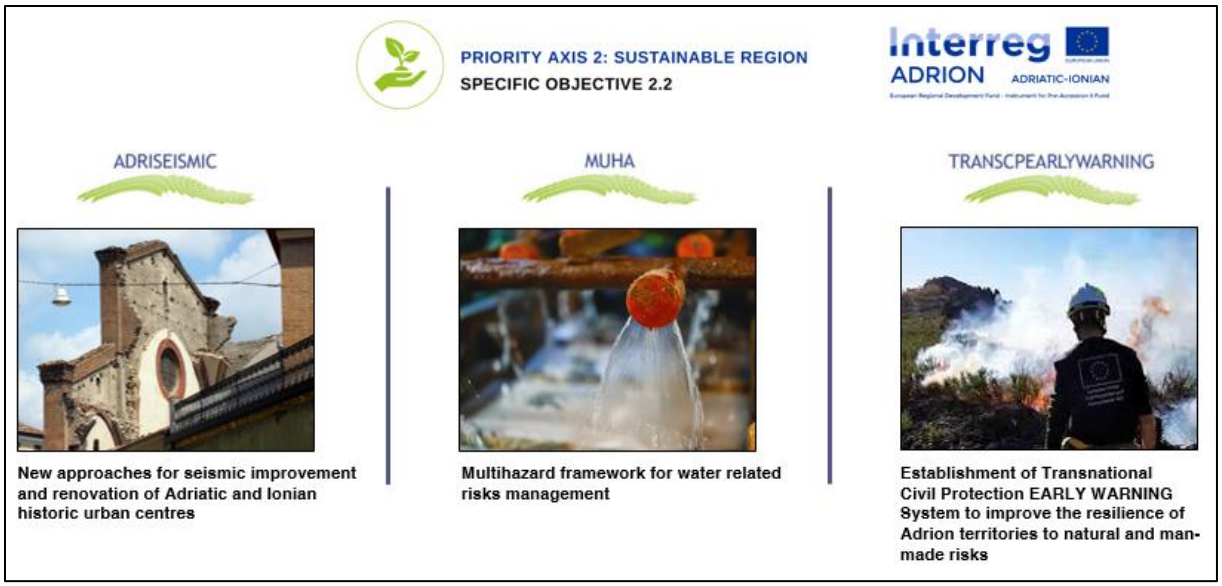

Figure 1 – Projects involved in Thematic Cluster Coastal and Marine Environment management, SUB CLUSTER no. 2.2 Risk prevention and disaster Resilience (from MUHA TC representative presentation held during the ADRION Annual and Capitalization Event on the December 7th, 2021).

The identification and elaboration of project ideas to be financed in the framework of the next programming period is one of the activities selected by the Cluster, aimed at contributing to the implementation of the EUSAIR strategy towards a more resilient Europe.

The development of new project proposals by Cluster was a gradual process consisting of various steps summarized below.

In order to facilitate the communication, a mailing list of the participants of the three projects involved in the Cluster activities has been set up. Moreover, it was created on Google drive a folder for sharing the documents (SWOT analysis, presentations, minutes, proposals) and the proposals.

A general overview of the ADRION Cluster (Figure 2) and of the projects involved in the Cluster no. 2.2 Risk prevention and disaster Resilience, have been presented during the first Thematic Cluster Meeting organized by ADRISEISMIC (held in teleconference on July 20th,

2021) in order to acquire a better knowledge of the individual project's expected outcomes and to identify possible synergies among the projects. Furthermore, a detailed explanation of the ADRION Capitalization Activities for Sub Cluster no. 2.2 has been provided by the coordinator (MUHA) of the thematic sub cluster 2.2.

