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EJP-CONCERT

**European Joint Programme for the Integration of Radiation Protection
Research**

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Round table on stakeholder engagement in relation to radon exposures

at the

**3rd European Radiation Protection Week
October 2nd, 2018, Rovinj**

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Summary

Exposure to indoor radon in homes is one of the most important causes of lung cancer deaths worldwide. EU Member States are now required to develop comprehensive radon action programmes, including communication strategies. While most of these communication programmes focus on increasing public awareness about radon and the related risk mitigation actions, increased awareness does not automatically lead to action and desired behavioural change. A value-action gap is observed, in the sense that individual values or attitudes do not correlate to the actions taken to mitigate radon risks. Effective radon risk communication should thus go beyond increasing awareness about the radon issue, and focus on motivating individuals to test their homes for radon and apply mitigation measures if needed. Stakeholder engagement may support this process, as it has been shown to stimulate systematic information processing and help people make long-term behavioral changes.

A round table was held at the 3rd Radiation Protection Week in the framework of the ENGAGE project to discuss stakeholder engagement in relation to exposures to indoor radon. Participants were invited to share their experiences, recommendations on best practice and views on challenges ahead. The topics for the moderated discussion at the round table include radon awareness, the role of stakeholders in radon action plans, and the engagement of stakeholders in decision-making and implementation of mitigation actions. Participants included radiations safety authorities, academics and research organisations.

In general, the round table participants indicated that stakeholder engagement for radon exposure is complex and various requirements exist in the different countries. It is deemed necessary to not only involve stakeholders in developing the plans and implementing them, but also to engage affected populations in applying protective measures. A structured and formalised manner to engage stakeholders in radon action plans is however missing in most countries.

In practice engagement presents itself in various forms: provision of information, gathering of feedback from local communities on action plans, organisation of workshops, communication at school level, public meetings, joint inspections, self-test for radon in homes. Key stakeholders for the implementation of mitigation measures are building industries and local authorities. Participants highlighted the importance of local initiatives, which are now being developed in many countries, and argued that national campaigns may be less effective than campaigns at the local level.

A number of challenges related to stakeholder engagement have been pointed out; local authorities for example experience a fear of panic by affected populations, and affected populations might not be interested or have specific concerns, for example related to the cost of mitigating actions.

The opportunities, challenges and tools for stakeholder engagement in radon issues will be further investigated in the ENGAGE project.

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1 ENGAGE project overview

The ENGAGE project, funded under the H2020 CONCERT, aims at *ENhancinG stAkeholder participation in the Governance of radiological risks*.

ENGAGE is a two-year project started on November 20th, 2017 that seeks to identify and address key challenges and opportunities for stakeholder engagement in relation to medical use of ionising radiation; post-accident exposures; and exposure to indoor radon. In all these situations, stakeholder engagement is a key issue for improving the governance of radiological risks and the radiation protection of the exposed individuals.

The project aims are:

- a. to assess why, when and how stakeholders engage in radiation protection;
- b. to develop novel approaches to analysing stakeholder interaction and engagement, and provide guidance to meet the challenges and opportunities identified in response to (a);
- c. to investigate the processes for enhancing radiation protection culture and their role in facilitating stakeholder engagement, and develop guidelines for building radiation protection culture; and
- d. to build a joint knowledge base for stakeholder engagement in radiation protection.

Through its research and innovation activities, ENGAGE will inform stakeholder engagement approaches to radiation protection in ways that all relevant stakeholders find meaningful and legitimate. It will contribute to improving radiological risk governance and radiation protection itself. Its beneficiaries are radiation protection researchers, policy makers, civil society stakeholders and wider publics.

ENGAGE is part of CONCERT. This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.

