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Project Title

Building local preparedness to global crises (PRELOC)

Principal Investigator (name, surname, organization and role within your organization)

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Abstract

Consistently with the general objectives of the Call, the project **Building local preparedness to global crises (PRELOC)**, focuses on the cutting edge of the relationship between science, technology and society. The basic questions are: **how can we best characterize the main challenges lying today at the interface of science, technology and society in a world of increasing uncertainty and complexity? Is the practice/concept of preparedness adapted to address them?** Which forms do these challenges take in the key fields of health and agriculture where complexity and uncertainty manifest themselves in a particularly striking way? How do scientific practices need to be transformed in order to address these challenges? What kind of criteria of efficiency and robustness and what kind of research designs are best suited to this purpose?

A broad scholarship indicates in the **rise of uncertainty, complexity and unpredictability** the cypher of the present, with heavy effects for all the different spheres of our forms of life. Indeed, the **Covid-19 outbreak**, the last in a line of insurgent or resurgent infectious diseases, encapsulates the relevance of the governance of socio-ecological uncertainty. This rise of uncertainty has been met with calls for a rethinking of science and innovation practices, leading to different perspectives for combining science, technology, public action, social organization. Among them, the approach centred on the concept of preparedness has taken growing traction in the last years. First developed in regard to different issues (nuclear threats, bioterrorism), it has been subsequently extended to the management of crises related to disasters, health threats and climate change related risks. PRELOC aims to **contribute to the clarification, fine tuning and operationalisation of preparedness** as a style of reasoning and a set of governmental techniques for reflecting about and intervening in an uncertain future. The Project's outputs are conceived as tools for making this approach more effective at the different levels (scientific, institutional, societal) of its development and implementation. To this purpose, the project focuses on **two key fields: healthcare and agriculture**. Such choice stems from two orders of considerations. First, **both deal with life and liveliness raising special challenges** regarding the interface of science and technology on one side and society and nature on the other. Second, **Italy is characterized by a specific combination of virtues and criticalities in both these areas**: on the one hand, it boasts an outstanding record in innovation embedded in tradition; on the other hand, it shows growing signs of fragility vis-à-vis emergent challenges stemming from globalization, economic crisis and climate change. This makes Italy an ideal site for conducting research, the results of which can at the same time find in Italy a receptive terrain of application. The project will **proceed in an abductive way**, in a continuous round to and from between existing insights into preparedness, significant experiences in these two areas and revision of concepts. Three approaches will be combined to pursue the Project's aim: a) **practical inquiry**, to actively involve stakeholders in the research process; b) **social multi-criteria evaluation (SMCE)**, to develop a set of indicators of territorial preparedness; c) **sociology of public action**, to highlight the interconnections between social practices and institutional functioning. This will result in two tools aimed at concretely support public action for territorial preparedness: 1) **a set of "non-equivalent" preparedness indicators**, offering decision makers a means for multi-criteria evaluations, to support public decision-making on territorial preparedness based on the assumption of the heterogeneity of the involved elements and values; 2) **a website designed both as a platform** of sharing information on preparedness and **as an incubator** of innovative solutions and technologies for preparedness in health and agriculture.

Overall expected impact of the project is to foster a **reorientation of science and technology in order to better respond to key societal needs and demands**, at the interface of health and food provision, healthcare services and socio-ecological systems, in a context of growing uncertainties. Three elements of originality stem from this ambition. First, the commitment to shedding light on, and strengthening, **the nexus between healthcare and caring for the environment and territory**. Second, the commitment to providing a **specific declension of preparedness as pivotal to a renewal in the approach to techno-scientific advancement** and the ensuing interweaving of society with the biophysical world (building bridges between different literatures and expertises and expanding over existing takes on preparedness). Finally, the commitment to **gaining evidence and systematising existing Italian experiences** traceable to the advocated approach to preparedness.

Please specify here if your project is a resubmission of an application submitted 2019 edition of the Call “Science and Technology Studies”?

yes

no

If yes, please summarize here how your new proposal addresses reviewers’ comments

1. DESCRIPTION AND STRATEGIC APPROACH/STRATEGY

1.1. Objective

Indicate the RESEARCH QUESTION[s].

1. How can we best characterize the main challenges lying today at the interface of science, technology and society in a world of increasing uncertainty and complexity?
 2. Is the practice/concept of preparedness adapted to address them?
 3. Which forms do these challenges take in the key fields of health and agriculture where complexity and uncertainty manifest themselves in a particularly striking way?
 4. How do scientific practices need to be transformed in order to address these challenges? What kind of criteria of efficiency and robustness and what kind of research designs are best suited to this purpose?

Describe both the overall **and** specific objective[s] of the project.

Please note objective[s] should be clear, measurable and achievable within the duration of this project.

Overall Goal of the project

PRELOC aims to contribute to the scientific debate on the place of science and technology in societies through conceptually **clarifying, fine tuning and operationalising preparedness** as a style of reasoning and set of governmental techniques for reflecting about and intervening in an uncertain, potentially catastrophic future. To achieve this goal, PRELOC will conduct a theoretical investigation in parallel with the analysis of eight case studies in two key fields (health and agriculture) with the **involvement of relevant stakeholders** in the whole process, and will define a set of “non-equivalent” **indicators**, specific **guidelines** for the territorial implementation of preparedness and will develop a **web-platform** for sharing knowledge, practices and technological advancements of local preparedness in the fields of healthcare and agriculture.

Context and rationale for the Overall Goal

A broad scholarship indicates in the **rise of uncertainty, complexity and unpredictability** the cypher of the present. To the extent that modern society is oriented towards the future, uncertainty is ingrained in its very rationale. Modernity has found ways to move into the future, which kept uncertainty at bay. Scientific advancement, technical innovation and institutional arrangements have largely built on probabilistic risk assessment, leading to predictive models and preventive strategies (Hacking 1990; Luhmann 1976). However, authors such as Beck (1992), Giddens (1990) Jonas (1984) have long-shown that, out of its own dynamism, society has entered into a phase where uncertainty grows beyond the coping capacities of these approaches. The growing pace of techno-scientific advancements of last decades has led to a broadening reach of intervention, with related pretences and expectations of control. There has been, however, also a growing frustration of such pretence in the form of “unforeseen consequences” or “surprise”. Hence, the alternation of hype and disappointment concerning technological innovation, and the **increase in “public unease” with, or distrust in, science** (EC 2000). The rise of uncertainty is reflected in phenomena such as growing ecological threats, most notably climate change and pandemics. Indeed, **the Covid-19 outbreak**, the last in a line of insurgent or resurgent infectious diseases, encapsulates the relevance of the governance of socio-ecological uncertainty. Over time, the answer has been to call for a **rethinking of science and innovation practices**, as condensed for example in the notions of “Post-Normal Science” (Funtowicz and Ravetz 1993) and “Responsible Research and Innovation” (Owen et al. 2013). The challenge has been met also with a **rethinking of anticipatory techniques**. Prediction has been flanked by precautionary, “worst case” approaches, which have been introduced in legislations since the 1990s (Pellizzoni 2009). A third approach has taken growing traction, namely **preparedness**. First developed in regard to nuclear threats and later to bioterrorism (Lakoff 2017; see also Collier 2008), preparedness has been subsequently extended to the risk management of disasters (Revet 2020). Health threats (WHO 2009) and climate change related food risks (FAO 2017) have also become fields of application. Preparedness replaces the search for a full predictive and preventive control of

a situation, and of a “trench warfare” against threats well understood and gauged, with the idea of dealing with surprise, hidden development and sudden insurgence. This asks for turning **from trench warfare to vigilance and “sentinel devices”** for an early detection of signs. For this reason, and most importantly, preparedness fosters a **different outlook on science, technology, social organisation and the interface with the biophysical world**. However, the trend is to **reduce preparedness to programmatic plans and the adoption of technologies** that by themselves should ensure preparedness. In this project we promote **another vision: technological solutions alone are not enough** if they are not integrated into a **wider network of interventions** that create, sustain, reinforce material and immaterial infrastructures that support collective capacities for territorial socio-ecological care. To this purpose a **Science and Technology Studies (STS) perspective is crucial**, since it takes into account at once, and in their interconnections, the cognitive and the material, the human and the non-human.

Specific Objectives (SO) of PRELOC are:

- **SO1** is to **explore a declension of preparedness that considers it as a peculiar way of conceiving and developing technologies and of relating with the biophysical world**. To achieve this objective, the research team will interact with an Interdisciplinary Advisory Board (IAB) and a set of selected stakeholders in a series of cross-sectoral and cross-disciplinary workshops that will contribute to the real-world applicability of the proposed declension of preparedness. Success in meeting this objective will be measured through scientific publications.
- **SO2** is to **elaborate on the driving notions of care and boundary-infrastructure as conducive to implementing preparedness**. The first notion means a logic of action oriented to maintaining and supporting socio-ecological interdependencies. The second means knowledge infrastructures capable of serving different communities of practice. These notions are illustrated in more detail in section 1.3. This objective will be **achieved through the definition of instruments and guidelines** for the territorial implementation of preparedness in the fields of healthcare and agriculture.
- **SO3** is to **propose preparedness as a paradigm for addressing uncertainty and complexity**, provided that it parts company with dominative, one-eye, one-way orientations towards socio-ecological assemblages, eliciting a suitable techno-scientific infrastructure for appraising and intervening in such assemblages. This account has been especially developed by **STS and feminist scholarships** (e.g. Coole and Frost 2010; Povinelli 2016; Stengers 2017). This objective will be achieved mainly through the dissemination of the project’s findings towards the scientific community.
- **SO4** is to concretize some **elements for a different way of doing science**. This objective will be **achieved through applying to PRELOC a suitable research design** that envisages the involvement of experts, practitioners and their organisations, local administrators, citizens and other relevant stakeholders in a **“practical inquiry”** on territorial preparedness in the healthcare and agriculture fields (see section 1.4), considering them all as carriers of valuable knowledge and solutions.
- **SO5** is to contribute to the **implementation of preparedness in two key fields: healthcare and agriculture**. Choice of these fields stems from two considerations. First, **both deal with life and liveliness, raising special challenges** regarding the interface of science and technology on one side and society and nature on the other. They do this in **different, yet not unrelated ways**. Food affects health, and industrial agriculture engenders zoonoses, like Covid-19. Both fields, in their own way, have seen fierce public engagement with the implications of science and innovation. A second consideration is that **both agriculture and healthcare see Italy in a peculiar position**. In both fields Italy boasts an outstanding record in **innovation embedded in tradition** (just think of the recovery and reuse of traditional seeds, or territorial preventive medicine). Both fields, on the other hand, show - again in their own way - **growing signs of fragility** vis-à-vis emergent challenges stemming from globalization, economic crisis, socio-demographic transformations and climate change. This backdrop makes them especially sensitive to a trend, observable in the Italian context towards a **polarisation between a top-down view of science and anti-scientific drives**. This makes Italy an ideal site for conducting research and a receptive terrain of application of the results. To meet this objective, the results from several case studies will be synthesized into guidelines and instruments for the territorial implementation of preparedness that will be made available to policy makers.
- **SO6** is to contribute to the **development of effective “civic epistemologies” (Jasanoff 2005) to guarantee the quality of knowledge claims production for preparedness**. The development of a culture of preparedness is today a key strategic objective in the two sectors of activity with which PRELOC is concerned (healthcare and agriculture). This objective will be **achieved through the elaboration of two tools** that can concretely support an effective public action for territorial preparedness: 1) a **set of “non-equivalent” preparedness indicators**, offering decision makers a means for multi-criteria evaluations, to guide public choices on territorial preparedness. “Non-equivalent” means that these indicators will not be amenable to a single metric, not just because relying on both quantitative and qualitative data, but because expressing the heterogeneity of elements and values involved in such choice; 2) a **website designed as a platform** for information on preparedness and an incubator of innovative solutions and technologies for preparedness (with respect to healthcare and agriculture).

1.2 Relation to the call

Explore how the project addresses the challenge and scope of this Call.

The objective of **building a mature and critical culture, capable of fostering dialogue between the desires, needs and values of society and those of science and technology**, is today essential for the future of democratic countries and for their ability to respond in inclusive ways to the need to imagine, socially and technologically, a society in which well-being is widespread, accessible and ecological, i.e. built on taking into account the interdependencies between humans and living systems. **Science and technology play a fundamental role** in the knowledge, care and transformation of these interdependencies. However, it is important to stress that **there is no such thing as science and technology in the singular**, but different ways of doing science and technology. The difference is in the ways to understand the relationship to living systems, either as informed by imperatives of control or instead by collaboration and care. **There is no science and technique that is neutral with respect to the desires, needs and values of society**, because these desires, needs and values inevitably orient the ways in which science envisions the relationship to living systems. Desires, needs and values should be explicitly included in the choices about how to do research, and on what, and how to define the problems that technology helps to solve. In this sense some authors talk of “democratization of expertise” (Carrozza 2015), which does not mean an “anything goes” assumption but acknowledging and including any insight potentially relevant to the issues at stake.