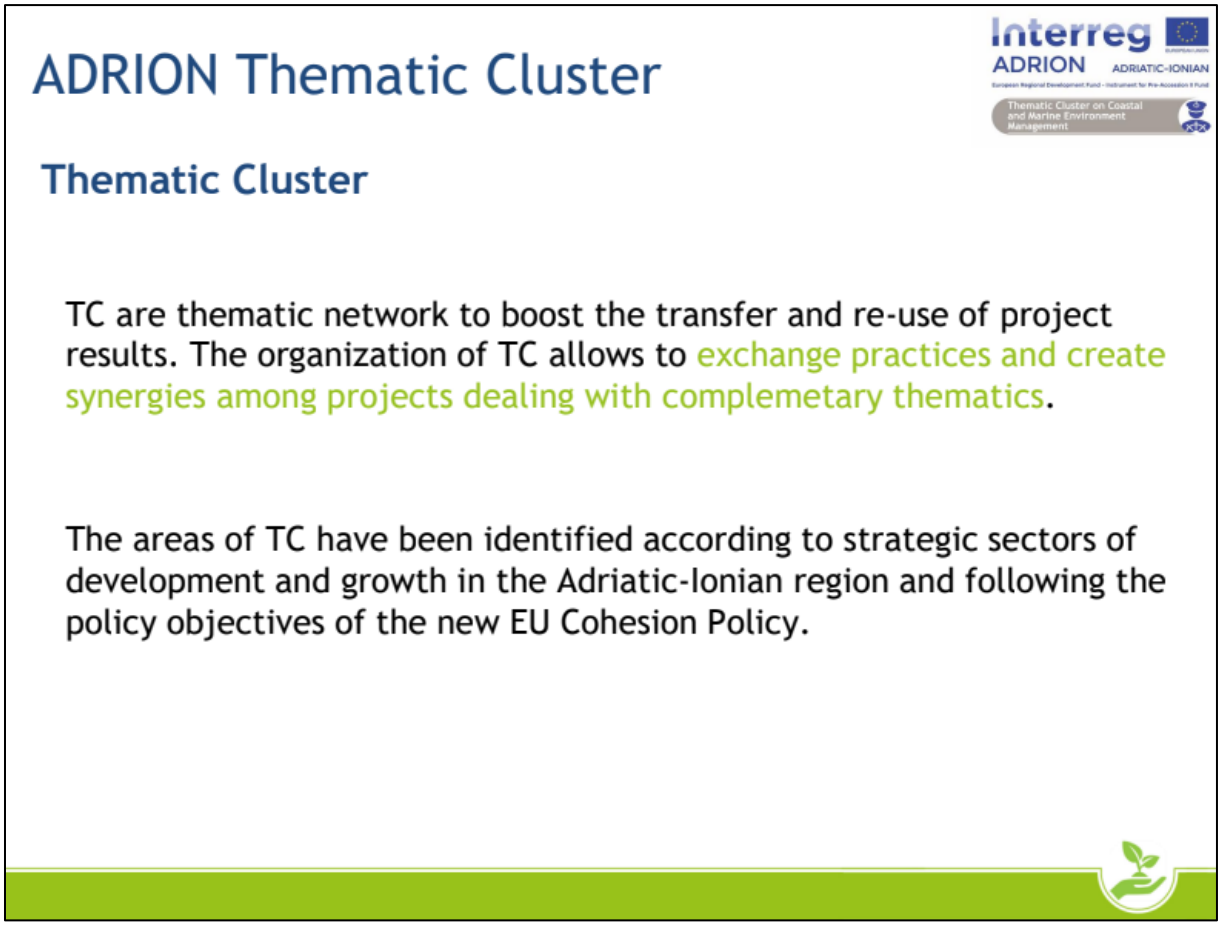

Figure 2 – Extract from the presentation on ADRION Thematic Cluster held by ADRISEISMIC during the first Thematic Cluster Meeting July 20th, 2021.

As starting point to draft the proposal for the next programming period, a SWOT analysis was performed by each project (Figure 3) and discussed among the participants by means of formal and informal meetings. The analysis of the results of the SWOT analysis evidenced bottlenecks, such as the lack of shared databases, procedures and homogeneity among countries, but also pointed out interesting collaboration opportunities.

