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### D 3.2 – Second Annual Joint Priority List

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## Contents

1. General background: Legal information and co-funding .....	4
2. Scope .....	4
3. Development of Call Priorities within CONCERT WP2-WP3.....	4
3.1. Input from radiation protection associations .....	4
3.2. Input and decisions from the National Programme Owners and Programme Managers as the CONCERT Management Board .....	5
3.3. Detailed action plan towards the definition of CONCERT call priorities by the WP2-WP3 working group .....	5
4. Priorities of the 2nd CONCERT call .....	7
5. Call conditions proposals.....	13

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## Abstract

The aim of this document is to report on the activities of the WP2-WP3 working group in the preparation of the second CONCERT call.

These activities included the collection of information on research needs in the field of radiation protection and to structure the research needs into 2 call priorities. The two proposed research priorities are (1) “Health”, which includes low-dose research, dosimetry and priorities in radiation protection research related to medical applications and (2) “Environment, Emergency and Social Sciences and Humanities”.

The outcome of the first CONCERT call and previous research projects was taken into account, to avoid funding research multiple times, and to assure balanced funding with respect to the different areas of research.

The proposed research priorities have been mainly drafted by delegates from the radiation protection research platforms (MELODI, EURADOS, NERIS, ALLIANCE and EURAMED) as well as by experts in social sciences and humanities research related to radiation protection.

The proposed priorities were publicly presented at a CONCERT Open Consultation workshop held 18 November 2016 in Brussels. This activity has been broadly announced by the platforms. In addition, the mailing list of the Radiation Protection Week held in September 2016 in Oxford was used to reach as many as possible people interested in radiation protection research. About 100 persons attended the Open Consultation workshop.

The proposed priorities were also published at the CONCERT website for feedback.

The comments received from the CONCERT MB, from the Open Consultation meeting as well as through web consultation were included when appropriate. The final version of the proposed priorities was approved by the CONCERT MB 16/12/2016. Since then, the final proposed priorities are available at the website of CONCERT, following the link [http://www.concert-h2020.eu/en/Calls/openconsultation2ndcall/second\\_call](http://www.concert-h2020.eu/en/Calls/openconsultation2ndcall/second_call) . The proposed priorities have been provided to CONCERT WP4, responsible for the CONCERT open call administration.

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## 1. General background: Legal information and co-funding

The CONCERT call is an initiative in the framework of the H2020 CONCERT project with Grant Agreement Number 662287. The Grant Agreement is based on the COUNCIL REGULATION (EURATOM) No 1314/2013 of 16 December 2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation and the REGULATION (EU) No 1290/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 laying down the rules for participation and dissemination in Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020) and Repealing Regulation (EC) No 1906/2006.

Research and innovation projects resulting from CONCERT calls will adopt the rules of the CONCERT Grant Agreement and Consortium Agreement.

CONCERT is a European Joint Programming Project, implicating that incorporation of projects originating from the CONCERT call will have to follow the co-fund conditions of European Joint Programming.

## 2. Scope

The call supports research and innovation actions treating knowledge gaps in radiation protection to address questions of concern to the society related to radiation protection that are only performable with efforts on a pan-European scale. The call is an initiative of the European Joint Programming instrument, requiring support from the European Member states by co-funding 30% of the required budget.

## 3. Development of Call Priorities within CONCERT WP2-WP3

### 3.1. Input from radiation protection associations

The call priorities have been established by taking into account the following information:

- Strategic Research Agendas (SRA) have been prepared by the platforms MELODI, EURADOS, NERIS, ALLIANCE and EURAMED. The strategic research agendas are publicly available at the websites of the respective associations.
- All abovementioned platforms cover a wide community of radiation protection entities, including national research institutes, universities, organisations and authorities, committed to and actively involved in radiation protection research.
- Based on the Strategic Research Agendas, priority statements have been produced by the SRA working groups of MELODI, EURADOS, NERIS and ALLIANCE, which are publicly available as a CONCERT deliverable D2.4. <http://www.concert-h2020.eu/en/Publications> . These priority statements take into account already ongoing research and the outcome of recently finished FP7 projects such as CEREBRAD, PROCARDIO, PREPARE, RISK-IR (to be finished), DoReMi, COMET and STAR to use state of the art info and to avoid overlapping funding.
- EURAMED, the newly established European Alliance for Medical Radiation Protection Research, provided its first draft strategic research agenda on its website.
- CONCERT Deliverable D2.6 lists the joint research needs and priorities addressing (1) radiation protection research relevant for medical use of radiation (related to the EURAMED SRA) and (2)

communication/risk perception in radiation protection, available at <http://www.concert-h2020.eu/en/Publications>.