2 Current challenges of mitigating radon risks

Exposure to indoor radon in homes is one of the most important causes of lung cancer deaths worldwide, accounting to about 2% of all deaths from cancer in Europe (WHO, 2009). EU Member States are now required to develop comprehensive radon action programmes, including communication strategies (Euratom, 2013). While most of these communication programmes focus on increasing public awareness about radon and the risk mitigation actions, knowledge about radon has been shown in some cases to be uncorrelated with actually doing a home radon test (Sandman and Eblen, 1994). A value-action gap is observed, in the sense that individual values or attitudes do not correlate to the actions taken (Nordgren et al., 2008). The Swedish National Board of Housing and Planning noted in 2004 that only approximately half of the yearly radon subsidy budget had been taken up by concerned homeowners to apply measures for reducing radon concentration in their house (e.g. the ventilation systems) (Löfstedt, 2018).

Evaluations of radon communication campaigns with the objective to increase radon awareness, also show that increased awareness does not automatically lead to action and behavioural change. For instance, awareness of radon issues among the public in Ireland increased after a series of communication campaigns: 76% (2004), 77% (2010) and 86% (2013). Opposite to this, concern about

radon in their home decreased: 47% (2004), 43% (2010) and 33% (2013), as did their likelihood of having their home tested 36% (2010) (Long, 2014). In addition, the Environmental Protection Agency in Ireland has shown that only 1 in 4 among those having tested their home and found elevated radon concentrations went on to apply mitigation actions (Long, 2014). Effective radon risk communication should thus go beyond increasing awareness about the radon issue, motivate individuals to test their homes for radon and apply mitigation measures if needed. Stakeholder engagement may facilitate this process, as it has been shown to stimulate systematic information processing and help people make long-term behavioral changes (Petty and Cacioppo, 1986)

3 Round table discussion on stakeholder engagement in relation to exposures to indoor radon

A round table has been held on October 2nd, 2018, in the framework of the ENGAGE project at the third European Radiation Protection Week to discuss stakeholder engagement in relation to exposures to indoor radon. Participants were invited to share their experiences, recommendations on best practice and views on challenges ahead.

The topics for the moderated discussion at the round table include radon awareness, the role of stakeholders in radon action plans, and the engagement of stakeholders in decision-making and implementation of mitigation actions.

Participants included radiations safety authorities, academia and research organisations from France, Norway, Slovakia, Italy, Ireland, Croatia, Poland, UK, Spain, Belgium and Germany.

A number of 14 participants attended the round table (out of which two moderators and one recorder of discussions from the ENGAGE project). The invitation sent to all participants at the Radiation Protection Week is included in Annex 1.

The discussion was introduced with a presentation included as Annex 2.

The questions addressed in the round table were the following:

- What do you know about your national radon action plan?
- What is the role of stakeholder engagement in the national radon action plans?
- What is the role of stakeholder engagement in decision making and implementation of mitigating actions?

Radon action plans

Participants discussed different aspects concerning the national radon action plans. They mentioned that bringing radon issues related to indoor exposure on the agenda was a long and sometimes difficult process. In the past, radon risk has been associated and regulated for occupational exposure in Uranium mines, while radon in homes was not considered as a public health issue. Attention to radon is considered “a political issue” in countries that have recently joined the EU (e.g. Croatia), as they have now to implement the revised BSS. Some countries are developing for the first time a radon action plan, while others are at the second or third revision.

Most Member States are now in the process of implementing the new law prescribing the national radon action plan. Some countries experience difficulties at political level, e.g. approval of the plan.

One participant mentioned a case where reference levels are specified in the plan and responsibilities are assigned (sanitary authorities have the main responsibility), but no concrete actions have been undertaken yet.

Participants also mentioned difficulties related to mapping of radon prone areas, due to potential heterogeneity of exposure: *“even on the same street there can be many differences”*. There is also variability in the same building (e.g. high doses for children sitting in the back of the room in some schools in Italy, due to building materials). Another participant argued that the radon case is a special case of radiological protection because exposures to people cannot be precisely determined; instead the focus is on the quality of the building.

While radon measurements are recommended by authorities (in Norway for instance *“practically everyone should measure radon in their home”*), only small fractions of the population in the affected areas carry out measurements (not more than 20% in Norway).