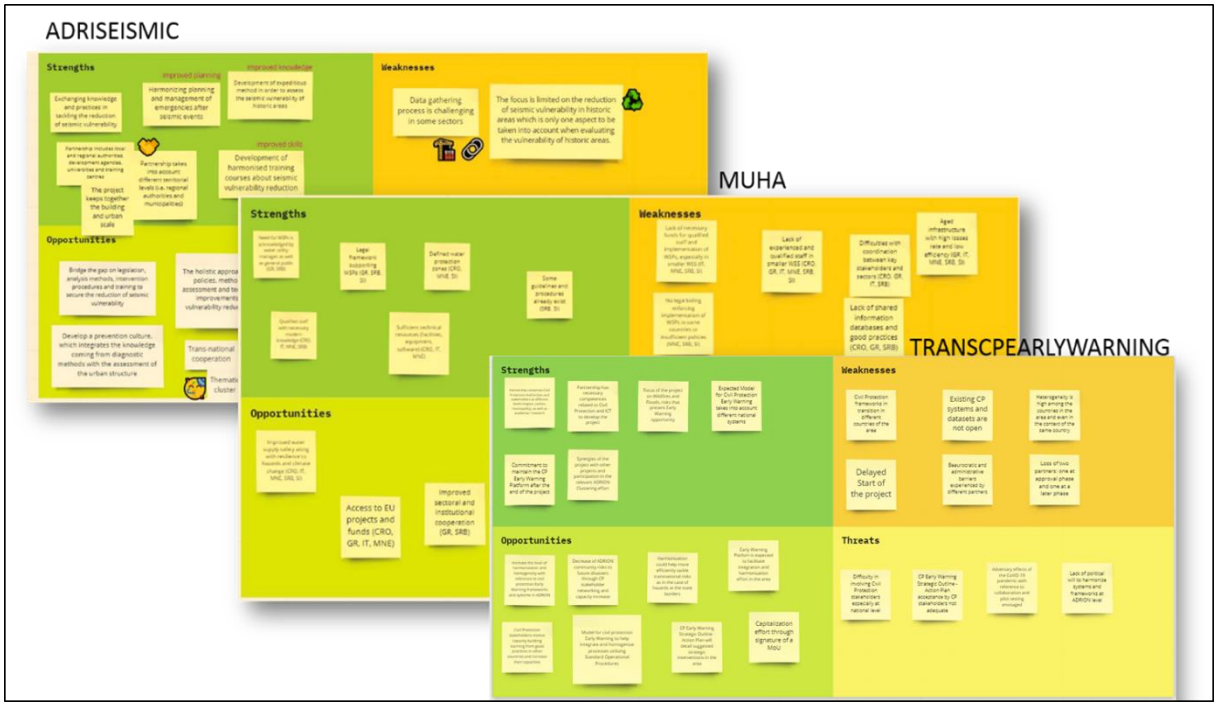

Figure 3 – Extracts of SWOT analysis performed by each project.

Based on the results of SWOT analysis, few new proposals aimed at contributing to the implementation of the EUSAIR strategy towards a more resilient Europe have been drafted following the template format provided by the Joint Secretariat.

ADRION projects involved in the Cluster have been also presented during the ADRION Annual and Capitalization Event, held in teleconference on the December 7th, 2021. In the same event, the SWOT analysis of the three projects and some selected results have been explained (Figure 4) and then, on this basis, ideas on how to address multi-hazard resilience and contributions of the projects have been pointed out by MUHA cluster representative. The new project ideas are based on common elements, such as cooperation, communication, data collection and data sharing.

Figure 4 - SWOT analysis: focus on Weakness and Opportunity (from MUHA Thematic Cluster representative presentation).

The second Thematic Cluster meeting organized by TransCPEarlyWarning project (Figure 5) held in teleconference on December 15th, 2021 was a good opportunity to brainstorm on the drafted project ideas for the next programming period. After a presentation about the Thematic Cluster approach of the ADRION Programme and the current outcomes of Cluster 2.2., all the participants, which are mainly the representatives of the projects involved in the Cluster, have been split in different virtual rooms, one for each proposal, where they have been invited to actively participate in discussing, making questions and providing suggestions for improving the proposals. Working in small groups facilitated the discussion and interaction among participants; after this brainstorming phase, the outcome of the discussions has been shared in the plenary room.