### 3.2. Input and decisions from the National Programme Owners and Programme Managers as the CONCERT Management Board

In addition to the input described in section 3.1, the call priorities have been established by taking into account the input from the National programme owners/managers as Management Board (MB) of CONCERT:

- The CONCERT MB has been invited to review the research priorities and recommendations of national interest that are also important on European level.
- In addition to the priorities formulated by the CONCERT MB for the 1<sup>st</sup> CONCERT call, some new priorities were proposed by PHE and the University of Tartu. Also JSI Slovenia, a new Concert MB members that accessed CONCERT only recently, took the opportunity to describe the priorities of importance in its country.
- The Management Board of CONCERT has been consulted about the plans and progress in call preparation during the CONCERT MB meetings held 15/2/2016, 23/9/2016 and 17/11/2016.
- The CONCERT MB advised during the last MB meeting to limit the number of call priorities to only two. Furthermore, the MB advised to take into account the outcome of the 1<sup>st</sup> call in such a way to promote balanced funding of the RTD budget of CONCERT to the different areas of radiation protection research.
- On 18/11/2016 the WP2-WP3 working group provided a new version of research priorities taking into account the recommendations of the MB. The following CONCERT MB members have given additional comments: SU, MTA-EK, ALLIANCE, CEA, IMROH, IOVENETO, FZ-Juelich, GIG, and Agencia Portuguesa do Ambiente. These comments were taken into account as far as possible by the WP2-WP3 working group, and a rationale on how the changes were included was provided to the MB.
- On 16 December 2016 the CONCERT MB finally approved the priorities proposed by the WP2-WP3 working group.

### 3.3. Detailed action plan towards the definition of CONCERT call priorities by the WP2-WP3 working group

The CONCERT WP2-WP3 working group selected the most appropriate research priorities in radiation protection of societal concern. The WP2-WP3 working group consists of representatives of the SRA working groups of MELODI, EURADOS, NERIS, ALLIANCE, representatives of the medical associations, WP2 -WP3 task leaders and WP2-WP3 Work Package leaders. The WP2-WP3 working group prepared the call priorities in a step by step way. The working group members consulted the SRA working groups and/or radiation protection association members, POMs, CONCERT WP leaders and CONCERT MB when appropriate. The activities coordinated by the CONCERT WP2-WP3 working group can be summarized as follows:

1. 15/2/2016: presentation of the plan towards the second CONCERT call to the CONCERT MB by the WP3 leader. The plan was adapted afterwards, because of the delayed launch of the 1<sup>st</sup> call: info on the outcome of the call has been considered indispensable to make sure there would not be double funding and that funding would be balanced with respect to the different areas of research.