Such biases are particularly strong in the Italian context, where the debate on the relation between science and society appears polarized between ineffective top-down approaches and irresponsible attitudes of anti-scientific populism. The recent events linked to the Covid emergency have raised many problematic issues, particularly acute in the Italian context, with respect to the role of experts in public life (Caselli 2020).

In this scenario, **the PRELOC project aims to contribute to improve the relationship between science, technology and society through the approach of issue-based "practical inquiry"** (Lanzara, 1993; 2016). On this, see below Section 1.4. **PRELOC aims this way to contribute to the development of effective “civic epistemologies” (Jasanoff 2005) to guarantee the quality of knowledge claims production for preparedness.** The development of a culture of preparedness is today a strategic objective of key importance in the two sectors of activity that PRELOC is concerned with (namely healthcare and agriculture). **In the Italian agriculture context**, to date, preparedness is mostly implemented by adopting a series of surveillance plans and technologies, with a reduced involvement of farmers (especially small farmers) into its definition. As for the **Italian healthcare context**, implementation of preparedness guidelines adopted by the WHO to deal with pandemic takes place within a very thick and stratified institutional infrastructure. However there is a lack of understanding of preparedness as related not only to new logics of public action but also to new scientific practices and technical solutions that can take care of social / territorial dimensions.

Starting from these premises, **the project works in six directions**, in order to make the relationship between science, technologies and society more effective as a pre-condition for the development of a large culture of preparedness, taking into account the specificities of the Italian context, which is marked by a significant potential of innovation as well as by an ambivalent relationship to science that alternates respect and curiosity with high distrust and conflict:

1. Through the **active involvement in the project of a large set of stakeholders from different scientific and professional backgrounds**. The specification of the conceptual tools proposed as well as the selection of the case-studies will take place in dialogue with them during the first months of the project;
2. Through the **constant dialogue with the Interdisciplinary Advisory Board** (see Section 3.2) and its regular follow-up (kick-off meeting, mid-term workshops and final workshop);
3. Through the **creation of a platform-website, designed as a boundary infrastructure for knowledge-making (see 1.3). Consistently with the “civic epistemology” approach and the “practical inquiry” methodology**, the project aims to create a transparent process of data collection and elaboration for preparedness. **The platform also wants to be a place where knowledge produced by different scientific disciplines (interdisciplinarity) and by practitioners (transdisciplinarity) is gathered and put at the service of a comprehensive approach to preparedness.** Overcoming strict disciplinary boundaries and dealing with heterogeneous forms of data is both a method of setting up the research process and the goal of the final definition of strategies to improve the social organization of preparedness. More in general, **through the platform we aim to encourage forms of encounter and translation between scientific approaches, technologies and practices.** In the two fields of agriculture and healthcare, the platform also aims to become an incubator of innovative solutions and technologies for preparedness **and protocols for the application of existing technologies** in forms that ensure their integration with actors’ expectations;
4. **Through the definition of a set of non-equivalent preparedness indicators, amenable to multi-criteria analysis, our goal is to support the co-construction of a reliable information basis for public action** through the collaboration of research actors and institutional and civil society subjects, thus developing the best conditions to foster **mutual education processes** (Burawoy, 2005) in the relationship between science, technologies and society. Through the

activities of dissemination and training related to the use of the set of preparedness indicators, our ambition is to support a **larger social process meant to popularize an approach to preparedness based on socio-ecological care and boundary infrastructures for knowledge making**;

5. Through the provision of **insight into the forms in which a major reorientation of science and technology is possible** (and already under way) in order to better respond to societal needs and demands, with special reference to the interface between health and food provision, health services and socio-ecological systems, vis-à-vis growing socio-ecological turbulence and unpredictability. Of particular importance is the involvement of young researchers and the creation of a receptive research environment that supports them in exploring and developing new ideas and approaches. Several actions are planned for this purpose in the project;

6. Through the elaboration of preparedness strategies that are based on insight into ongoing experiences in two crucial fields (healthcare and agriculture), to **understand the extent to which a preparedness approach is already present and may be amenable to diffusion and generalisation**. In this way, it will be possible to show a science that is interested in practices not so much to regulate them as to recognise their nature of experimental practices whose lessons can be reinforced and amplified by scientific research and transformed into recommendations and guidelines of more general scope.

Finally, as specified below (see section 3.3), the composition of the research team is by itself conducive to the goals of the project, as members of the research team have different yet complementary skills in the social sciences. Additionally, academic researchers and specialists in healthcare and agriculture will be involved at the stage of the creation, together with practitioners, of a practical inquiry research community on preparedness.

1.3 Concept

Explain the overall concept underpinning the project describing the positioning of the project in the academic debate, the main ideas, models and assumptions involved.

In this project we advance an **interpretation of preparedness** as a logic of public action promoting territorial **socio-ecological care** and **boundary infrastructures** of knowledge-making and resting on **a way of conceiving and developing technologies and of relating with the biophysical world in terms of supporting socio-ecological alliances for human and environmental health** (see Tsing 2015).

By **boundary infrastructures** we mean an infrastructure that “serves multiple communities of practice simultaneously, be these within a single organization or distributed across multiple organizations” (Bowker and Star 1999: 313). A boundary infrastructure of knowledge-making for preparedness is an infrastructure that **can accommodate heterogeneous forms of knowledge and “formats of information”** (Thévenot 1984; 2007) **and produce a relevant and objective “informational basis”** (Salais 2009) **for anticipation and action at different scales**. By **care** we mean, first of all, a **logic of action** (Mol 2002, 2008; Mol, Moser e Pols 2010) in which **practice and decisions are oriented by evaluative criteria that take shape in the situated experience of socioecological interdependencies with the goal to maintain and repair them and create the condition for all the agents involved to live as well as possible** (Tronto 1993). Acting according to a logic of care implies being able to take into account those elements of singularity in a situation which are relevant for maintaining and repairing socio-ecological interdependencies. Usually intended as a logic guiding human-to-human relations, care is today reframed in STS literature more broadly as “**ecological care**”, that is a mode of engaging with humans but also with the material world and non-human living beings (Puig de la Bellacasa 2017). This is the meaning of care we adopt in this project and it should not be confused with care intended as “cure” which is the meaning of care typically related to health issues.

Referring to a large scientific debate, our starting point is that preparedness is not just a technique. Actually, together with resilience, **preparedness is today a pillar of disaster risk management** (Revet 2020; see also Anderson 2010; Anderson et al. 2019). The importance progressively acquired by these notions cannot be understood without considering the parallel emergence of the “world risk society” (Beck 1999; 2006) in which local contexts are increasingly exposed to global processes engendering crises and uncertainty. The emergence of the world risk society has been accompanied by the pervasiveness of potential catastrophes, considered as inevitable, but also unpredictable.

According to anthropologist Andrew Lakoff (2017) preparedness is a style of reasoning, an ethos and a set of governmental techniques for reflecting about and intervening in an uncertain, potentially catastrophic future. The author distinguishes between prevention and preparedness as two ways of thinking about and intervening into a dangerous future.

In prevention, a potential threat is taken up first as a regularly occurring event whose probability can be calculated based on known patterns of historical incidence and that can be managed through the distribution of risk. In preparedness, alternatively, a threat is understood and managed as an unprecedented but potentially catastrophic

event “whose consequences can only be **managed by using methods of imaginative enactment that enable planners to mitigate vulnerabilities**” (Lakoff 2017, p. 8).

Lakoff explains that so-called «preparedness techniques», like scenario-based planning, early warning or “vigilance” systems, and medical supply stockpiling, emerged historically in the US during the Cold War, having been subsequently repurposed to address other emergencies and in particular health emergencies, like pandemics.

In the European context, the debates on new disasters and catastrophes have focused mainly on the issue of precaution while less attention has been paid to understanding preparedness.

An exception is **the work of French anthropologist Frédéric Keck (2020)** who studied the impact of SARS emergency (2002-2003) in three countries: Hong Kong, Taiwan and Singapore. His research explores the impact of the pandemic emergency in terms of reconfiguring humans-animals relations.

According to Keck, prevention and preparedness are not simply two risk management techniques. They are concepts referring to two distinct ways human beings have developed to manage uncertainty in their relationship with the environment and its potential threats. Keck names these two ways as «cynthetic» in the case of preparedness, and «pastoralist» in the case of prevention, referring to anthropology’s traditional distinction between hunting and pastoralist societies.

Following Keck, prevention (or securitization) is “the management and control of populations in a territory through the use of statistics”, and **preparedness (or mitigating) is “the imaginary enactment of disasters in a community where humans take the perspective of nonhumans”.**

More in general, Keck invites “a shift in the reflection on preparedness from the short temporality of emergencies to the long temporality of ecologies”. In his view preparedness **should be explored as a specific mode of understanding causality nexuses, as a specific argument on nature-society relation and as a specific form of evidence production.** In this sense, **preparedness would require a fundamental change in the goals and methods of scientific knowledge production.**

A key-concept in Keck’s analysis of preparedness is that of “**sentinel**”, an ecological notion that points to “sites where early warning signals are produced”. They can span from sentinel cells in organisms, to sentinel animals, sentinel actors, sentinel ecosystems, “digital sentinels”. These signals, however, must be elaborated and integrated into processes that allow for appropriate evaluation and responses to be taken at different scales.

Preparedness, understood in Keck’s sense as a logic of relationship to lifeworld, is not based on the aspiration to control but on the **promotion of forms of collaboration between humans and between humans and other living beings** (plants, animals, bacteria, viruses, etc.). On this view, of the three techniques indicated by Lakoff (scenarios, stockpiling and vigilance), it is the third that crucially characterises preparedness, the others being found also in preventive approaches. Through our research **we aim to show that an effective local preparedness to major health and environmental crises requires a specific logic of public action in addressing uncertainties, as related to potential health and environmental catastrophes.** This logic aims at improving territorially distributed capacities and competencies to **deal with global uncertainties through a peculiar take on anticipation.** It depends on developing “boundary infrastructures” of knowledge-making for preparedness to health and environmental crises and on material and immaterial infrastructures of territorial socio-ecological care.

We contend that boundary infrastructures of knowledge-making for preparedness challenge mainstream processes of scientific knowledge production and the centrality attributed to standard technical solutions that are scalable across multiple settings. More in general, preparedness calls for a new relation between science, technology and society which this project wants to clarify in its distinctive features.

In our view, **preparedness requires to recognize the public relevance of experiential forms of knowledge and non-scalable technical solutions elaborated by actors directly engaged in the everyday maintenance and reproduction of conditions of human and environmental health and ecological sustainability,** what we define in this project as activities of territorial “**socio-ecological care**”. More specifically, our project focuses on two fields and related categories of actors of territorial socio-ecological care: 1) **actors of territorial health systems and their role in preparedness for pandemic risks;** 2) **networks of farmers and their role in preparedness for climate change induced risks.**

As already said, we **define these actors and their organisations as “sentinels”** (Keck 2020) who, because of both their expert and experience-based knowledge of local conditions of human and environmental health and ecological sustainability, are able to pick up warning signals otherwise undetectable (including by statistical means). These signals are “clues” to potential catastrophes. However, **detecting early signals is not enough if sentinels are not included in a wider knowledge system that can alert public authorities at different scales and inform territorially tailored measures of intervention.**

In PRELOC we aim at translating this understanding of preparedness into **guidelines and instruments** to design - together with sentinels in the health and agricultural sectors, scientists, experts, citizens and local authorities -

knowledge systems and territorial infrastructures of socio-ecological care that can help increase territorial preparedness.

This objective requires **not to separate environmental health issues and human health issues** (see Gaille 2018). Instead, we want to emphasize that a perspective of socio-ecological care requires **connecting a diversity of forms of labour usually considered as separated**, related to human health and education (social reproduction) but also to the reproduction of ecological conditions of biodiversity and environmental health.

1.4 Methodology

Explain the overall methodology first, and in a second stage the specific method[s] used to answer your research question[s].

a. Overall methodology

The methodology we apply in this project is intended to be an example of the kind of reorientation of scientific practice we contend is required to meet the main challenges lying today at the interface of science, technology and society. In a scenario of increasing uncertainties and complexity, there is a need to imagine alternative research designs (Pellizzoni 2009).