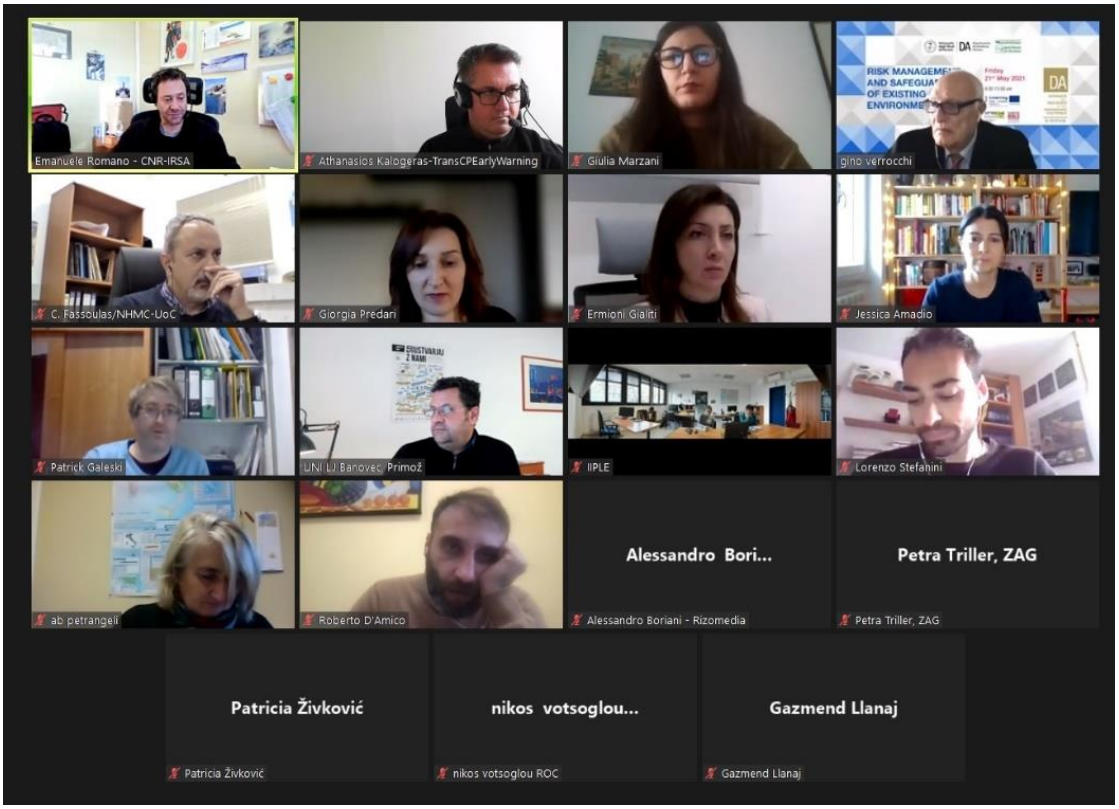

Figure 5 – Screenshot of the second Thematic Cluster meeting organized by TransCPEarlyWarning on December 15th, 2021.

Finally, based on the elaboration of the SWOT analysis and the following brainstorming, the Cluster drafted three new proposals following the template given by the Joint Secretariat; the shared project proposals are presented in the following paragraph.

2. List of shared project proposals

2.1 Proposal 1 | Integrating risk prevention in urban planning tools through the assessment of seismic vulnerability at urban scale

- **Project background and the problems and/or challenges to be addressed**

  The ADRION area is heavily subject to natural hazards, and it is the highest risk earthquake area in Europe. The current approach to seismic risk reduction involves well-established analysis techniques and calculation methods, but these are mainly applicable at the scale of the stand-alone building. Procedures capable of assessing urban districts and larger urban areas are rarely implemented in strategic contexts, and even more rarely used to produce results for seismic risk reduction protocols. Moreover, seismic risk reduction methods hardly consider the impact of the catastrophic event on infrastructures and facilities (roads, supply systems, etc.) and, consequently, on emergency management phase.
  ADRION Countries currently undertake different approaches in tackling vulnerability reduction of its built environment, the planning and management of emergencies after seismic events and the post-earthquake phase that concerns the reconstruction and seismic adaptation of damaged buildings. Knowledge and experiences collected so far in the framework of ADRISEISMIC project have shown that, while seismic norms are well-coordinated among the ADRION countries (i.e., Italy, Slovenia, Croatia, Serbia, Albania, Greece), from an urban planning perspective, there is a lack of integration of seismic risk within urban planning tools, and urban plans currently miss the opportunity to tackle seismic vulnerability at the urban scale rather than the building one.
  Therefore, one of the major challenges to be addressed is identifying large-scale resolution strategies that can cover the whole built environment (buildings and infrastructures), capable of prioritizing and tailoring both financing and specific measures.

- **General Objective of the project**

  The project fits into the context of seismic risk reduction at urban scale. The main objective is to provide new tools to local authorities that will then be able to address more accurately public funds and to study targeted strategies for both prevention and emergency phases. The processing of data (metadata) through the studied protocol will lead to a greater knowledge of the built environment highlighting both the major criticalities and the strengths of the different areas. This can support the identification of the key interventions functional to the effective reduction of seismic risk by addressing the vulnerability not only of buildings but also the infrastructure and supply systems ones.
  The ambitious result to be achieved is to develop a protocol able to process and extract information from the areas where it is applied, allowing, in this way, to design conscious and sustainable strategies both in the long and in the short term.

- **Project area of intervention**

  As already explained, the ADRION area is heavily subject to natural hazards. The high vulnerability of the area is due not only to the power of earthquakes, but also to the high population density and to the important value of the Cultural and Natural Heritage. The project proposal involves institutions from Italy, Greece, Albania, Croatia, Slovenia and Serbia.