Concerning the implementation of radon action plans, participants highlighted that regional approaches have sometimes been adopted, either because of differing contexts (e.g. Norway has sub-strategies for five different areas) or because of lack of governmental advice on how to implement the measures (Italy).

To the question regarding the **role of stakeholders in national radon action plans**

Action plans have been developed mainly by governmental stakeholders, with the building industry being mentioned as a key stakeholder in the development and/or the implementation of radon action plans and specific measures. Countries such as Norway or Ireland introduced provisions targeting the building industry in their legislation (e.g. prescribing in the building regulations that houses should be complying with restrictions for radon). Other ways to enforce the application of mitigation measures are to introduce the obligation to inform any potential clients about radon concentrations before selling a private house: this can influence the price on the real estate, therefore the issue is solved by the market rules.

In some other countries proposals have been made to categorise new buildings depending on the potential for radon concentrations: if this is high, there should be included a mitigation method in the design plan.

Participants suggested that engaging with stakeholders in the implementation of radon action plans is a complex issue, with some states including specific requirements for stakeholder involvement that go beyond the provision of information (France), others mentioning stakeholder involvement, but not detailing on any concrete plan (Croatia), while still others recognizing its importance and initiating stakeholder engagement without specific (direct) requirements (Norway).

Forms of engagement include feedback from local communities on radon action plans (France); workshops organized to present local initiatives (France); yearly workshops with building and health specialists (Norway); communication at community level with schools and organization of community joint inspections with the directorate for health (Norway).

In some cases, stakeholders (e.g. national radon association) expressed willingness to help the responsible authorities to develop a national action plan, but have so far not been engaged.

Participants mentioned different measures applied to raise awareness: e.g. a workshop organized by the radiation protection society in the U.K., brochures for schools in Spain and Italy (“Una scuola senza radon” for students and parents, <https://www.ediliziascolastica.it/1643-2/>), communication of radon

information in a journal for families. One participant argued that it is difficult to build a radiation protection culture among people living in radon prone areas. One participant pointed to the need to pay attention to comparisons of risks from radon and from other sources, such that these comparisons are meaningful.

One participant mentioned that discussing the radon risks with home owners is not so simple because people live since generations and are suddenly confronted with a new a risk. In addition, the synergistic effects with smoking are deemed difficult to understand.

An indirect mode of raising public awareness and stimulate the application of measures to reduces radon concentration in houses was mentioned in Norway, which introduced radon regulations for houses used as rental accommodations.

Stakeholder engagement in decision making and implementation of mitigating actions?

One participant mentioned that communication and distribution of brochures is not enough – “*the key point is engagement of different stakeholders*”: municipalities, owners of houses, building construction companies and authorities, and radiation protection experts.

Local authorities were repeatedly pointed out as an important stakeholder, e.g. due to the particular knowledge they can bring in the process (“*because they can give info about specific situations*”), or the increased effectiveness of radon action plans. Some participants revealed that national campaigns may be less effective than campaigns at local level, using also local media. Local initiatives are being developed in various countries, sometimes with support from national authorities (e.g. in France).

The Norwegian case shows that the national building authority is one of the most influential stakeholders and engaging them and other actors directly involved in the implementation of actions in the governance of radon issues can significantly contribute to implementation of action plans (in Norway “*the most successful thing was to coordinate with national building authorities, also authorities with tools to handle the radon problems*”). Moreover, they emphasize the benefits of mutual learning: authorities organise workshops with building professionals (industry) to discuss the measures to mitigate radon concentrations and their effectiveness.

While the need for engagement is recognized, the requirements in terms of time and other resources needed was mentioned as a limiting factor.