2. 21/9/2016: meeting of the WP2-WP3 working group in Oxford, back-to-back with the 1<sup>st</sup> Radiation Protection Week. We discussed mainly the first steps towards the Joint Roadmap, but also agreed on the adapted plan towards the development of priorities for the 2<sup>nd</sup> CONCERT call.
3. 27/10/2016: 1<sup>st</sup> teleconference meeting of the WP2-WP3 working group. We discussed the number of projects envisaged, how to define expected impact, as well as the format of call topics. An action plan and decision flow was prepared. The WP2-WP3 group decided to envisage 6 topical areas for smaller projects, given the limited time frame of projects answering this CONCERT second call. The projects answering this call could be much more limited in scope compared to the ones resulting from the 1<sup>st</sup> call, and these projects might aim towards more dedicated and well-defined outcomes. It was decided that each platform (+ SSH experts) would prepare 1 research priority. The meeting was chaired by the WP3 leader and minutes were made by the WP2 leader.
4. 7/11/2016: the 2<sup>nd</sup> teleconference was dedicated to discuss the first draft priority texts in detail, and to include input from the different platforms in each of the topics where appropriate. At the moment of this meeting, a draft deliverable D.2.3 was available on identifying the research needs and R&D priorities supporting the implementation of BSS, resulting from an e-survey consulting the national authorities, regulators and Technical Support Organisations. This deliverable also includes input provided by the Article 31 Working Party on Research Implications on Health and Safety Standards (WP RIHSS). The recommendations by the RIHSS Working Party were broad and it was recognised that there were a number of potential links to practically all RP SRAs, covering e.g. medical radiations, new data on radiation-induced effects, effects of in utero exposures, organ doses, dosimetry, emergencies and risk communication. The Deliverable D2.3. is publicly available at <http://www.concert-h2020.eu/en/Publications>. At the moment of the second teleconference, WP4 revealed limited information on the numbers of projects selected in the 1<sup>st</sup> call but the (limited) level of detail did not allow the WP2-WP3 working group to take this information into account.
5. 17/11/2016: WP2-WP3 physical meeting in Brussels: This meeting took place just after the CONCERT MB meeting held the same day. During this MB meeting, WP4 revealed more info on the 1<sup>st</sup> call, showing an unbalance in the funding of the 2 topics of the 1<sup>st</sup> call. In addition, the MB decided that the 2<sup>nd</sup> call should only have 2 main topics (instead of 6 topics prepared by the WP2-WP3 working group). Instead of having 2 topics with equal funding, repartitioning of the funding was recommended by the MB, to repair the balance of funding towards the different areas of radiation protection research.
6. 18/11/2016: Open Consultation meeting: the platform representatives and the WP3 leader presented the restructured call topics taking into account the CONCERT MB instructions. The presentations and draft priorities are available on the CONCERT website: <http://www.concert-h2020.eu/en/Calls/openconsultation2ndcall>
7. 18/11/2016 – 30/11/2016: web consultation on the priority topics.
8. 1/12/2016 – 15/12/2016: consultation of the MB through e-mail.
9. 16/12/2016: final approval of the priorities by the MB and information sent to WP4 for call preparation. The adapted priorities approved by the MB are since the approval available at [http://www.concert-h2020.eu/en/Calls/openconsultation2ndcall/second\\_call](http://www.concert-h2020.eu/en/Calls/openconsultation2ndcall/second_call)

## 4. Priorities of the 2nd CONCERT call

Two main priorities were accepted by the CONCERT MB, in which sub-priorities were defined. The priorities approved by the MB and presentations given at the open consultation meeting are available on the CONCERT website following the link:

[http://www.concert-h2020.eu/en/Calls/openconsultation2ndcall/second\\_call](http://www.concert-h2020.eu/en/Calls/openconsultation2ndcall/second_call)

**The topics have been defined as follows:**

### 4.1. TOPIC 1: “Health”.

With 3 subtopics:

#### ***4.1.1 Improvement of health risk assessment associated with low dose / dose rate radiation***

##### Challenge

Today the main uncertainties in radiation health risk assessment relate to (i) the magnitude of cancer risk following protracted exposures of the order of 100 mSv or less and organ specific risks following acute or protracted doses of a few hundred mSv, particularly for inhomogeneous dose distributions, and (ii) the magnitude of the risks of vascular and cognitive disease, cataracts and other tissue injury below 500 mSv. A better understanding of the effects of low-dose ionizing radiation on human health and the mechanisms leading to radiation-induced diseases, is essential for radiation protection of populations and individuals in all situations occupational, medical, emergency and in the course of normal life.

In order to consolidate further the radiation protection system, it is necessary

- to improve understanding of the biological mechanisms underlying radiation-induced diseases and of the factors that modulate the risk of diseases
- to improve the health risk evaluation through classical and/or molecular epidemiological studies
- to address the effects of, and risks associated with, internal exposures, differing radiation qualities and inhomogeneous exposures.