- **Project main activities**

  The project proposal addresses the topic of reducing the risk of seismic vulnerability at urban scale by adopting an integrated multidisciplinary (structural-urban) approach. Vulnerability issue, already addressed in the ADRISEISMIC project, is now approached from another perspective, by focusing on urban planning and aiming at the introduction of seismic risk assessment protocols to be made available to local authorities. In order to achieve this objective, four macro-phases of work are envisaged.
  In a first phase, large-scale seismic assessment methodologies will be studied and information will be gathered about their strengths and weaknesses, with a specific focus on the applicability of these methods to the project purposes. This analysis will be carried out on all regions covered by the project in order to have both a clear picture of the state of the art and a better chance of finding a suitable methodology to achieve the set objectives. In parallel the protocols and decision-making processes currently adopted by local authorities will be analysed. All this should lead to a clear definition of the state of the art of the reference context representing the basis for subsequent activities.
  The second foreseen phase is the heart of the project: the seismic risk assessment methodology to be adopted will be defined/elaborated. The study will have to cover both the more classical aspects of this discipline (definition of the risk for buildings) and the less addressed aspects (analysis of existing infrastructures and installations on an urban scale). The result should be a database containing useful data on each element of a given area (about risk, exposure, hazard and vulnerability).
  The third step will be the definition of a system for the interpretation of the collected information and its processing (metadata). The aim is to generate results that are easy to interpret and handle (databases, lists, planimetries, synoptic diagrams, etc.); for this, filter systems and layers with different degrees of importance must be implemented. A geo-referenced environment will be used for the creation of maps explaining the seismic vulnerability assessment of the urban settlements. The results will represent the basis for the decision-making process of policy makers when it comes to foster and fund different kind of interventions on the build environment and its infrastructure to tackle seismic vulnerability.
  The results produced in this way must be validated both internally and by applying the system to known cases. All this should be done in an iterative manner in order to

fine-tune the evaluation/processing process and make the tool more effective, tailoring it to the local context
The last activity will be the application of the protocol on Pilot cases, chosen in advance with the project partners. The areas will have different characteristics, so that the actual versatility of the system can be tested.

- **Expected results/outcomes**

The results of the multi-disciplinary work adopted will be easy-to-use tools for defining strategies for seismic risk reduction in the short, medium and long term.
In practical terms, the methodology, starting from seismic risk assessment techniques, applied on a large scale (considering in the process also site hazard and seismic exposure data) will allow to obtain reliable and easily usable results (also by non-experts) in a short time. Each studied component (buildings, roads, plants, etc.) will be associated with qualitative attributes useful both for the creation of databases and lists and for the realisation of plans and synoptic diagrams. The processing thus composed will be essential for the authorities in the definition of both preventive and emergency strategies. The results will be obtained and implemented in a geo-referenced environment. Dealing the project with different scales, European databases will be combined with the collection of data at local level.
Seismic risk is a common problem in many European areas, so a transnational involvement would allow both to significantly reduce the effects of disasters and to improve (and increase) the extent of the results achieved, implementing the system with different procedures and enriching it with the different experiences accumulated in seismic risk management in the involved countries. The results obtained during the project, made available by means of simplified tools (tables, graphs, spreadsheets, etc.), should be flexible enough to allow local authorities to make autonomous territorial decisions, despite the varied political and cultural context in the countries of the ADRION area. This flexibility, combined with the widespread dissemination of protocols, will enable strategies to be developed for both large cities and small towns.
In the medium-long term, the project will lead to an improvement in the way cities are planned and regenerated.

- **Potential partnership and stakeholders**

The proposal is planned to involve a wide range of partners: municipalities, regional authorities, universities and research centres, covering several expertise such as urban planning, architectural engineering, structural engineering and geology.
The list of potential partners is:
  - Alma Mater Studiorum – University of Bologna, Italy
  - Industrial Systems Institute, ATHENA Research Center, Greece
  - City of Zadar, Croatia

- Municipality of Elbasan, Albania
- Polytechnic University of Marche, Italy
- Abruzzo Region, Italy
- Earthquake Planning and Protection Organization, Greece
- Region of Crete, Greece
- University of Crete, Greece
- Regional development agency Backa, Serbia
- Municipality of Ljubljana, Slovenia

Further partners might be identified, especially in Montenegro, Bosnia and Herzegovina.

- **Relevance of the proposed project for the EUSAIR strategy**

  The project contributes to EUSAIR Pillar 3 “Environmental quality”, establishing the need for implementing disaster risk management policies, as well as developing a regional strategy for seismic vulnerability reduction. The project will also share the existing knowledge on the topic through territorial cooperation and coordination among research and local and regional authorities.

- **Duration and budget**

  The duration of the project is expected to be 36 months and the budget approximately 1.2M euro.

2.2 Proposal 2 | Impacts on water supply system from assessment to increased resilience

- **Project background and the problems and/or challenges to be addressed**

  Risk prevention is based on two pillars: evaluation of the probability of occurrence of a given hazardous event and assessment of the related impact. Considering natural hazards (flooding, drought, earthquakes, etc.) usually available observational networks (both land-based and remote) along with historical data are enough to perform a rough estimate of the return period of a given event as a function of the intensity. Much more difficult is to collect data on the impacts of such events on a given target good and numerous enough to perform a robust statistical analysis able to link hazardous events and impacts, mostly in case of multi-hazard and non-linear impacts. The most important limitation is due to the lack of a shared "catalogue of impacts" enabling to feed a shared database and thus increasing the statistical population of the impacts.
  Such kind of need is particularly true when dealing with water supply systems (WSS), due to several reasons: 1) the entire chain from water resources to users are prone to several hazards, in some cases overlapping: physical hazards (drought, flooding, earthquake); chemical (contamination of the resources); biological; 2) monitoring of hazardous events is entrusted to different actors (water utilities, monitoring agencies, regulatory agencies, public Institutions); 3) conversely monitoring of impacts is usually entrusted to the only water manager, preventing for an effective sharing of impact data; 4) WSS are sometimes shared by different countries, forcing for an effective sharing of data and procedures.