Participants mentioned challenges but also opportunities, such as citizen science. In Ireland measurement of radon is an item among other citizen science initiatives by Environmental Protection Agency (EPA) in Ireland. At the same time as testing their homes for radon, 1400 homeowners provided information about the house type, age and insulation, which contributes to a research project aiming to “*better understand the behaviour of radon in different types of homes*” and “*improve the advice*” given to homeowners about how to protect themselves (<http://www.epa.ie/irelandsenvironment/getinvolved/citizenscience/epacitizenscienceinitiatives/>).

In many other countries it is possible to request a radon test and buy a radon detector (e.g. Slovakia, Belgium). For instance in Belgium anyone can buy a radon detector for 20 eur. Other, non-governmental organisations, also offer radon measurement devices; for a journal related to families in Italy (<https://www.altroconsumo.it/casa-energia/pulizie/vantaggi/radon#>).

In recent years the EPA of Ireland efforts included oversight of commercial companies and public outreach, promoting remediation measures and offering grants to conduct remediation of houses.

To a follow-up question whether there should be specific requirements for stakeholder engagement in national action plans vs. bottom-up engagement, a participant mentioned that for public places such as schools the responsibility for radon measurement lies with the authorities who should provide radon detectors. Also from France, it was mentioned that costs of remediation in schools are a challenge and that the implementer of actions should not be the same as the decision maker of remediation options (e.g. the regulator).

Concern was raised by some participants that raising public awareness would create panic and fear among the public. It also mentioned that "*the sense of uncertainty that is generated is not productive*" and that there is a "*need to educate the building industry*", and to build trust.

It was also pointed out that dealing with the different types of protective actions needed is not straightforward as they range from simple action such as opening the window to building renovation. In France, radon is now connected to indoor air quality and with renovation and energy saving policies.

One participant put forward ethical concerns generated by disseminating information about radon without addressing actions and specific support ("*people know there is radon but there is no expertise and no money*").

To the question who should ideally be involved in decisions, participants mentioned several stakeholders. For instance municipalities and local authorities are in the frontline to promote activities concerning renovation of houses; consumer associations are also involved (e.g. cancer association); also other stakeholders directly linked to local population; the organisations of radon professionals.

Participants pointed out that measurements are just a first step. However, for private houses it is an individual decision whether to take mitigation actions or not (unless renting the house, e.g. in Norway).

Cases were mentioned of opposition to radon measurements from local stakeholders, e.g. a mayor opposing measurements in schools, due to fear that this would generate panic among the population; or people opposing radon measurements in a region where the main income is tourism.

While prescriptions for risk mitigation measures can be included in building regulations, the participants pointed out that for home owners this cannot be legislated (other than e.g. via regulations for rental accommodations). An example of opposition to remediation projects and, linked to that, to stakeholder engagement was recalled for a region in Norway with very high indoor radon levels where the mayor and the public opposed remediation measures and tensions were created between the members of the public participating in the remediation project (together with other stakeholders e.g. company involved in implementing remediation measures) and other members of the public. The participant recalling the case argued that "*what should have been done was to educate healthcare professionals because people trust them*". One participant pointed out that risk perception and risk justification should be part of the dialogue, and that if people do not wish to take measures it is not necessarily because they do not care about the risk.

One issue debated upon was the cost of measurements and remediation actions and whether this is an obstacle in the implementation of radon action plans. In Norway, a study on people's willingness to pay (WTP) to undertake radon risk mitigation measures found that the mean WTP/household would cover the typical cost of remediation/protection measures. In other countries, participants mentioned that cheaper solutions are needed. In addition, it was argued that "*financial support helps but there is a psychological barrier to overcome*".

4 Conclusions

Issues concerning indoor exposure to radon have in the past been proven difficult to place high on policy agendas. Radon health risks from indoor exposure were not considered as a public health issue; since the revised Basic Safety Standards this is changing and several countries, including those who newly joined the EU, are developing radon action plans for the first time. These plans, and the past and current implementation practices, are not without difficulties. For example, due to the heterogeneity of radon exposure, mapping radon prone areas is challenging. Additionally, it should be noted that even when implementation challenges are tackled, only a small fraction of the population carries out measurements or applies remediating measures. It is deemed necessary to involve stakeholders not only to develop the plans and implement them, but also to engage affected populations in applying protective measures.