The project will **proceed in an abductive way** (see Tavory and Timmermans 2014; Thomas 2010). A first step (1) will be devoted to draw an outline of the existing insights into preparedness at the theoretical level. The second step (2) will be the analysis of the state of implementation of preparedness logics and instruments in the Italian context and the study of selected experiences in the two fields of health and agriculture. Subsequently (3) there will be a conceptual reconsideration and refinement and (4) the return to the empirical field to further investigate. The final step (5) will be devoted to building a comprehensive account of how preparedness can be enacted in the key of a novel understanding of social well-being and socio-ecological alliances for sustainability. This process will result in the elaboration of two tools that can concretely support public action for territorial preparedness: 1) **a set of non-equivalent preparedness indicators**, amenable to multi-criteria analysis approaches; 2) a boundary infrastructure for knowledge-making in the form of a **website designed both as a platform** of information on preparedness and as an incubator of innovative solutions and technologies for preparedness.

The **set of non-equivalent preparedness indicators** to support public decision-making will be based on already existing quantitative data and qualitative evidence that will be produced during the research process. In fact, the complexity of socio-ecological issues brings to the fore diverse forms of **incommensurability** (Centemeri 2015) and the impossibility of using an algorithm to compress the information required for a given representation without losing valuable information (see also Desrosières 1993). As argued by Giampietro *et al.* (2011) **health and other socio-ecological issues are complex by definition** and a complex phenomenon is “a phenomenon which can only be perceived and represented using simultaneously **several non-equivalent narratives, dimensions and scales of analysis**”.

The **website-platform**, realized with the technical support of web-design specialists, will be instrumental in the process of **collecting data for the construction of the set of indicators** and for their dissemination, providing an **authoritative source of information on preparedness**. It will also provide a venue for the **collaborative development of technological innovations**.

The definition of the set of indicators and the development of the website will be **the result of the active involvement of the stakeholders in the research process**. Stakeholders include: **individual farmers and doctors; networks of farmers and doctors; networks of technological innovators; international, national and regional policy makers; technicians; health services cooperatives and associations; civil society organizations; representatives of the main professional organizations in agriculture and healthcare**.

In this respect, our project aims to contribute to develop effective “**civic epistemologies**” (Jasanoff 2005; see also Miller 2005) capable of guaranteeing the quality of knowledge claims production for preparedness. This quality rests on the inclusiveness of the processes of knowledge-making in terms of taking into account the representations of those actors who are directly affected by the consequences of the decisions that are made on the basis of these claims. This is particularly true when decisions concern **technological innovations** with a strong impact on organisational and working models. Some of the “solutions” that are promoted today as a response to the need to increase preparedness in health and agriculture (e.g. digital agriculture or telemedicine and e-health) share these characteristics.

Consequently, the research will combine three theoretical and methodological approaches:

- “**Practical Inquiry**” (Lanzara 1993; 2016; see also Dewey 1954), according to which the **active involvement of all the actors (researchers and non-researchers) in both the definition of the problems at stake (problem setting), and the search for effective strategies to cope with complexity (problem solving)**, allows to both avoid ineffective top-down

approaches from science to institutional actors, to society at large, and to significantly reduce, if not eliminate, skeptical or anti-scientific attitudes grounded in the aforementioned loss of trust in the reliability of the pre-analytical process leading to the issue definition.

- **Social Multi-Criteria Evaluation (SMCE)** (Munda 2003), which is particularly appropriate to guide us in the definition of a set of non-equivalent indicators for preparedness. In fact, preparedness choices fall within the type of policy problems where, as stated by Funtowicz and Ravetz (1993), “facts are uncertain, values in dispute, stakes high and decisions urgent”. SMCE has emerged as a **practical method for dealing with the social dimensions of decision-making processes in conditions of uncertainty through a participatory approach**, able to guarantee a participative and transparent decision-making process while at the same time supporting the learning process and a dialogue among stakeholders on the relative merits of different options (Ortiz et al. 2018). This approach sets the **relevance of a synergy between qualitative and quantitative investigation and the need to review, relate and verify data and their quality, in order to build indicators for supporting deliberation processes**. Above all, SMCE shows how data must be included in meaningful frames of interpretation (or narrative) in order to be significant to actors and to guarantee effectiveness to those measures that are taken on their basis.

- **Sociology of Public Action** (Lascoumes and Le Galès, 2007; Bifulco, 2017), which allows us to **jointly consider the institutional level, the level of social practices and their relationships** – the interdependencies, inconsistencies, mutual alignments and misalignments. From this theoretical perspective, the concept of public action denotes a plurality of institutional authorities and social actors interacting at different levels and the focus is on the articulations between political regulation and social regulation.

b. Specific methods to answer the research questions

The project will use methods and techniques that aim at combining expert knowledge, technical knowledge, practical and experiential knowledge. In order to deal with the objectives and the contents of the project, we will enhance the **interaction between qualitative and quantitative methods**, both aimed at investigating preparedness logics, practices and techniques in their making and with an active involvement of experts and stakeholders at different stages of the research.

We will combine the **analysis of policy texts on preparedness from national and international institutions in healthcare systems and agriculture with in-depth interviews with key informants at local, national and international level** (between 10 and 15 interviews for each field). Data thus collected will be analyzed relying on the methods of **Qualitative Text Analysis** (Kuckartz 2014) with the use of a specific software (Atlas.ti) in order to identify preparedness discursive frameworks and underlying logics of public action.

This analysis will provide us information relevant for the **selection of 8 case-studies (4 in the health sector and 4 in the agriculture sector) as relevant cases of territorial preparedness** to be investigated in order to advance in the design of preparedness indicators and in the analysis of territorial network of socio-ecological care. This selection will be made conjointly with stakeholders (see WP1 in section 3.1).

In the choice of case studies, however, we will refer first of all to the territorial contexts of the Lombardy, Tuscany and Emilia-Romagna Regions and then will expand the choice to other contexts. The same applies to the dissemination of the project. The eventual ambition of PRELOC is to provide results of national significance.

Case-studies will be investigated through a methodology of participant observation (Jerolmack & Khan 2018) in order to have access to the understanding of specific practical and experiential forms of knowledge that are relevant for preparedness in both fields. Participant observation will also provide relevant data on how actors appropriate top-down technological innovations for preparedness. In addition, specific data will be collected on the organisational dimensions of existing infrastructures of socio-ecological care, in order to advance in the understanding of how to design and support them.

The definition of the set of indicators for preparedness will be developed together with stakeholders. Researchers will present a first set of indicators, turning explicit the rationale that has guided their choice. This first selection will be elaborated by relying on the heterogeneous set of data collected in WP1, WP2 and WP3. Through the organization of 3 focus groups (1 for each group of stakeholders in healthcare and agriculture; 1 general) stakeholders will discuss the first set of indicators. The focus groups will provide the opportunity to collect their critical observation and improve the original set of indicators.

1.5 Ambition

Describe the originality of your research and the advance your proposal would generate beyond the state of art.

The proponents believe that for an advancement beyond the state of the art regarding the relationship between science, technology and society, with special reference to the peculiar Italian context, a cutting-edge issue is particularly suited. More precisely, **the ambition of the project is fourfold**.

First, it aims at advancing reflection on **alternative takes on science and technology**. Second, it aims at advancing knowledge and insight on **preparedness as a concept and methodology to deal with uncertainty**. Third, it aims at

offering **innovative tools for building preparedness for future challenges** in the fields of healthcare and agriculture (and, prospectively, others). Fourth, it aims at sustaining the **development of “civic epistemologies”** (Jasanoff 2005) capable of guaranteeing the quality of knowledge claims production for preparedness. Instrumental to this purpose is the **interdisciplinary and transdisciplinary outlook** of the project, which, though firmly placed in the social science area, entails a constant dialogue with different disciplines and experiential knowledges. In fact, the research team is supported for the entire duration of the project by an **Interdisciplinary Advisory Board**. The **abductive methodology** adopted implies the early implication of, and a constant dialogue with a diversity of stakeholders in the fields of healthcare and agriculture.

The first ambition of the project is to provide a **significant advancement regarding a reorientation of science and technology in order to address the uncertainty and complexity of socio-ecological issues**. The issue of an “alternative science” has long haunted philosophers, social scientists and STS scholars. In philosophy there have been various attempts, from Marx to Adorno, Benjamin and Marcuse, to define what “another” science might look like, often conjuring images of a non-dominative and non-instrumental relation with the world; images usually met with charges of utopianism, elitism, romanticism, regressiveness. Later, the issue of a science done “otherwise” has been addressed by feminist and decolonial science studies, which connected it with a case for nonhuman agency, subject-decentering and social/gendered positionality. This issue has hardly a merely academic relevance, being instead of burning actuality. The **culturally and technologically standardizing impacts of globalization** and the way science policies and scientific work have increasingly lined up, in setting research agendas, with purported economic imperatives and corporate dictates, **have been insufficiently elaborated** even by cutting-edge literature in STS and elsewhere. Yet, they raise the issue of whether **new important directions and approaches in science and technology may be missing, out of an overall effect of “group think”** (i.e. conformity in formulating questions and searching for answers, with resulting diminished capacity of alternative innovative thinking). **Emergent socio-ecological and health threats and crises provide clues** to the relevance of this issue, representing for this reason a crucial field of investigation. In turn, preparedness as a way of addressing threats and crises constitutes a framework within which significant advancements can be achieved through the analysis of ongoing experiences in fields where Italy traditionally boasts a leading role for innovativeness and originality.

Accordingly, the **second ambition** of the project is to provide a **significant advancement of knowledge and insight on preparedness as a specific outlook on socio-ecological turbulence and a way to cope with growing threats** of catastrophic events, with special reference on the one hand to healthcare and on the other on agriculture and food provision. More specifically, the advancement beyond the state of the art in this regard will concern:

- a. **The introduction and development in the Italian debate** of the issue of preparedness as an emergent approach to anticipatory governance;
- b. **The rationale of preparedness and its applicability** in a variety of fields beyond emergency management, as the comparison between the two selected fields of inquiry will help to clarify;
- c. The elaboration of an account of preparedness which aims to **connect it with other conceptual frameworks of growing importance, namely care and boundary-organisation**, again capable of extensive application across problem-fields.

Regarding the **third ambition**, namely offering **innovative tools for building preparedness for future challenges** in healthcare and agriculture (and, prospectively, others), the key contribution of the project will consist in:

- a. **Mapping ongoing experiences**, as preliminary to the improvement and diffusion of preparedness approaches through an **adaptive benchmarking approach** (communication and learning of best practices in the light of local specificities);
- b. The provision of **in-depth insight into ongoing experiences** in two crucial fields (healthcare and agriculture), to understand the extent to which a preparedness approach is already present and may be amenable to diffusion and generalisation;
- c. The construction of a **set of indicators for preparedness** together with stakeholders through the application of social multi-criteria evaluation methods, **complemented by guidelines** for an innovative approach to preparedness;
- d. The construction of a **platform-website as a boundary-infrastructure for knowledge-making** stemming from different disciplinary and experiential knowledge and **incubator of innovative solutions and technologies for preparedness**.

Finally, for the **fourth ambition**, that is contributing to the emergence of **civic epistemologies** capable of guaranteeing the quality of knowledge claims production for preparedness, the key contribution of the project, through the development of suitable **guidelines and technologies**, is to help develop **trust and accountability** in processes of knowledge-making for preparedness. In this way, the project aims at significantly contributing to reduce skeptical or anti-scientific attitudes in social responses to situations of uncertainty.

In sum, the ambition of the project is the provision of insight into **the forms in which a major reorientation of science and technology is possible and perhaps to some extent already under way** in order to better respond to societal needs

and demands vis-à-vis growing socio-ecological turbulence and unpredictability, with special reference to the interface of health and food provision, healthcare services and socio-ecological systems. Three elements of originality descend from this ambition:

- The commitment to shedding light on, and strengthening, **the nexus between human healthcare activities and activities of taking care of the environment;**
- The commitment to providing **a specific declension of preparedness as pivotal to a renewal in the approach to techno-scientific advancement** and the ensuing interweaving of society with the biophysical world. This entails on the one side **building bridges between different literatures and expertises;** on the other side, **expanding over existing takes on preparedness** and its implementation across diversified publics and stakeholders, by way of its connection with the logic of care and the concept of boundary-infrastructure;
- The commitment to **gaining evidence and systematising existing Italian experiences** traceable to the advocated approach to preparedness.