- **General Objective of the project**

  The main goal of this project proposal is to build a structured "catalogue of impacts" of hazardous events on water supply systems that includes: 1) components of the system under study; 2) catalogue of possible hazardous events; 3) catalogue of possible impacts and relationships with triggering hazardous events; 4) catalogue of possible mitigation measures.
  The different catalogues in a perspective of a multi-hazard approach necessitate the adoption of GIS tools. Catalogues have to be shared and acknowledged by all the actors involved in the water management with the aim of significantly increase the statistical basis necessary to soundly estimate the probability of occurrence of the impacts. Currently a structured "catalogue of impacts" in the ADRION area is missing both at national and transnational scale, resulting in an overall lack of information to develop effective and robust water safety plan, according to the revised drinking water directive (2020/2184).

- **Project area of intervention**

  The project area of intervention involves all the ADRION countries, with a particular focus on the transboundary and transregional water supply systems. In particular the following countries are proposed: Italy, Slovenia, Croatia, Montenegro, Albania, Greece, Bosnia and Herzegovina.

- **Project main activities**

  The project main activities are listed and described below:
  - Identifying targets. Main targets are transnational and/or transregional water supply systems.
  - Identifying hazards (eventually related to climate change, but not necessarily; to be clearly stated in the proposal, not an output of the project). Once identified the system under analysis, a first step is to identify all the possible hazardous events. Although the final goal of the proposal is to build a structured "catalogue of impacts", it is previously necessary to identify a comprehensive catalogue of all the possible hazardous events potentially impacting on the system under consideration. A special focus will be given to the climate change related hazards (salt intrusion, deterioration in quality due to increase in temperature, drought, etc)
  - Extensive collection of information from the managers and/or stakeholders on the impacts. The main goal of this activity is to collect a catalogue of possible impacts based on the experiences and skills of the managers of the system under consideration. It is worth to stress that in some cases also feedback from stakeholders must be taken into account.
  - Developing the "catalogue of impacts" database structure. Such a catalogue has to be structured in order to homogenize the way to describe "hazardous events", the related "impacts" and the causality links among them. The links have to be described on a geographical basis.
  - Testing the effectiveness of the "catalogue of impacts". The catalogue has to be filled primarily by the water utilities involved in order to increase the statistical population of the events.
  - Implementing and testing of specific mitigation measures. The "catalogue of impacts" will allow to identify which parts of WSS are prone the most to impacts and which mitigation measures can be adopted. Specific measures will be tested on most vulnerable parts of WSS on specific pilot sites.
  - Involving the entrusted institutions to acknowledge and promote (officially, if possible), an extensive use of the database. This is a key point: the effectiveness of the proposed catalogue strongly relies on the fact that it is recognized and adopted not only by all the managers and stakeholders, but also by the institutional agencies entrusted of regulation and control.
  - Educational programme addressed to water utilities and institutions involved in the water supply systems management

- **Expected results/outcomes**

  The expected outcome is to create a network of system managers able to share their own "casuistry" of impacts, similar to that one of civil air transportation.
  A shared catalogue is necessary at transnational level to ensure usability of dataset, comparison and increasing the "population" for probability analysis.

The development of the proposed database will allow the water utilities to significantly increase the knowledge basis necessary to draft robust and effective water safety plans in the ADRION area. In fact, it is well known that especially small water utilities do not have in their own skills, competences and knowledges to perform sound risk analysis leading the development of WSP according the EU legislation. Catalogues like those one proposed in this project aim at increase the knowledge basis necessary to improve the water safety through the sharing of knowledges for risk analysis and related mitigation measures, especially in a context of climate change.