These are long-term goals, which can however be achieved through a succession of steps which can be implemented into the radiation protection system when research results are appropriately validated.

##### Scope

Proposals should identify concrete research steps that are likely to contribute effectively to the above-mentioned challenge. For this purpose, appropriate attention should be given to the quality of the dosimetry, outcome data and other relevant data to be obtained and/or analysed in the course of the project. High priority is given to studies relating to cancer and vascular diseases, but other radiation-induced diseases are also of interest.

##### Expected impact

Research results are expected to contribute to protect people's health on an individual and collective basis through the optimization of future European BSS. Additionally, given the long-term nature of the work, the

impact may be through contribution to the evolution of global protection standards and the evidence base on which they are formulated.

### Type of action

Research and innovation actions. Project proposals may address part of the scope.

#### **4.1.2 Improvement of occupational dosimetry**

### Challenge

The challenge is to provide reliable, accurate and on-line personal dosimetry for workers when exposed to ionizing radiation and in particular to neutrons. This requires monitoring the workers in real time for relevant limiting quantities (e.g., whole body, eye lens, extremities, brain, heart), and to provide input for the optimal application of the ALARA principle. Dosimetric research for personal dosimetry should deliver well characterized dosimeters, and good computational tools.

### Scope

The EURADOS objective for the 2nd CONCERT call is to improve occupational dosimetry with particular emphasis on neutron applications; however, applications featuring other radiation qualities are also welcome.

Active dosimeters need to be developed for radiation fields relevant for occupational exposure. These dosimeters should be developed with the final goal that they can also be used for official dose records. Active sensors may also be developed to provide estimates of eye lens and extremity exposures. Improvement of active dosimeters is also needed so that the measured dose is visible to the operator on-line and that the results can be easily implemented in advanced staff databases. The inclusion of dosimetry of other potentially radiosensitive organs (brain, heart) might also be needed. In the medical field, there is the special problem of whole body dosimetry in case of lead shielding (lead apron, thyroid shield). This requires the development of the best method to monitor effective doses in case of inhomogeneous irradiation.

In particular, accurate active dosimeters for neutrons should be developed. External dosimetry for neutron radiation, which is inevitably accompanied by a photon component, still presents challenges despite many years of development of neutron personal dosimeters. Neutron sources are intentionally used and/or incidentally created in various scientific areas, and in technical and medical applications. Some of the fields represent particular challenges due to strongly pulsed radiation or due to an energy range of interest that might cover many orders of magnitude from thermal energies up to several 100 MeV. The simultaneous measurement of energy and directional distributions might be beneficial

The developed dosimeters should be user friendly and take into account work specifics of different users and their working environment. Changes in the behaviour of individuals using on-line dosimeters can be part of the research scope. A draft exploitation plan should be included.

### Expected impact

The availability of reliable and on-line personal dosimetry for workers will increase the awareness of the workers and will improve the optimal application of the ALARA principle. Development of more accurate dosimeters will decrease the large uncertainties that still exist in personal dosimetry, especially for neutrons, and will thus be an important improvement in estimating the risk of working with ionising radiation.



### **4.1.3 Patient-tailored diagnosis and treatment: full exploitation and improvement of technology and techniques with clinical and dose structured reporting**

#### Challenge

In terms of optimising radiation protection for the increasing number of patients exposed to ionising radiation in the context of medical diagnosis and treatment there are various steps that are unsolved so far. One major approach, the comprehensive tailoring of imaging and therapeutic procedures in terms of the clinical question, anthropometric and physiological parameters as well as individual susceptibility of each patient and especially children and lesion-specific characteristics is a key challenge that still is not addressed properly. Patient-tailored procedures will reduce the risks for individual patients. The patient group and indication dependent optimisation in terms of dose distributions need to be improved and standardized to allow a better compliance with COUNCIL DIRECTIVE 2013/59/EURATOM (BSS) Article 56 (Optimisation in medical use) and to pave the way for susceptibility dependent medical application of ionising radiation. Therefore a full exploitation of technology and techniques is needed with clinical and dose structured reporting.