2. IMPACT

Describe the impact of your proposal on the relationship between science, technology and society in Italy. Please indicate how you intend to measure it.

The project aims to produce two interwoven types of impact.

- First of all, we expect the research to **provide a framework for knowledge-making to enable territories to effectively anticipate and respond to potentially catastrophic crisis situations**, through the use of the preparedness tools that PRELOC will develop.

- At the same time, the process through which we aim to achieve this goal - and which is detailed in section 1 - will have, in turn, a more general impact on the relations between science, technology and society in the Italian context, being an example of a possible reorientation of science practice since it results **from the collaboration among different disciplines and different levels and contexts of knowledge production**. In fact, we believe that building trust in processes of knowledge-making, connecting research actors, practitioners, local administrators and other civil society stakeholders is of fundamental importance to face an increasingly uncertain world. Consequently, the expected impact is that of contributing to develop effective **“civic epistemologies”** (Jasanoff 2005) capable of guaranteeing the quality of knowledge claims production for technologies of preparedness. This quality rests significantly on the inclusiveness of the processes of knowledge-making.

Through identifying logics and tools for preparedness grounded on the relationship between expert knowledge, technical knowledge as well as practical and experiential knowledge, PRELOC aims at creating the conditions for an effective implementation of organisational and technological socially responsible innovations in the health and agriculture sectors.

The scientific contribution of PRELOC concerns a field which is crucially resting on the capacity to create networks of trust in knowledge-making, thus helping to overcome the difficulties currently present in the Italian context in the relation between science, technologies and societies. This implies, more precisely, the possibility to translate an innovative socio-ecological understanding of preparedness into specific tools (as the set of non-equivalent indicators and the related maps, the video-interviews to various stakeholders, the paper and articles produced through the research, the consultancy and training activities, the dissemination activities, as well as the collection of the innovative technological solutions and protocols for preparedness, etc.) that will be contained in the platform, and that will be subsumed into specific **guidelines for a socio-ecological care approach to preparedness**. These guidelines will be disseminated to political decision makers in order to support the creation of: preparedness knowledge systems; practices of socio-ecological care that rest on a relationship to living systems informed by imperatives of socio-ecological alliances; the development of technologies designed to take into account a diversity of “sentinels” in the healthcare and agricultural sectors, from practitioners, to scientists and experts, to citizens, to ecosystems and the species inhabiting them.

The creation of a boundary infrastructure (the website/platform) to support technological socially responsible innovation will help to reinforce territorial infrastructures of socio-ecological care.

Therefore, **the general expected impact of the project is to foster a reorientation of science and technology in order to better respond to key societal needs and demands, at the interface of health and food provision, healthcare services and socio-ecological systems, in a context of increasing radical uncertainties**. This entails also strengthening the connection between healthcare work and caring for the environment and territory. This is possible through the promotion of an alternative, socio-ecological understanding of logics and technologies of preparedness, which rests, on the one side, on bridging different approaches to uncertainty and preparedness; on the other side, on highlighting the connections between preparedness, the logic of care and the rationale of boundary-organisations.

As for the impact on society and territories as a whole, the research will disseminate its findings also among non-academic audiences, additionally designing and implementing knowledge frameworks for preparedness that enhance the innovative tradition of both agriculture and healthcare in Italy, in a context characterised by the challenges stemming from globalization, economic and health crisis, and climate change.

In this sense, the potential applications of the research and its impact on the relationship between science, technology and society in Italy will mainly concern the **production of new knowledge and tools for preparedness**, their implementation and the **creation of networks of knowledge-making for preparedness (via the platform-website)**. This will be pursued in constant collaboration with the stakeholders and the Interdisciplinary Advisory Board: the former will be at once co-designers and implementers of the tools and technologies produced by the project, while the latter will constantly contribute to their definition. Moreover, through communication activities, the project will ensure that **knowledge and technologies will be accessible and available for use by publics and communities** beyond the territorial and institutional contexts targeted by the research, thus reaching other scales.

To sum up, the products and activities of PRELOC that will produce a **specific impact on the relationship among science, technology and society in Italy** will be:

- the **creation of a website as a boundary infrastructure for knowledge making about preparedness** and its advertising on the main social networks. Relevant knowledge for preparedness will be made accessible through the collection of contents on territorial preparedness: video-interviews with stakeholders, cartographies, other multimedia contents, the set of non-equivalent indicators for local preparedness, the collection of innovative technological solutions and protocols for preparedness. Moreover, a section in the website will host an open access repository (for position papers, reports, other academic contents);
- the production of **guidelines for a socio-ecological care approach to preparedness**, which will be the topic of a conference presenting the research results to stakeholders and to the general public and that will be available on the platform;
- **consultancy and training activities with public and private actors** involved in the construction and implementation of preparedness practices, in order to provide the know-what and know-how of effective tools;
- publication of **papers in online websites engaged in scientific reflection and dissemination; academic dissemination through national and international conferences and the publication of scientific articles and books.**

As for the measurement of impacts, a preliminary remark is necessary. Nowadays research councils and investors expect researchers to plan for and demonstrate the impact of their investigations not only on the scientific community but also at the social, political and economic levels, to make the whole society benefit from findings.

As it is in the perspective of PRELOC, even its **impact** on the relationship among science, technology and society in Italy will be **measured through a framework that focuses on the processual dimension of the production of science and technology and on the involvement of different audiences in the research process**. Standard metrics will be then supplemented by more local and appropriate indicators that will assess not only the research outputs but also the research process and how it may have affected people's lives and supported reflective practices and knowledge on preparedness.

For this reason, we defined a set of quantitative indicators to monitor the impact of our activities both in the scientific and non-scientific fields:

Platform access and usage indicators - number of page views, number of users, source of views, % of new sessions, number of page views per session, affinity categories (what users who came to the site are looking for), most visited pages;

Participation in the project indicators - number of persons who participated in the public workshops, number of persons who attended the final conference, number of stakeholders involved in the project (interviews, focus groups, case studies, participation in conferences and seminars), number of projects and collaborations born from the project;

Public dissemination indicators - number of contributions appeared on science dissemination platforms and websites, number of research presentations in non-academic areas;

Academic dissemination indicators - number of conferences where project results were presented, number of scientific articles published, number of accesses to open access articles and volume, number of seminars presenting research results;

Training indicators - number of students involved in the planned training activities (PhDs, summer schools), number of training actions requested by public and private actors on project issues and themes, number of local authorities adopting indicators and guidelines for preparedness.

These indicators will be complemented with an **accounting for the transformation in stakeholder practices** that the investigation itself has produced by interconnecting different levels and types of knowledge. We will try to understand

if there has been a change in preparedness logics and technologies connected with stakeholder involvement in the research and their use of the developed tools. Such investigation will be based on interviews with stakeholders and actors involved in the case studies. An interview grid will be prepared and between 10 and 20% of the people actively involved in the research practices will be interviewed.

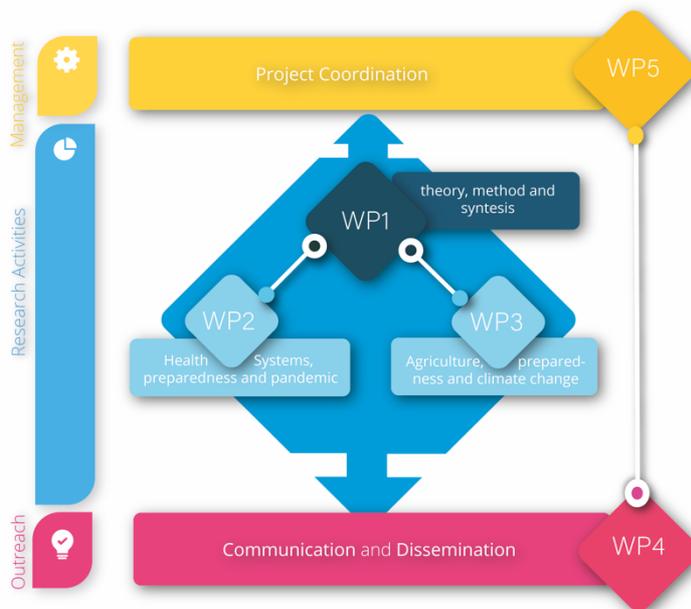
The impact of the research will be illustrated in a specific section of the final report.

3. TEAM AND ORGANIZATION

3.1 Work packages (WPs) and deliverables

Please provide a short description of:

- The whole structure of the workplan



The workplan is based on five work packages (WP). WPs are organised according to a basic sequential logic (from theory to empirical investigation to dissemination of results). However they are also temporally and substantively integrated (see description, tables, figures and Gantt).

WP1 is devoted to **constructing the theoretical framework and operationalisation** of the key concept (**preparedness**, boundary-infrastructure of knowledge making; networks of socioecological care in science and technology design and implementation), and to compare and systematise the results of the on-field study for scientific and policy purposes. All the activities in WP1 will be implemented in close relation with the Interdisciplinary Advisory Board and are articulated in 5 tasks, to be developed at different stages of the project each. Crucially, WP1 is responsible for the elaboration of the final results

and therefore for the accomplishment of the project's impact both on the scientific and societal levels (theoretical advancements; preparedness indicators; web platform). WP1 will provide the baseline for the case studies carried out in WP2 and WP3 and the underpinnings for the dissemination strategy developed in WP4 (see the Gantt).

WP2 is devoted to the **analysis of logics, techniques and organizational infrastructure of preparedness to pandemics in Italian healthcare system** and it is organized in 3 tasks. First, a survey of the state of implementation of preparedness techniques and technologies in the sector with respect to the risks of pandemics will be complemented with the overview of the scientific literature on the issue. Second, we will conduct a round of interviews with experts and stakeholders, including experts of WHO and the Italian Ministry of Health, individual experts and leading institutions in the fields of healthcare and pandemics (Fondazione GIMBE, Centro Studi Sereno Regis), representatives of the medicine professionals (Ordine dei Medici), networks of promoters of universal public health (e.g. Medicina Democratica, Slow Medicine) and key institutional actors in charge of healthcare management in time of pandemics, selected on the basis of the significance of their experience (a first selection includes ATS Milano; AUSL di Bologna; AUSL di Parma; ULSS 2 della Marca Trevigiana; ASS di Trieste). Beyond providing information on the implementation of preparedness logics, principles and techniques, these interviews will guide us in the selection of 4 case-studies considered by stakeholders as relevant cases of territorial preparedness.

Finally, a 1-year period of investigation will be conducted on the 4 selected case studies, relying on documentary analysis, interviews and participant observation. During this phase, we will pay particular attention to the technologies for preparedness mobilized in these experiences within the institutional and organizational context of healthcare system.

WP2 is informed by the analyses developed in WP1 and provides data for the reformulation of the theoretical framework. It is conducted in parallel with WP3, in connection to which it provides the relevant data for the activities of dissemination included in WP4.

WP3 is devoted to the analysis of **preparedness to climate change in Italian agriculture**. The WP is organised in the same way as WP2, that is in 3 tasks. First, a survey of the state of implementation of preparedness techniques and technologies in the sector with respect to climate change-related risks will be complemented with the overview of the scientific literature on the issue. Second, we will conduct a round of interviews with experts and stakeholders, including experts of FAO, the MIPAAF (Ministry of Agricultural, Food and Forestry Policies), experts at CREA (Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria), experts in agronomy and climate change, representatives of the main farmers' organisations (Confagricoltura and Coldiretti), networks of promoters of "precision agriculture", networks of agroecological farmers (Accademia di Permacultura; Scuola diffusa della terra Emilio Sereni; Associazione Rurale Italiana; Genuino Clandestino), Aiab (Italian association for organic agriculture), Deafal (Italian association for regenerative agriculture), "Rete semi rurali" (network of farmers seeds), the network Rural Hack, national environmental NGOs (Legambiente, WWF, Terra!).

Beyond providing information on the implementation of preparedness logics, principles and techniques, these interviews will guide us in the selection of 4 case-studies considered by stakeholders as relevant cases of territorial preparedness.