- **Potential partnership and stakeholders**

  The following types of institutions can potentially be involved in the partnership: Water utilities, Institutional monitoring agencies, Civil protection agencies, Research Institutions, Irrigation consortia.
  Therefore it is proposed the following partnership:
  - Water Research Institute of the National Research Council (Italy)
  - Consorzio di Bonifica della Capitanata (irrigation consortium – Italy)
  - Industrial Systems Institute - Research Centre ATHENA (Greece)
  - Municipal Water Supply and Sewerage Company of Larissa – DEYAL (Greece)
  - University of Ljubljana – Department of Engineering (Slovenia)
  - Croatian Geological Survey (Croatia)
  - Water Supply and Sewerage Association of Albania (SHUKALB)
  - Decentralized Administration of Crete (Greece)
  - Civil Protection and Fire fighting Administration of Herzegovina Neretva Canton (Bosnia and Herzegovina)
  - University of Bologna - Department of Architecture (Italy)
  - Slovenian national building and civil engineering institute (Slovenia)
  - Limited Liability Company “VODOVOD I KANALIZACIJA" Nikšić (Montenegro)

- **Relevance of the proposed project for the EUSAIR strategy**

  The project will contribute to the implementation of the EUSAIR Pillar 3 “Environmental quality”. In particular, the focus will be on: comprehensive actions to adapt to disasters and to the impact of climate actions, conducting adequate comprehensive risk assessment, addressing issues related to water quality, disaster risk reduction and climate change mitigation and adaptation.

- **Duration and budget**

  The duration of the project is expected to be 30 months and the budget approximately 2.5M euro.

2.3 Proposal 3 | Improving ADRION resilience through enhanced Civil Protection operation uniformity

- **Project background and the problems and/or challenges to be addressed**

  ADRION area faces different risks, which frequency and severity steadily rise, due to climate change, urbanization, environmental degradation and other causes, leading to human losses, damages to infrastructures, and social alert. Diversities in approaches, equipment, and tactics can bring an added value if properly exploited to create a common strategic and operational platform. Effective management of emergencies calls for adoption of joint approaches and common monitoring and management strategies addressing prevention, mitigation and adaptation and exploiting available technological solutions to this end. Adrion TransCPEarlyWarning and IT-HR FIRESPILL projects are addressing these challenges, the former in enhancing level of uniformity, homogeneity, and similarity of existing CP Early Warning platforms, the latter in the Emergency Services Regulatory Systems.
  Both projects have identified level of heterogeneity among the different involved countries, particularly significant among the EU Member and IPA Countries, and aim at producing guidelines to improve Civil Protection overall efficiency by enhancing their level of uniformity in ADRION macroregion.
  To this end, TransCPEarlyWarning is currently developing a Platform for addressing the Early Warning stage in the risk management lifecycle, equipping EU and IPA Civil Protection with adequate tools for management and monitoring of Early Warning processes, integrating existing systems and enabling relevant experimentation. This platform has as a main challenge the integration of existing systems used in the CP every day routine and the monitoring of CP Early Warning processes. It furthermore introduces some elements of innovation in the context of Machine Learning / Artificial Intelligence algorithms, mainly addressing smoke and fire detection from photos / videostreams.
  Building on top of this Platform, further experimentation with reference to Machine Learning / Artificial Intelligence will be introduced related to other types of risks, while requirements for moving from the state of experimentation to pilot operation will be also explored.

- **General Objective of the project**

  The general objective of the project is to improve the capacity of Civil Protection, in particular in ADRION IPA countries, in dealing with natural and man-made risks, reducing the exposure of populations to the impact of hazards, increasing safety in the EUSAIR Macro-area, improving CP Early Warning with innovative technologies and implementing it in the IPA Adrion countries with the support and transfer of good practices and experiences from the EU member Adrion countries.
  Common macro actions will be dedicated to the (a) enhancement of Civil Protection Early Warning platform further introducing ML / AI technologies; (b) Activation of transfer of Best Practices from EU to IPA Countries Civil Protection.
  Specific actions will be dedicated to integrate the Enhanced Civil Protection Early Warning platform in IPA Countries risk management operations.

The adoption of ML / AI in the management of Early Warning is essential in those countries, such as the IPA countries of the ADRION area, where the structure, procedures, and capabilities of civil protection are still distant or not compliant with European standards.
The use of such technologies simplifies the management of the Early Warning processes, and creates more user-friendly interactions between platform and Civil Protection operators, benefiting thus IPA Countries Civil Protections so as to reduce the distance in structure, procedures, and capabilities and become more compliant with European standards. Furthermore, homogenization is possible both for hazards affecting urban and rural territories in the ADRION macro-region.

- **Project area of intervention**

  All ADRION countries will be covered by the project with the aim of benefiting especially IPA countries in becoming more compliant with Civil Protection EU standards.