In general, the round table participants indicate that stakeholder engagement for radon exposure is complex and various requirements exist that differ for the different countries. Engagement in practice presents itself in various forms: provision of information, gathering of feedback from local communities on action plans, organisation of workshops, communication at school level, joint inspections, public meetings, self-test for radon. It should be noted that stakeholders have expressed an interest to aid responsible governments in the development and implementation of action plans, but a structured and formalised manner to engage them does not exist. Several hesitations by various stakeholders exist; local authorities for example experience a fear of panic by affected populations, and affected populations not be interested or have specific concerns, for example related to the cost of mitigating actions.

A key stakeholder involved in mitigating indoor exposure to radon is the building industry. This involvement is in some countries embedded in their legislation as is the case in Norway and Ireland. In practice, this stakeholder engagement translates itself in legislation or prescriptions in building regulations that houses should comply with restrictions for radon. In a more informal manner this engagement includes the obligation to inform potential clients about radon concentrations before selling a private house. Additionally, several countries indicate the need for (or existence of) categorisation according to the potential for exposure and an implementation of corresponding measures. Furthermore, local authorities were considered as a key stakeholder as they possess particular knowledge they can bring into the process. Some participants pointed out the importance of local initiatives and argued that national campaigns may be less effective than campaigns at local level.

Besides the aforementioned challenges, participants also bring forth opportunities for stakeholder engagement and protective actions against radon exposure. These opportunities include for example, citizen science, commercialisation of radon tests, reducing costs or provision of test by non-governmental organisation. Concerning public spaces however these opportunities do not apply and the responsibility remains with the authorities.

In general it can be concluded that opportunities for stakeholder engagement exist in mitigating indoor exposure to radon. Stakeholder engagement is however complex and hesitation exists for several key stakeholders. Thus far, both formal and more informal forms of engagement exist; all experiencing opportunities and challenges. Emergent forms of engagement such as citizen science are however brought forward as practices with great potential to improve mitigation of indoor radon exposure. More research is needed to elucidate whether and how this potential is confirmed in practice.

Annex 1 Invitation to the round table

Dear radiation protection expert,

With the occasion of the 3rd European Radiological Protection Research Week, the ENGAGE project organises two *Round Tables* focusing on stakeholder engagement.

We kindly invite you to participate to these round tables and share your experiences, recommendations on best practice and views on challenges ahead.

“Stakeholder engagement in relation to exposures to indoor radon”

Date and time: *Tuesday, 2nd October 2018, 13:00-14:15.*

Location: Room 5

The topics for the moderated discussion at the round table include radon awareness, the role of stakeholders in radon action plans, and the engagement of stakeholders in decision-making and implementation of mitigation actions.

and

“Stakeholder engagement in relation to medical exposures to ionizing radiation”

Date and time: *Tuesday, 2nd October 2018, 16:00-17:15 (please note the revision compared to the printed conference programme)*

Location: Room 5

The moderated discussion will be centred on how stakeholder engagement in radiological protection is enacted in practice and what is its impact, particularly in relation to improving the risk-benefit dialogue with patients and the public, the awareness of radiation risks and benefits among healthcare professionals, and the informed decision making process for patients.



“ENhancinG stAkeholder participation in the Governance of radiological risks for improved radiation protection and informed decision-making”

The ENGAGE project seeks to identify and address key difficulties and opportunities for stakeholder engagement in three fields of exposure to ionising radiation: medical use of ionising radiation, post-accident exposures; and exposures to indoor radon.

ENGAGE is part of the CONCERT project. This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.