#### Scope:

The scope of the proposed topic is to foster the full exploitation of technology and its improvement for diagnostic or therapeutic applications to patients dependent on characteristic parameters (individual susceptibility, age, gender etc. and clinical indication) in combination with providing documentation and optimisation tools (e.g. by clinical implementation of diagnostic reference levels, harmonisation of procedures for stratified patient groups, maximise clinical information and/or benefit relative to patient risk etc.) including the uncertainties in the determination of the variables. A project fitting to this topic will either aim to implement harmonisation or documentation schemes throughout Europe improving patient radiation protection and allowing better data for future patient based radiation biology or show feasibility of individualisation or stratification approaches and determine how such approaches could be implemented in the future. Projects need to include clear concepts of dosimetric description of procedures in combination with clinical outcomes (structured clinical and dose reporting) and of ways for standardisation (an example for such an approach could be DRLs based on such structured reporting, but other examples like in theranostics could also be possible). It would be beneficial, to address justification and the ethical basis underlying the optimisation process. Connections are seen with approaches of MELODI, EURADOS and SSH.

#### Expected Impact:

Optimised and harmonised practices will lead to reduced uncertainty in radiation exposure and corresponding risks. There will be a better dose documentation and a patient tailored optimisation of radiation application to patients to reduce the risk for individualised patients. Both aspects would be big steps for a more efficient implementation of the BSS. In addition, this individualised risk reduction harmonised throughout Europe will give greater confidence and assurance to patients. This could allow also a better communication for such medical applications.

#### Type of action:

Research and innovation actions. Project proposals may address part of the scope and links to other subtopics are welcome. Involvement of young researchers in hospitals is mandatory.

### **4.2. TOPIC 2: “Environment, Emergency and Social Sciences and Humanities”**

With 3 subtopics:

#### **4.2.1 Biomarkers of exposure and effects in living organisms, as operational outcomes of a mechanistic understanding of intra- and inter-species variation of radiosensitivity under chronic low dose exposure situations**

##### Challenge

The issue of biological effects of low doses of ionising radiation (environmentally relevant) is still of major concern for both human and environmental radiation protection, as highlighted after the Fukushima accident, especially with the aim of quantifying (and reducing if needed) the magnitude of risk to individuals (human and endangered species) and populations (human and biota) health at such low doses/dose rates. The present moving of ICRP towards an integrated system of protection of both human and the environment urges to complement the knowledge and associated tools to be able to face the wide biodiversity and biological responses to radiation (from molecules to ecosystems) in a credible and robust way. A key for success is to explore intra- and inter-species causes of radiosensitivity variation. This requires reliable quantification of radiosensitivity in vitro and ideally also in vivo. This will help to screen out candidates for biomarkers of exposure and effects to be used as early warning tools after ad hoc validation. Identification of such biomarkers will be relevant to radiation protection.

##### Scope

Proposals will contribute to the identification of the principal mechanisms of radiation induced effects at the molecular level and their propagation up to the individual level, including consequences for physiological functions (e.g. reproduction) with potential population level impact. This will be evidenced by evaluating suitable biomarkers of exposure and biomarkers of effects. A comparative and “lab-field-modelling”-combined approach for a number of exposure conditions and/or a number of species will enhance the understanding of the toxicity profiles as a response to exposure conditions. When relevant, dose-response relationships will be established making the best use of “omics” analytical methods, possibly combined with the use of a system biology approach, to provide evidence of linkage between metabolic pathways and associated biomarkers of effects. Research could expand to the use of genetic and epigenetic changes as potential biomarkers by implementing innovative approaches to test changes in the genome (e.g., mutation rates and types) and the epigenome (e.g., epigenetic tags) through generations. The research will need accurate biodistribution and accurate dosimetry as a prerequisite for any robust dose-response relationships. The proposed research should provide the basis for the development of biologically-based extrapolation models which are the key to tackle the wide species diversity and would be useful for risk assessors by helping reducing uncertainty in predictions of exposure and/or effects (and ultimately risk). The implications of the research results on the perception and communication of risks from low doses of ionising radiation should be evaluated and addressed.