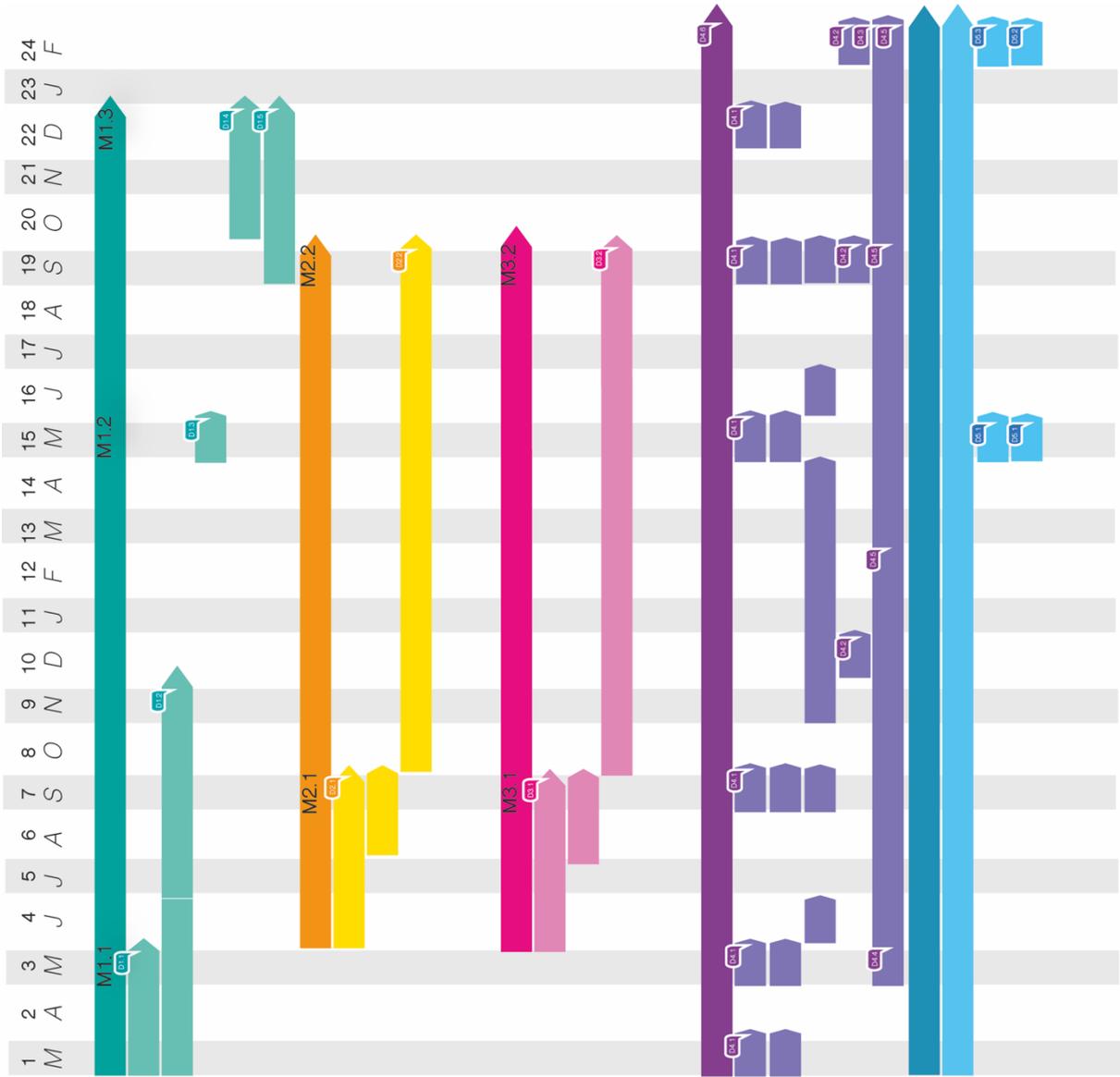
Finally, a 1-year period of investigation will be conducted on the 4 selected case studies, relying on documentary analysis, interviews and participant observation. During this phase, we will pay particular attention to the technologies for preparedness these projects use and the networks they participate in, with particular reference to their integration into agri-food systems.

WP3 is informed by the analyses developed in WP1 and provides data for the reformulation of the theoretical framework. It is conducted in parallel with WP2, in connection to which it provides the relevant data for the activities of dissemination included in WP4.

WP4: this WP is devoted to the **communication** with the funding organization, as well as among members and with the IAB and the stakeholders. Besides, the WP aims at developing and implementing the **dissemination** activities towards external scientific and general audience (see also Communication Plan). The activities are organised in five tasks, including a) periodic organizational meetings to ensure the accountability of the project to the funding organization; b) periodic workshops to ensure the best possible flow of information among members of the research units and with the IAB; c) young people training activities; d) scientific dissemination through participation to national and international congresses and conferences and through publication of open access scientific articles and texts; e) public dissemination to non-academic publics through participation to conferences and initiatives and publication in social media.

WP4 will coordinate the communication of the whole project and disseminate the research results and the tools that will be defined and designed through the work of WP1, WP2 and WP3.

WP5 is devoted to activities of **project coordination, financial management and progress monitoring**. The WP is organized in 3 tasks, and it includes the contributions of all partners and team members; monitoring the progress of scientific development and managing the financial dimensions of the project in order to appropriately respond to potential issues and risks and to respect the foreseen quality, budget and time objectives. In order to do so, the WP will be operating all along the project, in close relation to all other WPs, assuring their effective and synergistic action.



1 – Theory, method and synthesis

Task 1.1. Literature review, theoretical framework
 Task 1.2. Design and implementation of the website-platform
 Task 1.3. Evaluation of the first round of participant observation
 Task 1.4. Comparison of results and theoretical reformulation
 Task 1.5. Elaboration set of non-equivalent indicators for preparedness

2 - Health Systems, preparedness and pandemics

Task 2.1. Preparedness principles and techniques in healthcare in Italy
 Task 2.2. Interviews and selection of case-studies
 Task 2.3. Fieldwork

3 - Agriculture, preparedness and climate change

Task 3.1. Preparedness principles and techniques in agriculture in Italy
 Task 3.2. Interviews and selection of case-studies
 Task 3.3. Fieldwork

4 – Communication and Dissemination

Task 4.1. Periodic organizational meetings
 Task 4.2. Periodic workshops
 Task 4.3. Young people training activities
 Task 4.4. Participation in conferences and publications
 Task 4.5. Research dissemination in non-academic contexts

5 - Project Management and Coordination

Task 5.1. Preparedness principles and techniques in healthcare in Italy
 Task 5.2. Interviews and selection of case-studies
 Task 5.3. Fieldwork

Table 1 – List of Milestones

Milestone number	Milestone name	Related WP	Due date (months)	Means of verification
M1.1	Workshop 1.1 – Validation of WP1 results with IAB and invited academic and policy experts (Unimib)	1	3	Results included in D1.1
M1.2	Workshop 1.2 – Checking the first round and elaborating indication for second round of participant observation with IAB and selected stakeholders (Unipi)	1	15	Results included in D1.3
M1.3	Workshop 1.3 – for discussion of scientific and policy implication of case studies and validation of the non-equivalent set of indicators with IAB and selected stakeholders (Unimib)	1	22	Results included in D1.4
M2.1	Workshop 2.1. – with selected stakeholders, to present the results of the analysis of the implementation of preparedness in healthcare in Italy and selection of case studies (Unimib)	2	7	Results included in D2.1 and D2.2
M2.2	Workshop 2.2. – with selected stakeholders to discuss the results from the analysis of case studies (Unibo)	2	19	Results included in D2.2 and D1.4
M3.1	Workshop 3.1. – with selected stakeholders, to present the results of the analysis of the implementation of preparedness in agriculture in Italy (Unipi)	3	7	Results included in D3.1 and D3.2
M3.2	Workshop 3.2. – with selected stakeholders to discuss the results from the analysis of case studies (Unibo)	3	19	Results included in D3.2 and D1.4

- A description of each WP (use the table below)

WORK PACKAGE NAME and NUMBER	1 – Theory, method and synthesis
WORK PACKAGE PARTICIPANTS (organizations)	Università degli Studi di Milano-Bicocca (Unimib), Università di Pisa (Unipi), Università di Bologna (Unibo), Interdisciplinary Advisory Board, Stakeholders
START MONTH and END MONTH	1-22
OBJECTIVE	O1.1 Providing the theoretical framework for the empirical study O1.2 Design of platform for knowledge sharing on preparedness O1.3 Analysing outcome of empirical studies O1.4 Elaborating and comparing results O1.5 Definition of preparedness indicators
DESCRIPTION	T.1.1 Literature review, theoretical framework and concepts operationalisation – M1-3 T.1.2 Design and implementation of the website-platform for knowledge sharing for preparedness - M1-9

	<p>T.1.3 – Evaluation of the first round of participant observation (case studies) and elaboration of indications for the second round – M15</p> <p>T.1.4 Comparison of results and theoretical reformulation – M20-22</p> <p>T.1.5 Elaboration of the set of non-equivalent indicators for preparedness - M 19-22</p>
EXPECTED RESULTS	<p>Advancement of insight into the characters and possible declensions of preparedness</p> <p>Developing consistent and comparable results from case studies</p> <p>Contributing to the advancing of the scientific and policy debate about preparedness</p> <p>Definition of instruments for preparedness (indicators and platform)</p>
DELIVERABLES	<p>D1.1 (Confidential, CO) – Report on theoretical framework and operationalisation, including Workshop 1 results – M3</p> <p>D1.2 (Public, PU) - Web-platform for knowledge sharing on preparedness - M9</p> <p>D1.3 (CO) – Report on empirical investigation first campaign check – M15</p> <p>D1.4 (PU) – Report on comparative results, synthesis, reformulation and definition of policy guidelines – M22</p> <p>D1.5 (PU) - Set of non-equivalent indicators for preparedness - M22</p>
RELATION with THE OTHER WP[S]	<p>WP1 provides the baseline for the case studies carried out in WP2 and WP3, and the underpinnings for the activities of dissemination included in WP4. It will be supervised and monitored by WP5.</p>

WORK PACKAGE NAME AND NUMBER	2 - Health Systems, preparedness and pandemics
WORK PACKAGE PARTICIPANTS (organization)	Unimib, Unibo
START MONTH AND END MONTH	4-19
OBJECTIVE	<p>O.2.1 - Analysis of the implementation of preparedness to pandemics in healthcare systems with relation to pandemic-related risks.</p> <p>O.2.2 - Data collection combining multiple data collection methods, including participant observation in selected case-studies.</p>
DESCRIPTION	<p>T.2.1 Documentary analysis of regional, national and international plans for preparedness in healthcare in Italy; analysis of the implementation of preparedness principles and techniques in the Italian context; overview of scientific literature on the issue – M 4-7</p> <p>T.2.2 Interviews with stakeholders, scientists and experts and selection of 4 case-studies, relevant in terms of preparedness in healthcare; selection of case-studies – M 6-7</p> <p>T.2.3 Case studies participant observation with focus on how logics, principles and techniques related to preparedness promote and activate a specific relationship among health services and territory – M 8-19</p>

EXPECTED RESULTS	Enhancing the knowledge on state of implementation of preparedness logics and instruments in the sector Collection of data on the 4 case-studies
DELIVERABLES	D2.1 (PU) – Report on the implementation of preparedness in the healthcare sector in Italy – M7 D2.2 (CO) – Report on the case studies – M19
RELATION WITH THE OTHER WPS	WP2 is informed by the analyses developed in WP1 and provides data for the reformulation of the theoretical framework. It is conducted in parallel with WP3, in connection to which it provides the relevant data for the activities of dissemination included in WP4. It will be supervised and monitored by WP5.

WORK PACKAGE NAME AND NUMBER	3 - Agriculture, preparedness and climate change
WORK PACKAGE PARTICIPANTS (organization)	Unipi, Unibo
START MONTH AND END MONTH	4-19
OBJECTIVE	O.3.1 - Providing an analysis of the implementation of preparedness to climate change in agriculture O.3.2 - Data collection combining multiple data collection methods, including participant observation in selected case-studies
DESCRIPTION	T.3.1 Documentary analysis, plans and reports of national and international institutions and organizations on preparedness in the field of agriculture in Italy; analysis of the implementation of preparedness principles and techniques in the Italian context; overview of scientific literature – M 4-7 T.3.2 Interviews with stakeholders, scientists and experts and selection of 4 case-studies identified as relevant in terms of preparedness to climate change; selection of case-studies – M 6-7 T.3.3 Case studies participant observation with particular attention to the technologies for preparedness they use and the local networks they participate in – M 8-19
EXPECTED RESULTS	Enhancing the knowledge on state of implementation of preparedness logics and instruments in the sector Collection of new data on the 4 case-studies
DELIVERABLES	D3.1 (PU) – Report on the implementation of preparedness in the agricultural sector in Italy – M7 D3.2 (CO) – Report on the case studies – M19
RELATION with THE OTHER WPS	WP3 is informed by the analyses developed in WP1 and provides data for the reformulation of the theoretical framework. It is conducted in parallel with WP2, in connection to which it provides the relevant data for the activities of dissemination included in WP4. It will be supervised and monitored by WP5.