Annex 2 Presentation used to introduce the round table discussion

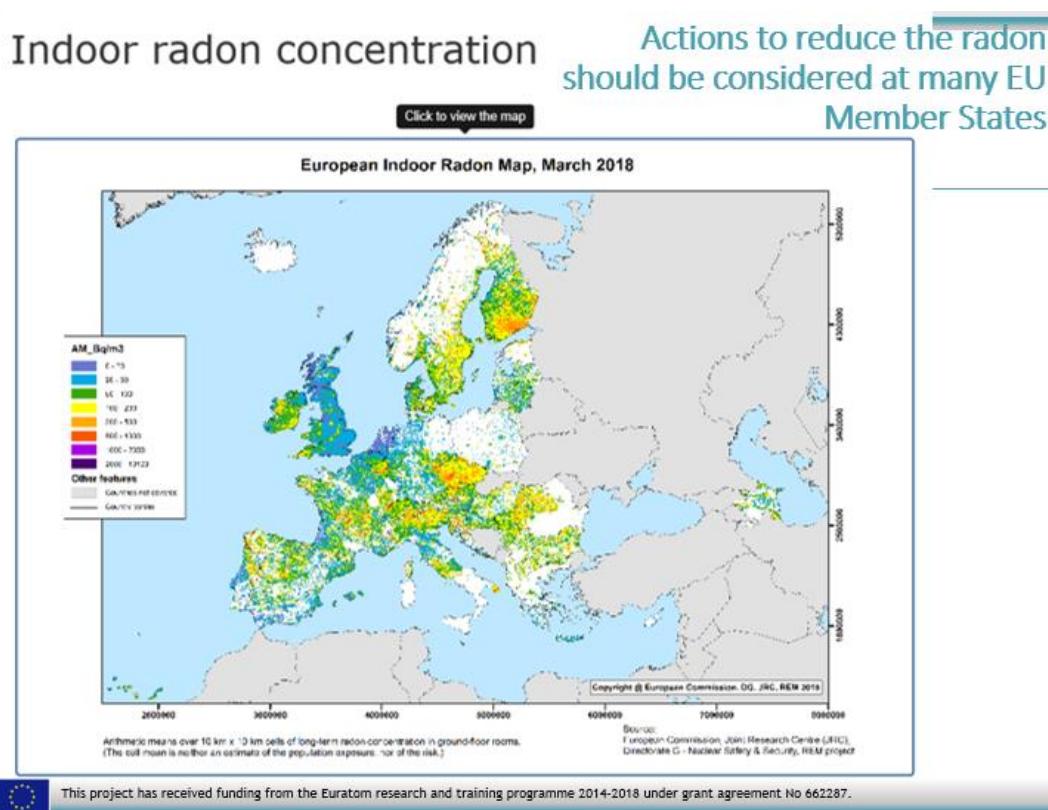
 

The ENGAGE Round table: Stakeholder engagement in relation to exposures to indoor radon

Tanja Perko, SCK•CEN
(presented by Christiane Pöhlz-Viol, BfS)

Radiation Protection Week, 2. Oct 2018 , Rovinj, Croatia

This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.





Different communication campaigns in EU MS were conducted in last decade



Radon is a health hazard with a simple solution.

Test. Fix. Save a Life.



RADON
karcinogen,
kterému se můžeme vyhnout



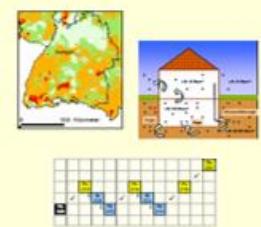
This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.



Most of the campaigns were based on a one way information:
brochures and document



Radon
in Baden-Württemberg
Vorkommen • Risiko • Empfehlungen



This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.



Findings from research and experiences from MS



Awareness about radon does not automatically lead to action!!!

e.g. case Ireland

Awareness of radon among the public after series of communication campaigns:
76% (2004), 77% (2010) and full awareness 86% (2013)

Despite increasing awareness, concern about radon in their home decreasing:
47% (2004), 43% (2010) & 33% (2013)

Even lower likelihood of having their home tested 36% (2010)

EPA have shown that of those that test and find elevated radon concentrations,
in their home only 1 in 4 go on to reduce radon

Source: Stephanie Long RPII EPA, IAEA workshop, Estonia, 2014



Engagement might do!