The topic is relevant for any exposure situations where flora and fauna, and humans, may be chronically exposed to environmentally relevant levels of radionuclides from various sources (e.g., radiocontaminated territories after a major accident, NORM-sites, legacy sites) in that biomarkers potentially also useful in health surveillance, are looked for.

##### Expected impact

The study will contribute to answer an issue of concern which is the long-term biological effects of low radiation doses and alleviate part of the existing controversy.

The identification of robust biomarkers of exposure and effect and of radiation sensitivity and associated acquired knowledge will highlight and feed the various extrapolations needed when assessing radiological risk to humans or non-human species, and will provide robustness in decision making. Outcomes will support

emerging policy in the field of radioprotection of the environment, mentioned in the EURATOM Basic Safety Standards through the statement that “While the state of the environment can impact long-term human health, this calls for a policy protecting the environment against the harmful effects of ionising radiation. For the purpose of long-term human health protection, environmental criteria based on internationally recognised scientific data (...) should be taken into account”.

By encouraging openness to other disciplines and innovative hypothesis-driven approaches to understand underlying mechanisms, this research topic will contribute to increasing acceptability of the radiation protection system and aid in risk prediction, management and communication.

#### **4.2.2 Countermeasure strategies preparedness for emergency and recovery situations and response**

##### Challenge

Defining countermeasure strategies is an important task in the response and recovery phase of a nuclear or radiological emergency, in particular the management of contaminated territories in the aftermath of such an event. In past Framework Programmes several European projects (FARMING, SAGE, EURANOS, NERIS TP, PREPARE) have addressed countermeasure management options including the multiple dimensions such as the radiological effectiveness, technical feasibility, stakeholder involvement and societal aspects. The accident in Fukushima highlighted however the need for further work in the area of emergency and recovery preparedness and response as regards the development of countermeasure strategies. Radiological and societal aspects that are difficult to describe are e.g. vulnerabilities and resilience capabilities of a territory that should be taken into account when developing management strategies. It is also important to define appropriate strategies at different levels ranging from local to the national and European level. Finally, the aspect of optimisation of management measures is often expressed in publications but so far not fully investigated in terms of realisation and implementation. In this perspective the challenge is to ensure that parameters governing the radiological consequences can be identified in time to enable optimised countermeasures and remediation. All these aspects require the further development of impact assessment capabilities such as adequate monitoring and modelling techniques, insight in the societal dimension of countermeasures and the improvement of the decision making processes for the selection of the “optimal” strategies.

##### Scope

Proposals should focus on one or more of the following elements: 1/ the in-depth analyses of the implementation of management strategies in the emergency and/or recovery phase of the Fukushima nuclear event; 2/ the investigation of local differences and how they can be reflected in the countermeasure simulation models; 3/ the development of novel and adequate tools (including monitoring and modelling tools) for assisting countermeasure emergency and/or recovery strategies; 4/ the improvement of the decision making tools and/or processes.

To contribute to preparedness, there is a need to characterise and improve the adequacy of existing tools and decision making processes at the local and national level combining radiological, societal and cultural dimensions in the evaluation of the effectiveness of the countermeasure strategies. This should be accompanied by approaches allowing to effectively optimise management strategies once the basic strategy has been implemented. As preparedness is crucial in managing contaminated territories, it should be investigated to which extent approaches can be developed to identify vulnerabilities and resiliencies allowing tailoring appropriate management strategies in the preparedness phase and contributing to the development of sustainable approaches for the engagement of local stakeholders in emergency and recovery preparedness and response. Inputs from social sciences and humanities are required concerning the social, economic and ethical dimensions of vulnerability and resilience, including countermeasure strategies.

## Expected Impact

Improved management strategies in the aftermath of a nuclear or radiological emergency will surely strengthen the preparedness and response capabilities in Europe and beyond. Developing integrated approaches taking into account radiological, human, economic, ethical and societal aspects will improve the decision making capacities of authorities and relevant stakeholders and contribute to improved preparedness for emergency and recovery situations. Important in this aspect is the integration of these approaches in existing widely used decision support systems in Europe. In addition, by contributing to the validation of models and tools, the developments will favour harmonization of emergency and recovery countermeasures across Europe and will largely contribute to the implementation of the Basic Safety Standards.