WORK PACKAGES NAME AND NUMBER	4 - Communication and dissemination
WORK PACKAGES PARTICIPANTS (organization)	Unimib, Unipi, Unibo
START MONTH AND END MONTH	1-24
OBJECTIVE	O.4.1 – Coordinating the communication with the funding organization; O.4.2 – Coordinating communication among members, with the Advisory Board and with stakeholders O.4.3 - Disseminating the research actions and result to external audiences.
DESCRIPTION	T.4.1 Periodic organizational meetings to manage the project organization and to develop information for the accountability of the project to funding organization (M1, M3, M7, M15, M19; M22) T.4.2 Periodic workshops to ensure a continuous, transparent and monitorable flow of information among members, units and IAB (M1, M3, M7, M15, M19; M22) T.4.3 Young people training activities within doctorate programs in the 3 Universities, 2 summer schools, and academic open day and Meet me Tonight events in 2021 and 2022 for high schools students (M 4, 7, 9-14, 16, 19) T.4.4 Scientific dissemination through participation in national and international conferences, open access repository in the platform, publication of open access articles and books, final conference (M10, 19, 24) T.4.5 Public dissemination through research presentation in non-academic contexts, use of social networks, publication of short articles in online platforms for scientific dissemination, participation in public events in the framework of the European Researchers' Night (such as Meet me Tonight), the European night for research, definition of preparedness guidelines (M3-24)
EXPECTED RESULTS	Coordination of the communication among team members, Advisory Board, stakeholders and large public, and with funding organization Spread of a socio-ecological care approach of preparedness through an intensive use of the website and guidelines.
DELIVERABLES	D 4.1 (CO) - Short reports on kick-off, regular and final organizational meetings (M1, M3, M7, M15, M19, M22) D 4.2 (PU) - Scientific articles and conferences (M10; M19; M24) D 4.3 (PU) - Open access book (M24) D 4.4 (PU) - Activation of Social Networks accounts (M3) D 4.5 (PU) - Publication of contributions on non-academic magazines and journal (M12, M19, M24) D 4.6 (PU) - Final conference for presenting research results, preparedness tools (indicators, data, guidelines, etc) on platform (M24)
RELATION WITH THE OTHER WPS	WP4 will coordinate the communication of the whole project and disseminate the research results and the tools that will be defined and designed through the work of WP1, WP2 and WP3. It will be supervised and monitored by WP5.

WORK PACKAGE NAME AND NUMBER	5 - Project Management and Coordination
WORK PACKAGE PARTICIPANTS (organization)	Unimib , Unipi, Unibo
START MONTH AND END MONTH	1-24
OBJECTIVE	O.5.1. - Ensuring the project advancement according to the project design O.5.2. - Meeting the project's overall and specific objectives and measuring its impact
DESCRIPTION	T.5.1 - Integrating the contributions of all partners and team members (M1-M24) T.5.2 - Progress monitoring on scientific development (M15; M24) (see "Impact" section 2) T.5.3 - Progress monitoring on financial management (M15; M24)
EXPECTED RESULTS	Identifying potential issues and risks in advance, in order to set up appropriate responses Reaching PRELOC goals respecting the foreseen quality, budget and time objectives
DELIVERABLES	D5.1 (CO) - Short progress-report on financial management and scientific monitoring (M15) D5.2 (CO) - Final Financial Report to Fondazione Cariplo (M24) D5.3 (CO) - Final Scientific Report (M24)
RELATION WITH THE OTHER WPS	WP5 will oversee the whole project, monitor the accomplishment of the objectives of the other WPs and ensure that the activities of all WPs are performed in a synergistic way.

3.2 Research organization and lab facilities

Describe the research organization as a whole.

How it matches the call?

How each member complements each other?

How each member is necessary to the proposal?

The PRELOC team includes three universities: Unimib, Unipi and Unibo. The project is based on the collective and collaborative engagement of the members of the partnership that will have different tasks and roles in the project but will jointly contribute the common effort for the realization of its general and specific objectives.

Such collective and collaborative approach is substantiated in WP1, WP5 (coordinated by Unimib) and WP4 (coordinated by Unibo) through the organization of seminars and workshops hosted by each research unit, as well as through the realization of a collective open-access publication for the dissemination of the research results and the joint planning and implementation of the web platform that will act as boundary infrastructure. Moreover, at the organizational and financial level, the budget for these common initiatives is shared by the partners, each one of which will be responsible for specific actions.

WP1 will also benefit from the regular dialogue with the Interdisciplinary Advisory Board (*see infra for details*) that will contribute to the project through continuous interactions and review activities and, to this end, will participate in four workshops.

WP2 (coordinated by Unimib) and WP3 (coordinated by Unipi) will focus on different topics and fields but the collaboration between the partners will be secured both at intra-WP (each WP being developed by two units) and inter-WP level (each WP coordinating with the other and collaborating in the elaboration of the results within a common framework).

The same aspiration to collaboration and dialogue is proposed in the relation with the national network of stakeholders, that - according to the Practical Inquiry approach (see 1.4) - will participate in each phase of the project, including the identification of the case-studies and the refinement of the theoretical framework. The choice of organising the seminars in the three different universities is also aimed at favouring the widest possible participation of the national network of stakeholders.

All the members (research units, IAB, stakeholders) will meet at the kick-off meeting (M1), at the two general Team Meetings (M3 and M15) and at the final meeting (M22); moreover there will be two thematic WP-meetings (M7 and M19) in which Unimib research unit and Unibo research unit will meet for WP2 and Unipi research unit and Unibo research unit will meet for WP3.

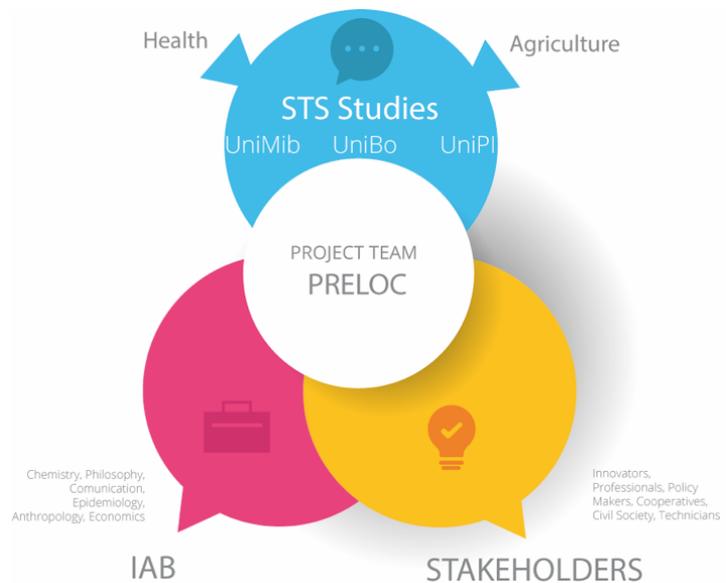
University of Milano-Bicocca - Department of Sociology and Social Research

The **University of Milano-Bicocca**, born in 1998, is a multidisciplinary university that offers a wide educational offer to its 33000 students, also at post-graduate level, in 7 areas: Economics and Statistical Sciences, Law, Sciences, Medicine and Surgery, Sociology, Psychology, and Educational Sciences. With a strong orientation towards research and innovation, UniMib was ranked 2nd among the Italian universities of comparable size by ANVUR (national agency for the rating of university quality and research) and 82nd in the list of the best 250 young (less than 50 years old) universities world-wide by Times Higher Education. The excellent performance of Unimib in research and innovation is also witnessed by its current involvement in more than 100 ongoing European granted projects and by the foundation of 18 spin-off companies.

The Department of Sociology and Social Research has 2 main aims: to work as a centre of excellence for sociological research and to offer a wide range of high standard learning opportunities in the field of the social sciences. In 2018, it gained the qualification of Department of Excellence from Italian Research Minister. The Department involves different disciplinary fields of social sciences (sociological, economic, anthropological, historical, geographic and demographic) working on a plurality of research themes - such as welfare systems, labour market, demographic and family dynamics, cultural and communication processes, territory, tourism and local development, social policies -with specific attention to theoretical and methodological approach, territorial context of the phenomena and with a strong interdisciplinary and international mark.

There are several permanent workshop, academic centres and laboratory, as Sui Generis - Workshop on Sociology of public action, Laboratory of Visual Research, MaCSIS - Centre for the Communication of Science and Sustainable Innovation.

UniMib research unit will contribute to the project with **specific theoretical and empirical expertise regarding its long and established experience in public action, role of different forms of knowledge in decision making processes, Health Policies and Services, Social Participation and Science and Technology Studies**, for the project is grounded on an STS and Public Action approach and it investigates how different forms of knowledge and practices can develop a local approach to preparedness.



University of Bologna - Department of Sociology and Business Law (SDE)

The **University of Bologna** dates back to 1088: it is the oldest university in the Western world. It has 5 Campuses, 32 Departments, 221 Degree Programmes, 47 PhD programmes. 230 are the Research projects funded by the European Union within H2020.

The Department of Sociology and Business Law was born in 2012. There are 6 research centres affiliated, focussing on urban and territorial issues, consume and communication, labour, Social Innovation, victimology and safety), SMEs. The Department devotes specific attention to issues concerning the relationships between socioeconomic problems, local and national welfare policies and territorial aspects. Moreover, it can express several methodological expertises, both in terms of quantitative and qualitative techniques of research and analysis. Therefore, Bologna research unit will contribute to the project with **specific theoretical and empirical expertise regarding the relationship between preparedness, knowledge and public action in the area both of agriculture practices and of health.**

University of Pisa - Department of Political Science

The **University of Pisa** dates back to 1343, making it one of the oldest universities worldwide. It includes 20 departments and offers about 70 degree courses at BSc and MSc level (about 50,000 students), 22 PhD programs (about 800 students) and over 110 between master courses and specialization schools (about 1100 students).

The **Department of Political Sciences** includes a wide range of courses (BSc, MSc, PhD) and research activities, in constant interdisciplinary dialogue (history, philosophy, law, economics, political science, sociology, and communication). Exchanges at national and international level are very intense, concerning both the permanent staff and young scholars undergoing periods of study and training. There are as well collaborations with the Department of Agricultural, Food and Agro-Environmental Sciences. Research groups active within the Department include the "**Politics Ontology Ecology**" (which deals with new trends in approaching socio-ecological relations with special attention to emergent mobilizations in the agri-food field and techno-scientific transformation) and "**Gender and Equal Opportunities in Science**" ones. The Department hosts as well the "**MediaLaB**", a laboratory on communication, new media and social networks for data processing. Therefore, Pisa research unit will contribute to the project with **specific theoretical and empirical expertise regarding the changing relationship with the environment and agriculture practices also through techno-scientific transformation, and data gathering and processing.**

As the description of the three research units shows, each unit has both individual (see section 3.3 for individual CVs) and collective competencies that will serve the theoretical and methodological effort of the project. Moreover, each unit has skills and competencies fit for contributing to both specific (Healthcare- and agriculture-related) and general (STS, Public Action) aspects of the research.

Interdisciplinary Advisory Board (IAB)

PRELOC research activities will be supported by an Interdisciplinary Advisory Board that will actively cooperate with the research units in defining strategies and tools in the first phase of the project, and in analysing and interpreting the outcomes as they become available. The dialogue with the IAB, realized through participation in several meetings (see the description of WP1), will cover a plurality of disciplines and foster cross-fertilisation and synergistic interactions. In this way, it will strengthen and complement the expertise of the research units. The IAB will be composed by experts from different fields relevant for the case studies and with broader spectrum: epidemiology, chemistry, economics (specifically agrarian economics), health and environmental communication, anthropology, philosophy, data science. Although focused on the Italian case, the IAB also includes experts from different European countries. The 9 IAB members are listed below and support letters are attached at the end of this document:

- Fabrizio Bianchi, CNR, Leader of the Research Unit of Environmental Epidemiology
- Gianluca Brunori, University of Pisa, Full Professor of Food Policy
- Liliana Cori, CNR, Research Technologist, Expert in Health and Environmental Communication
- Enzo Ferrara, INRiM, Researcher, Vice-President of the Centro Studi Sereno Regis, Associate Director of the journal "Epidemiologia & Prevenzione"
- Marie Gaille, CNRS (France), Senior Researcher in Philosophy, Adjunct Scientific Director of the Institute for Social Sciences and Humanities
- Benedetto Saraceno, Lisbon Institute of Global Mental Health (Portugal), General Secretary, Psychiatrist
- Andrew Hoffman, Radboud University (Netherlands), Researcher, Interdisciplinary Hub for Security, Privacy and Data Governance. Expert of data-driven science
- Frédéric Keck, CNRS (France), Senior Researcher, Director of the Laboratory for Social Anthropology
- Tommaso Luzzati, University of Pisa, Associate Professor of Economics

3.3 Research Team

For each member of the research team (permanent and temporary) including PIs provide here a short CV indicating all the relevant information in relation to the call (**include a maximum of 10 publication per each CV and do not exceed 1 page per each CV**). Indicate here also the role in the project and the involvement of the members of the team per each WP in terms of Person Month (PM).