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EUROPEAN JOINT PROGRAMME
FOR THE INTEGRATION OF
RADIATION PROTECTION RESEARCH
CONCERT

ENhancinG
stAkeholder
participation
ENGAGE
in the GovernanceE
of radiological risks

A (legal) request for engagement

Official Journal of the European Union



English edition Legislation

L 13

Volume 37
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II Non-legislative acts

DIRECTIVES

- Council Directive 2011/59/Euratom of 5 December 2011 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation and repealing Directives 89/651/Euratom, 96/41/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom

“Strategy for communication to increase public awareness and inform local decision makers, employers and employees of the risks of radon, including in relation to smoking”

„Member States shall provide as appropriate for the involvement of stakeholders in decisions regarding the development and implementation of strategies for managing exposure situations“



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Some MS started to engage with stakeholders



e.g. In Ireland briefing national politician's that represent the target county; Public meetings (2 to 3 in main towns), chaired by local (sometimes national) politicians

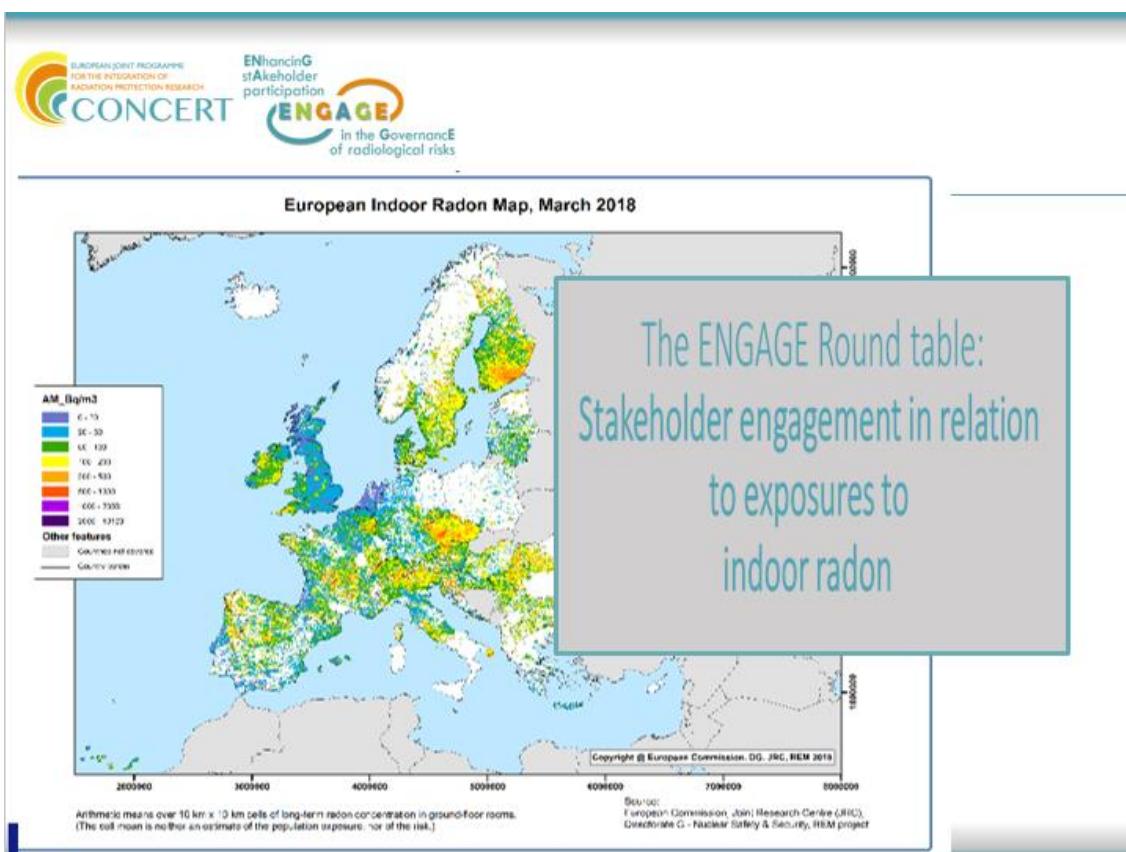
In Croatia ministry engaged with schools (e.g. meetings at schools, special www for schools, measurements in schools...)