### **4.2.3 Models, tools and rationales for stakeholder engagement and informed decision-making in radiation protection research, policy and practice for situations involving exposures to ionising radiation**

#### Challenge

Governance of radiological risks is challenged by the particularities of ionizing radiation (e.g. scientific and societal uncertainties, different perceptions of risks, societal trust issues) and the evolving European societal landscape (e.g. new mass media, active citizenship). To address this, research on new models, tools and rationales of stakeholder engagement in radiation protection research, policy and practice is needed, for different exposure situations. Although a number of national and international recommendations and legal requirements for stakeholder engagement in radiation protection (e.g. Basic Safety Standards, Aarhus Convention) have been developed, there is still a big gap between discourse and practice, as highlighted for instance by the FP7 projects EAGLE and PREPARE. In addition, the increasing capacity of organised civil society stakeholders and citizens to investigate by themselves radiation protection issues and to produce knowledge poses new challenges for institutional actors in radiation protection to engage with non-institutional stakeholders and develop new models of interaction taking into account these social dynamics. The aim of this action is to improve the governance of radiological risks by enhancing stakeholder engagement and informed decision-making on multiple levels (e.g. institutional, non-institutional, individual), by clarifying the venues and instruments for stakeholder engagement, the factors that inform engagement (socio-psychological, political, economic, cultural, legal, ethical), and the impact of stakeholder engagement on justification, health and wellbeing.

#### Scope

Proposals will identify and address key challenges in stakeholder engagement and informed decision making in radiation protection, by analysing rationales and developing new models and tools for stakeholder interaction and engagement. This is needed for different exposure situations and categories of exposures, whether affecting an individual, groups of people, or larger communities. The proposal outcomes may include the analysis of societal needs for and evaluation of legal instruments and governance frameworks supporting access to information, public participation and access to justice in relation with radiation protection issues; the ethical principles guiding engagement and justification; and the examination, assessment and design of stakeholder and public participation tools and methodologies for different radiological exposure situations and categories of exposure. Proposal may entail highlighting roles and rules of stakeholders in the engagement process; the interaction between institutional and non-institutional stakeholders; factors facilitating engagement; stakeholders' sense-making of ionizing radiation concepts, risk and uncertainty (e.g. practitioners, patients, local population); impact of stakeholder engagement on the interplay of psychological aspects associated with radioactivity, social environment, culture and radiation

protection behaviours; and the role of recent developments in communication including social media (e.g. citizens' journalism).

#### Expected impact

The research should bring insights on ways to intensify responsiveness to societal needs and concerns, increasing the quality of radiation protection approaches, techniques and culture. It should improve the mutual understanding between stakeholders, and enable informed decision making. Proposals should reinforce the links between social sciences and humanities research and the radiation protection platforms (MELODI, NERIS, ALLIANCE, EURADOS, EURAMED) and help with disseminating and understanding stakeholder engagement processes. The research results should be applicable, for instance to support the implementation of Basic Safety Standards.

#### Type of action:

Research and innovation. Project proposals may address the entire or part of the scope.

## 5. Call conditions proposals

In the 1<sup>st</sup> call, about 80% of funding went to the topic 2 dealing with environment and emergency management, and only 20% to the topic related to health. To ensure continuation of health research, the MB decided to allocate most funding for the health related topics in the 2<sup>nd</sup> call.

The MB further decided that the proposals could cover one or more subtopics of the main topic. In the case of the SSH subtopic, it was requested by CONCERT task 2.6 that proposals should not be limited to emergency, but could address also other exposure situations (e.g. medical) or categories of exposures (e.g. occupational). It was proposed that at least one project would be funded for each main topic considering that there are proposals which pass the threshold. It is anticipated that 2-3 projects of the order of 1.5-2.5 M€/project would be funded for Topic 1 (Health) and 1-2 projects of the order of 0.8-1.2 M€/project for Topic 2.