UNIMIB - Università degli Studi di Milano-Bicocca

Lavinia Bifulco is a Full Professor of Sociology and teaches Public Knowledge and Action at the Department of Sociology and Social Research of the University of Milano-Bicocca. She is Coordinator of the URBEUR- Urban Studies PhD course at the same Department. She is member and co-coordinator of *Sui Generis*, Laboratory of Sociology of Public Action. She has been a visiting scholar and visiting professor at a number of European and American Universities and coordinated several national and European research projects.

Her research focuses mainly on theory of public knowledge and action; social policies and local welfare; social innovation; urban governance, participation and democracy; health services and policies; social and institutional innovations.

Lavinia Bifulco is the P.I. She will coordinate the team of University of Milano Bicocca as well as WP5. She will also participate in WP1, WP2 and WP4 with the person months mentioned in the scheme, working on the theoretical and methodological research framework, on the empirical research especially on preparedness in healthcare systems, on dissemination and communication. She authored about 150 scientific works.

Selected publications:

2020 Sharing and Control: The Janus-Faced Governance of Social Services at Times of Social Innovation and Social Investment, *Social Work & Society*, 1, p. 1-10.

2018 (with V. Borghi, M. Bricocoli, D. Mauri, Eds.) *Azione pubblica*, Mimesis, Milano.

2018 (with M. Dodaro), "Local welfare governance and social innovation", in Ayda Eraydın, Klaus Frey, eds., *Politics and Conflict in Governance and Planning*, Routledge, NY and London, pp. 169-185.

2017 *Social Policy and Public Action*, Routledge, London.

2017 ¿Qué hay de lo social en las políticas sociales?, in G. Vergara, A. De Sena (comp.), *Geometrías sociales, Estudios Sociológicos* Editora, Buenos Aires, p. 126-149.

2017 Innovazione sociale e conoscenza", *La Rivista delle Politiche Sociali*, 3.

2015 *Il welfare locale*, Carocci, Roma.

2014 Citizenship and governance at a time of territorialisation, *European, Urban and Regional Studies*, 23, 4, pp. 628-644.

2013 Citizen participation, agency and voice, *European Journal of Social Theory*, 16 (2), pp.174-187.

2011 Becoming Public. Notes on Governance and Local Welfare in Italy, *Administration and Society*, 4, pp. 301-318.

Carlotta Mozzana is Assistant Professor in General Sociology at the Department of Sociology and Social Research of the University of Milan-Bicocca. She is a member of *Sui Generis*, Laboratory of Sociology of Public Action. Her areas of interest and research projects include: sociology of public action, science and technology studies, social policies and services, the role of knowledge in public action, the role and effects of decision-making procedures and standardization in medical practices. She is currently working on the role of metrics and quantification in public policies and organizations. She got a PhD in Sociology from the graduate School in Social, Economic and Political Science - University of Milan (Italy). She has experience in national and international projects (e.g. European Commission's FP VI, VII; Prin). Carlotta Mozzana will participate in WP1, WP2, WP4 and WP5 with the person months mentioned in the PM scheme: she will participate in the theoretical and methodological definition of the research framework, as well as the comparison among the case studies, especially developing the investigation on preparedness in healthcare systems, as well as dissemination, communication and coordination activities.

Selected publications:

2019 *Welfare, capacità e conoscenza. Le basi informative dell'azione pubblica*. Roma. Carocci.

2019 Cosa conta? Basi informative, numeri e politiche nel caso di Garanzia giovani. *La Rivista delle Politiche Sociali*, 4, pp. 221-38.

2019 A matter of definitions: the profiling of people in Italian active labour market policies. *Historical Social Research*, 44 (2), pp. 225-46, doi: 10.12759/hsr.44.2019.2.225-246.

2018 (with Monteleone R.) Capacitazioni, in Bifulco L., Borghi V., Bricocoli M., Mauri D.. *Azione Pubblica. Un glossario Sui Generis*. Milano. Mimesis.

2015 Standard in azione. L'evidence-based medicine tra conoscenza scientifica e pratica medica. *Rassegna Italiana di Sociologia*, 56(3-4), pp. 629-650.

2011 (with Bifulco L.) La dimensione sociale delle capacità: fattori di conversione, istituzioni e azione pubblica. *Rassegna Italiana di Sociologia*, 3, pp. 399-416.

Maria Dodaro (b. March 15, 1989) currently holds a research scholarship at the University of Milano-Bicocca within the project "Le Istituzioni del Welfare" (prof. Lavinia Bifulco). She is working on local welfare strategies of financial inclusion, with a focus on social microcredit and financial education. The research is part of the activities of the WG "Welfare and Institutions" – among the initiatives undertaken by the Department of Sociology and Social Research for the establishment of the Institute for Advanced Study of Social Change (IASSC). In 2019, she obtained a PhD in Cotutelle (cum laude) in Urban Studies (Department of Sociology and Social Research, University of Milano-Bicocca) and Sociology (Faculty of Economics and Business, University of Barcelona).

Maria Dodaro will participate in WP1, with the person months mentioned in the PM scheme.

Selected publications:

2019 *Milan's inclusive entrepreneurship policies: the risk of 'differentiated inclusion'*. The Journal of Poverty and Social Justice, Volume 27, Number 2, June 2019, pp. 295-310.

2018 (with Bifulco L) Local Welfare Governance and Social Innovation. The Ambivalence of the Political Dimension. In Eraydin, A., Frey, K. (eds.), *Politics and Conflict in Governance and Planning. Theory and Practice*, Routledge.

Rosario Cutuli has a PhD student position in Urban Studies at the University Milano-Bicocca, Italy (2nd year). He is currently working on a PhD research project, focused on the social innovation that could come from peripheral spaces, comparing two hypothetical cases of social innovation, in the suburbs of the cities of Trieste and Milan. Therefore the research field will be represented, in Trieste, by the Microaree program, established by the Department of Health and Policies of the Friuli Venezia Giulia Region with a memorandum of understanding between the health and Social Care Company of Trieste, the Municipality of Trieste, the local public housing company (Ater) and the social cooperatives. She will be involved in WP1, WP2, WP4, with the person/months indicated in the P/M table.

Lorenza Dodi is PhD Executive Candidate in Sociology at the Urbeur doctoral program. After a long experience as a social worker in childhood services, since 2014 she is full-time employed at the Parma Local Health Care Services (AUSL), in the clinical governance and risk management sector, involved in the activities of analysis and prevention of adverse events and in training for professionals. She employs organizational ethnography and risk management tools (Audit, Root Causes Analysis, Failure Mode - Effects and Criticality Analysis). She is a member of the University of Parma Interdepartmental Center for Social Research (CIRS) on behalf of the AUSL Parma, and of the Ausl Panel of the research project "Prescribing appropriateness in the old population" in collaboration with Thomas Jefferson University, Philadelphia. Her research interests include Organizational Ethnography, Visual Studies, Qualitative Research, Risk Management, Urban studies and design.

She will be involved in WP1, WP2, WP4, with the person/months indicated in the P/M table

Roberta Gallina has a PhD student position in Urban Studies at the University Milano-Bicocca, Italy (2nd year). Her main interest research areas are: health inequalities, social determinants of health, neighborhood effects on health, pandemics and Covid19. She has a ten-years work experience in the field of healthcare assistance, planning and training within the public sector (Local Health Authority ULSS 3 Marca Trevigiana and C.E.C.A.T.). She is currently working on a PhD research project aimed at analyzing the distribution in space of Covid19 in relation to the socio-territorial variables and social networks of positive Covid19 patients in the territory of the Local Health Authority ULSS 2 of Treviso. Starting from an ecological study, ESDA will be used to identify disease clusters that will then be investigated through Network Analysis and Grounded Theory. Knowing the social, demographic and territorial characteristics that have come into play in the spread of the virus will allow both a better orientation of policies and a remodulation of communication to clearly indicate to the population which socio-demographic characteristics and lifestyles increase the risk of contagion, especially in view of a possible resurgence of the epidemic. She has high proficiency in English and Spanish languages (B2 QCER level). She will be involved in WP1, WP2, WP4, with the person/months indicated in the P/M table

UNIFI - University of Pisa

Luigi Pellizzoni is professor in Sociology of the environment and territory at the Department of Political Sciences, University of Pisa, and member of the Doctoral program in Sociology and Methodology of social Research (Milan-Turin Universities). His research interests intersect three fields: risk, uncertainty, environmental change and sustainability; anticipations and impacts of scientific advancement and technological innovation; conflict, participation and the transformation of governance. Scientific appointments include the Board of the International Sociological Association

(ISA) Research committee RC24 (Environment and Society) and the Executive Committee of the European Sociological Association (ESA). Presently he is in the Board of the Sociology of Territory Section of the Italian Sociological Association (AIS). Visiting scholarships include the Centre for the Study of Environmental Change (CSEC) of Lancaster University (UK). He has been editor of the journal *Sociologica* (currently Editorial Board member) and is in the Editorial Board of *Rassegna Italiana di Sociologia*, *European Societies*, *Environmental Sociology*, *Science as Culture*, *Scienze del Territorio*. He has provided lectures and keynote speeches for international institutions and at international conferences (EHESS Paris, SCORE Stockholm, European University Institute, WU University Vienna, JRC European Commission, ISA and ESA conferences etc.). He has a long experience, also as PI and team unit coordinator (e.g. PRIN) in national and international projects (e.g. European Commission's FP IV, V, VI, VII and Interreg programs). He has worked with organizations and bodies such as WHO, ENEL, SNAM, EC-JRC, regional governments and local administrations). He authored about 140 scientific works.

Luigi Pellizzoni will participate in WP1, WP3, WP4 and WP5 with the person months mentioned in the P/M table: he will participate in the theoretical and methodological definition of the research framework, the comparison among the case studies, especially developing the investigation on preparedness in agriculture, as well as the dissemination and coordination activities.

Selected publications:

2020 Prefiguration, subtraction and emancipation. *Social Movements Studies*, DOI: [10.1080/14742837.2020.1752169](https://doi.org/10.1080/14742837.2020.1752169).

2020 The environmental state between pre-emption and inoperosity. *Environmental Politics*, 29(1), 76-95.

2019 Responsibility, in *Routledge Handbook of Global Sustainability Governance*, edited by Agni Kalfagianni, Doris Fuchs and Anders Hayden, London, Routledge.

2018 The commons in the shifting problematization of contemporary society, *Rassegna Italiana di Sociologia*, 59(2), 211-233.

2016 *Ontological Politics in a Disposable World: The New Mastery of Nature*. London: Routledge.

2012 (co-ed.) *Neoliberalism and Technoscience. Critical Assessments*. Farnham: Ashgate.

2011 Governing through disorder: neoliberal environmental governance and social theory. *Global Environmental Change*, 21(3): 795-803.

2011 The politics of facts. Local environmental conflicts and expertise. *Environmental Politics*, 20(6): 765-785.

2010 Risk and responsibility in a manufactured world. *Science and Engineering Ethics*, 16(3): 463-479.

2009 Revolution or passing fashion? Reassessing the precautionary principle. *International Journal of Risk Assessment and Management*, 12(1): 14-34.

Alexandra d'Angelo (b. 24.02.1993) is a PhD candidate at the Doctoral program in Sociology and Methodology of social Research, supervised by Prof. Luigi Pellizzoni and she collaborates with Pisa University. Her research project combines the fields of Disaster Research and Political Ecology. She has had an anthropological education, with a degree at the University of Bologna and at the University of Siena, also holding a Master degree at the Autonomous University of Barcelona. During her studies, she carried out fieldwork in Colombia analyzing the effects of the armed conflict on the indigenous communities' landholding. In 2014 she participated in a collective research project on the practice of honey-hunting in the indigenous communities of Tamil Nadu (India). Since 2016 she has been part of Emidio di Treviri research group, with which she analyzes the effects of the earthquake in central Italy. She has published in specialized anthropological journals and with *DeriveApprodi* and *FrancoAngeli* editors. Dr. D'Angelo will participate in WP1, WP3 and WP4 with the person/months indicated in the P/M table.