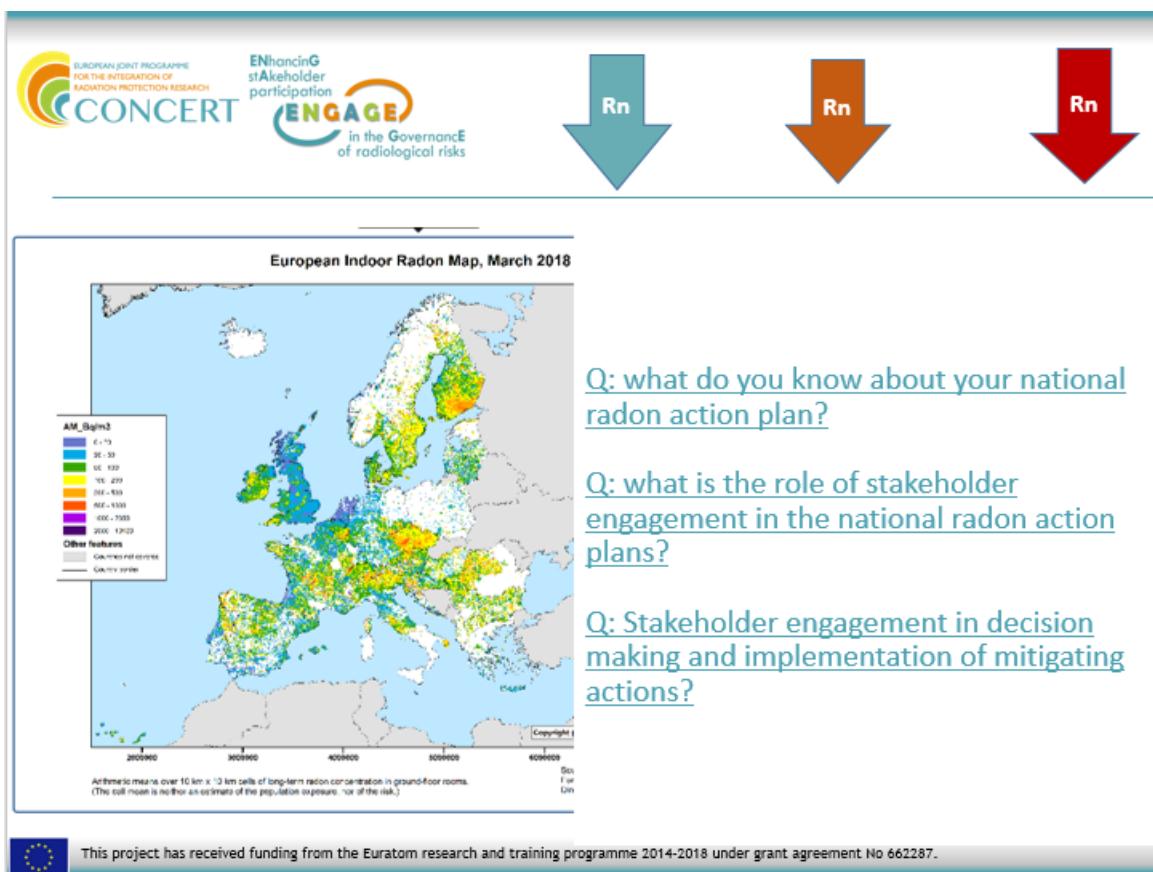
In Belgium national authorities engaged with local authorities, building industry

In Hungary national authorities engaged with residents, local doctors for radon mapping.



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5 References:

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