- **Project main activities**

  The project main activities are listed and described below:
  - Survey of current Early Warning processes, where use of ML / AI technologies brings operational simplification and greater efficiency.
  - Identification of good practices relevant to involved CPs and associated urban planning, and study visits
  - Modelling an innovative Early Warning system, where simplification and automation of the processes are obtained by applying ML / AI technologies.
  - Enhanced Civil Protection Early Warning Platform functional specifications: Document that describes the behavior of an application software system, based on TransCPEarlyWarning outcomes and enriched by ML/AI technology
  - Development, testing, and release of Enhanced Civil Protection Early Warning Platform, by surveying and collection of applicable and available open software artefacts; Artificial Intelligence algorithm training
  - Preparing pilot activities: Preparation of the appropriate environment for parallel running of the platform in either one big IPA Country, or in two-three smaller bordering IPA countries, and preparation of transfer macro-actions to the rest of the ADRION area
  - Pilot Projects deployment: implementation and experimentation of the Enhanced Civil Protection Early Warning Platform
  - Assessment of Pilot Projects achievements
  - Development and implementation of capacity building actions: innovative way of training for high level skills, improving existing knowledge through gamification
  - Development of adoption plan by IPA and EU Countries

- **Expected results/outcomes**

  The project is expected to facilitate the development and adoption of an integrated and common to the ADRION EU and IPA countries system, instead of the various systems currently used, mainly by Adrion EU Member States, to manage the Early Warning process by the civil protection. Another expected outcome is the convergence of the IPA countries Civil Protection intervention capabilities to EU standards, through the greater simplicity of use and support received by Civil Protection operators from the enhanced platform with ML / AI technologies. Moreover, it is expected to enhanced prevention and preparedness and overall efficiency of Civil Protection frameworks in the ADRION Countries.

- **Potential partnership and stakeholders**

  Indicative stakeholders that already expressed interest in the proposal include:
  - National / Regional / Local authorities, such as partners
    - Municipality of Ajdovščina, Slovenia
    - Varazdin County, Croatia
    - Old Royal Capital of Cetinje, Montenegro
    - Regional Council of Durres, Albania
    - Rethymno Municipality, Greece
  - Local Development Agencies, such as partner
    - -COPE, Italy
  - National and Regional Civil Protection Departments and Civil Protection Volunteer Associations such as partner
    - Regional Civil Protection Department of Marche Region
    - Academia / research such as partners
    - Industrial Systems Institute, ATHENA Research Center, Greece
    - University of Bologna, Italy
  - Training / VET Centers, such as partner
    - Institute for Vocational Training of Construction Workers in the Province of Bologna, Italy

  Further partners will be identified in Serbia, Bosnia Herzegovina and North Macedonia.

- **Relevance of the proposed project for the EUSAIR strategy**

  The project contributes to the improvement of environmental quality in the Adriatic-Ionian Region, in line with Pillar 3 "Environmental Quality" of the EUSAIR strategy, as it foresees an innovative Civil Protection Early Warning system, a joint system of rules, processes and an applying ML / AI technologies web enabled platform that allows the EUSAIR countries Civil Protection a coordinated approach in prevention and management of natural and man-made hazards. Reduction of environmental risks

will be achieved by implementing the new solution in pilot areas and consequently contribute to protection and preservation of their habitats and landscape elements. Actually, the actions addressed to improve the early warning and related emergency management measures, foreseen in the project, provide to better withstand and contain the hazards in involved countries, helping, so, the EUSAIR Region in becoming more resilient to disasters and improve environmental quality.
The project also contributes to the EUSAIR pillar 1 "Blue growth", given that enhanced safety of coastal territories from natural and manmade hazards aids to protect and preserve their sustainable development (economic, socio- cultural and environmental).

- **Duration and budget**

  The duration of the project is expected to be around 36 months and the budget approximatly 2.7-3.5M euro.

3. Conclusion

The shared proposals were written after a fruitful and engaging seven months period of collaboration, meetings, discussions and brainstorming among the 3 different projects of the Cluster with the common theme of the risk prevention and disaster resilience.

In summary, the idea depicted in the proposal 1 is to develop a protocol able to process and extract information from the areas where it is applied, allowing the design of sustainable strategies in the long and in the short term for both prevention and emergency phases in the context of seismic risk reduction at urban scale. The concept of the proposal 2 is to build a structured “catalogue of impacts” of hazardous events on water supply systems in a perspective of a multi-hazard approach; these catalogues will be shared and acknowledged by all the actors involved in the water management with the aim of significantly increasing the statistical basis necessary to soundly estimate the probability of occurrence of the impacts. Finally, the proposal 3 aims to improve the capacity of Civil Protection in dealing with natural and man-made risks by enhancing the Civil Protection Early Warning platform introducing ML / AI technologies and transfering the Best Practices from EU to IPA Countries Civil Protection.

All the three ideas contribute to the improvement of the environmental quality in the Adriatic-Ionian Region in line with the Pillar 3 "Environmental Quality" of the EUSAIR strategy. The actions addressed in the proposals aim to improve the early warning and related emergency management measures and to adapt to the impact of climate actions, supporting the EUSAIR Region in becoming more resilient to disasters.