UNIBO - University of Bologna

Vando Borghi is Full Professor of Sociology of economic processes, labour and organization at Bologna University. Visiting professor in several Universities and research centres, he is also Fellow of the Institut d'Etudes Avancées de Nantes. He is a member of *Sui Generis*, Laboratory of Sociology of Public Action. He is in the Editorial Board of *Sociologia del lavoro*, *Politiche Sociali*, *European Journal of Creative Practices in Cities and Landscapes*.

His research deals with interactions among policies, institutions and social practices and is conducted on different empirical grounds: labor, unemployment and vulnerability, activation policies, urban transformations, culture and city policies, research and policy bases. In recent years, such research has focused mainly on the theme of the cognitive/informational bases of policies and on the effects of inclusion or exclusion of social actors in production processes of these same bases. The concept of capacity (capability, critical capacities of actors, capacity to aspire) is the perspective in which these research interests are mainly developed. These various areas of research can be summarized into a fundamental interest in the "social bases of democracy". He authored about 80 scientific works.

Vando Borghi will participate in WP1, WP2, WP4 and WP5 with the person months mentioned in the P/M table: he will participate in the theoretical and methodological definition of the research framework, the comparison among the case

studies, especially developing the investigation on preparedness in health, as well as the dissemination and coordination activities.

Selected publications:

- 2020 Transforming knowledge into cognitive basis of policies. *Science and Scientification in South Asia and Europe*, edited by A. Michael, C. Wulf. Abingdon. Routledge.
- 2019 The possible in the real: infrastructures of experience, cosmopolitanism from below and sociology. *Quaderni di teoria sociale*, 3, pp. 35-59.
- 2018 From Knowledge to Informational Basis: Capability, Capacity to Aspire and Research. *Critical Sociology*, 44(6), pp.899-920.
- 2018 (with L. Bifulco, M. Bricocoli, D. Mauri, Eds.). *Azione pubblica*. Mimesis. Milano.
- 2013 (with de Leonardis O., Procacci G., Eds.). *La ragione politica II. I discorsi delle politiche*. Liguori. Napoli.
- 2013 (with Grandi S., Eds.), Cosa vuol dire essere sicuri? Pratiche e rappresentazioni della sicurezza sul lavoro. *Sociologia del lavoro*, n. 130.
- 2012 (with L. Bifulco), Governance, territorio, capacità: le questioni in gioco. *La Rivista delle Politiche Sociali*, 4, pp. 13-35.
- 2011 One-way Europe? Institutional guidelines, emerging regimes of justification and paradoxical turns in European welfare capitalism. *European Journal of Social Theory*, 14(3), pp. 321–341.
- 2006 Tra cittadini e istituzioni. Riflessioni sull'introduzione di dispositivi partecipativi nelle pratiche istituzionali locali, *Rivista delle politiche sociali*, n. 2, pp. 147-181.
- 2006 Capital social, institutions et agir public, in *Le capital social: performances, équité, réciprocité* (sous la direction de A. Bervort, M. Lallement). Paris. La Découverte/M.A.U.S.S.

Laura Centemeri is Researcher (*Chargée de recherche*) in Environmental Sociology at the French CNRS and a member of the Center for the Study of Social Movements (CEMS) of the *Ecole des Hautes Etudes en Sciences Sociales* (EHESS). She will be visiting researcher at the University of Bologna (see attached letter of invitation). Her areas of interest and research projects include: sociology of (e)valuation and environmental conflicts, everyday environmentalism and sustainable materialism, sociology of repair and environmental disasters. She has worked on post-disaster situations and she is currently doing research on agroecology and preparedness to climate change in agriculture in Italy (with a focus on the permaculture movement). She got a PhD in Economic Sociology from the University of Brescia (Italy). She is associated researcher of the Center for Social Studies of the University of Coimbra (Portugal) where she has worked as coordinator of the Risk Observatory (2008-2011). Dr. Centemeri will participate in WP1, WP3 and WP4 with the person/months indicated in the P/M table. She will participate in the theoretical and methodological work, the investigation on preparedness in agriculture, and the dissemination activity.

Selected publications:

- 2019 *La permaculture ou l'art de réhabiter*, Versailles. Editions QUAE.
- 2019 Health and the environment in ecological transition: the case of the permaculture movement, in *The Relationship between Environment, Health, and Disease Toward a Multi-Spatial and Historical Approach*, edited by F. Bretelle-Establet, M. Gaille, M. Katouzian-Safadi (dir.). Springer.
- 2019 Rethinking environmentalism in a 'ruined' world. Lessons from the permaculture movement», in *Building a sustainable future. The role of non-state actors in the green transition*, edited by J.V. Hoff, Q. Gausset, S. Lex. London. Routledge.
- 2018 Commons and the new environmentalism of everyday life. Alternative value practices and multispecies commoning in the permaculture movement". *Rassegna Italiana di Sociologia*, 64(2), 289-313.
- 2017 From public participation to place-based resistance. Environmental critique and modes of valuation in the struggles against the expansion of the Malpensa airport». *Historical Social Research/Historische Sozialforschung*, 42, 3, p. 97-122.
- 2015 Reframing problems of incommensurability in environmental conflicts through pragmatic sociology. From value pluralism to the plurality of modes of engagement with the environment. *Environmental Values*, 24, 3, p. 299-320.

Laura Tanzini, (b. 27.05.1991) is PhD student at University of Bologna. She obtained a double Master's degree in Sociology and Social Research (University of Trento) and in a Research Master in Sociology and Demography (Universitat Pompeu Fabra, SP). She has been research Officer for the European Values Study (EVS) and the project Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS) at University of Tilburg (NL) and research Administrator at European Social Survey ERIC HQ at City, University of London, (UK).

During her work for the European Values Study and at the European Social Survey, she mainly acquired experience in data cleaning and harmonization and in the management and preparation of large datasets, but also contributed to the dissemination and communication of the results of the preliminary analysis of the data. In her studies in Trento and Barcelona, I focused my research interest on social inequalities, education, and the labour market.

Laura Tanzini has an approved research project at University of Bologna focusing on the impact of precarious employment on health and well-being, taking into account the gender differences related to this topic and to care work. She is studying both with quantitative and qualitative data, the impact of the working conditions and job quality on the health of the individual, pre- and post-pandemic. She will coordinate WP4 and participate in WP1, WP2 and WP5, with the person/months indicated in the P/M table.

List of participants and P/M

Unit	Participant	WP1	WP2	WP3	WP4	WP5	Total P/M per participant
UniMib	Lavinia Bifulco	2	1		1	3	7
	Carlotta Mozzana	1	2		1	1	5
	Maria Dodaro	1					1
	Rosario Cutuli	0.5	0.5		0.5		1.5
	Roberta Gallina	0.5	0.5		0.5		1.5
	Lorenza Dodi	0.5	0.5		0.5		1.5
	Post-doc (to be recruited)	3	16		3	2	24
	Total	8.5	21		6.5	6	41.5
UniBo	Vando Borghi	1	1		1	1	4
	Laura Centemeri	1		1	2		4
	Laura Tanzini	0.5	1		3	0.5	5
	Post-doc (to be recruited)	3	8	8	5		24
	Total	5.5	10	9	11	1.5	37
UniPi	Luigi Pellizzoni	1		2	2	1	6
	Alexandra D'Angelo	1		1	1		3
	Post-doc (to be recruited)	3		16	5		24
	Total	5		19	8	1	33

3.4 Young researcher

Describe actions aimed to involve, train and enhance young researchers and their careers.

The project foresees several actions for involving, training and enhancing young researchers and their careers:

1) First of all, **the coordinator of the communication plan is a young PhD student**, who will benefit from this responsibility - which is of special importance for PRELOC - both through improvement of communication skills and through the experience of leading a project WP. Her training will be strengthened through the continuous supervisions

by all the research team, in particular by Prof. Lavinia Bifulco, Prof. Vando Borghi, Prof. Luigi Pellizzoni. Besides she will attend the courses that will be activated within the Urbeur PhD Program, University of Milano Bicocca, Political Sciences PhD Program, University of Pisa, Sociology and Social Research PhD Program, University of Bologna, dedicated to:

- Scientific communication
- Methodological approaches of civic epistemology
- Anthropocene and public action: theoretical and methodological issues of public action in the world-ecology crises
- Issues of preparedness: the cases of agriculture and health sectors
- Care and knowledge boundaries.

2) Secondly, **other 4 PhD students and 1 Research Scholar will be involved in the research** for a suitable amount of time and with specific responsibility, consistently with their training and competencies. Maria Dodaro (Research Fellow, University of Milano-Bicocca) and Alessandra D'Angelo (PhD Student, University of Pisa) **are both under 35 years old**.

3) The **same courses described** in 1) will be **accessible to other PhD candidates** (also external to the project teams) - within the Urbeur PhD Program, University of Milano Bicocca, Political Sciences PhD Program, University of Pisa, PhD Sociology and Social Research, University of Bologna - for a number of 14 young researchers each year.

4) Moreover, **collaboration with 2 Summer Schools** will be developed:

- **"Emidio di Treviri" (EdT) Summer School** (<https://www.emioditreviri.org/scuola2/>). This summer school gathers young researchers on the themes of ecology, vulnerable territories, civic engagement, post-disaster action-research. Interacting strongly with the school organization team, will include the themes of Science Technology Studies, knowledge boundaries infrastructure and preparedness in the schedule of the works. Actually the school is a moment of training and formation crossed by dozens of young scholar in training: cooperating with the school team we're already networked with, can be possible involving the focus themes of the project into the researcher's perspectives and debate.
- **"Politics Ontologies Ecologies" Summer School**. Held at the University of Pisa, it focuses on Political Ecology as a long-established interdisciplinary field aimed at investigating the interface of societies and the biophysical world as affected by, and in its turn affecting, the political and economic order and related dynamics of conflict and cooperation, domination and emancipation, by focusing on emergent problematics, such as climate change and the Anthropocene, the worldwide spread of "environmental justice" mobilizations and the recently arisen theme of the "Green New Deal" and the connected shift in the pace and approach to science and technological innovation.

For all young researchers members of PRELOC, active participation in this ambitious project offers the opportunity of extending their networks and developing new ones, performing cutting-edge research, and interact with a series of relevant stakeholders beyond the academic community. A boost in their research careers is thus expected thanks to participation in PRELOC.

3.5 Personnel to be recruited and consultants

If you intend to recruit new personnel or require consultants, please provide adequate information below.

University of Pisa - Recruitment will correspond to the following:

- **a post-doctoral researcher**, to be hired for two years and to be involved in all the phases of the project, yet especially in the empirical investigation. In terms of WPs, s/he will be involved, with the person/months indicated in the P/M table, in WP1, WP3 and WP4. The ideal candidate will have experience about on-field research in the agricultural sector, together with theoretical competence in STS and political ecology. S/he will be involved in the WP as specified in the P/M table (see section 3.3).

University of Bologna- Recruitment will correspond to the following:

- **a post-doctoral researcher**, to be hired for two years and to be involved in all the phases of the project, yet especially in the empirical investigation. In terms of WPs, s/he will be involved, with the person/months indicated in the P/M table, in WP1, WP2, WP3 and WP4. The ideal candidate will have experience about on-field research in sociological ethnographic research, focusing in particular on the issues of territory, crises and disasters. S/he will be involved in the WP as specified in the P/M table (see section 3.3).
- A temporary **consultant** for the design and the implementation of the website designed as a platform to make available to a large public a variety of data, information and other resources for developing innovative solutions and technologies for preparedness in healthcare and agriculture.
- A temporary **consultant** for the revision of 2 English articles that will be written by the team members.

University of Milano-Bicocca - Recruitment will correspond to the following:

- a **post-doctoral researcher**, to be hired for 24 months and to be involved in the whole project, in the various WPs and especially in the empirical investigation in WP2 as well as public and scientific dissemination of the investigation results. In terms of WPs, s/he will be involved, with the person/months indicated in the P/M table, in WP1, WP2 and WP4. The ideal candidate should have experience in qualitative and organizational research in the field of social and health services and on the role of experts and knowledge in decision-making processes. S/he will be involved in the WP as specified in the P/M table (see section 3.3).
- a temporary **consultant** for the revision of 3 English articles that will be written by the team members.

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