RadoNorm
Managing risks from radon and NORM

Deliverable 8.6:

Communication, dissemination and exploitation final report

Work Package 8

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Executive Summary

The RadoNorm project, funded under the Euratom research and training programme (2019–2020), pursued a comprehensive five-year strategy to enhance radiation protection from radon and NORM through integrated communication, dissemination, and exploitation of results. Work Package 8 (WP8) coordinated activities to ensure that project outcomes were visible, accessible, and impactful across scientific, policy, industrial, and public domains.

A unified plan combined communication and dissemination into a single strategic framework, aligning messaging, channels, and engagement methods for maximum effect. Stakeholder mapping identified internal and external audiences ranging from EU institutions, national regulators, and researchers to industry representatives, civil society, and the general public. They were grouped into eight targeted network categories. Engagement was fostered through tailored materials, events, online platforms, and direct dialogue, ensuring two-way exchanges and feedback loops that informed project direction.

The plan evolved through annual updates, supported by a comprehensive set of tools: a public website serving as a central repository for deliverables and open-access publications, social media channels (X, LinkedIn, YouTube), printed and digital materials (leaflets, brochures, posters, videos), and thematic newsletters. Scientific outputs were widely disseminated through green and gold open access, with research data stored in the STORE^{DB} platform for long-term accessibility.

Events were central to outreach, including RadoNorm annual scientific meetings, the related conferences, thematic webinars, and targeted training programmes for early-career researchers. Participation in external high-profile events further expanded the project's visibility and fostered collaboration with related EU-funded initiatives and global radiation protection organisations.

Exploitation activities targeted four main pathways: further research, product and process development, service provision, and standardisation. Results were systematically analysed for user relevance, intellectual property considerations, and market or policy uptake potential. Approximately two-thirds of project data were shared openly, and mechanisms were put in place for sustained access beyond the project's lifespan.

RadoNorm's integrated approach ensured that its scientific, technical, and societal outputs were not only disseminated but also positioned for practical use in policymaking, industry, and public health. By combining robust stakeholder engagement, open science practices, and clear exploitation routes, the project maximised its contribution to European and international efforts in radiation protection, leaving a durable legacy for research, regulation, and societal benefit.

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Glossary

ALLIANCE – European Radioecology Alliance

BSS – Basic Safety Standards

DOI - Digital Object Identifier

ENA – European NORM Association

EP - Exploitation Plan

ERA – European Radon Association

E&T – Education and training

EURADOS - European Radiation Dosimetry Group

GA – Grant Agreement

GDPR – General Data Protection Regulation

ICRP – International Committee for Radiation Protection

IPR – Intellectual Property Rights

IRPA – International Radiation Protection Association

MELODI - Multidisciplinary European Low Dose Initiative

NORM - Naturally Occurring Radioactive Materials (the term NORM will include aspects of TENORM)

PEDR - Plan for the Exploitation and Dissemination of Results

RIA - Research & Innovation Action

SHARE – Social sciences and HumAnities in ionizing radiation REsearch

TENORM - Technologically Enhanced Naturally Occurring Radioactive Materials

WP(s) – Work Package(s)

WPLs – Work Package Leaders

1. Aim of the document

1.1 Introduction

According to the Grant Agreement (GA) Number 900009 — RadoNorm [1] the objectives of WP8 Communication, Dissemination and Exploitation of Results were to:

- enable two-way communication about the RadoNorm and its results[1] to multiple audiences and show its impact and benefits by addressing and providing possible solutions to challenges of radon and NORM exposures;
- make the RadoNorm results transferable for audiences that may use the new knowledge, data and information in their own work, enable use and uptake of results and maximise the impact of EU-funded research;
- utilise the RadoNorm results in developing, creating and marketing products, processes, services or any other activities (policymaking) to effectively exploit the project's results for society.

These objectives were also part of obligations related to communication, dissemination and exploitation, and were formally outlined in GA. More specifically, by signing the European Commission (EC) RadoNorm GA participants agreed to:

- Promote the action and its results, by providing targeted information to multiple audiences (including the media and the public), in a strategic and effective manner and possibly engaging in a two-way exchange (Article 38 of the GA),
- Disseminate results - as soon as possible - through appropriate means, including in scientific publications (Article 29 of the GA),
- Ensure open access (free of charge, online access for any user) to all peer-reviewed scientific publications relating to its results (Article 29 of the GA),
- Take measures aiming to ensure 'exploitation' of the results - up to four years after the end of the project - by using them in further research activities; developing, creating or marketing a product or process; creating and providing a service, or using them in standardisation activities (Article 28 of the GA)
- Acknowledge EU funding in all communication, dissemination and exploitation activities (including IPR protection and standards) as well as on all equipment, infrastructure and major results financed by the action by using the wording and criteria specified in the GA (Articles 27, 28, 29, 38).

In order to achieve the objectives, the Deliverable 8.1 Strategy and plan for communication, dissemination and exploitation of results [2] was developed at the start of the project with Plan for the Exploitation and Dissemination of Results (PEDR) where a well-planned strategy for protection, exploitation and dissemination of results is given. The Communication plan was integrated in the PEDR to increase the reciprocal impacts and included proactive engagement with different stakeholder based on the stakeholders mapping. To fulfil the objectives, different tools and channels for communication and dissemination were established along with activities for involvement of target groups. Different opportunities were given: online communication and feedback, specific materials to promote key messages for different audiences, events and participation in RadoNorm and other relevant actions.

[1] Results are "*any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including intellectual property rights*" (Source: EC Research & Innovation Participant Portal Glossary).

Also support for other RadoNorm Work Packages (WPs) in communication and dissemination of their research to scientific and non-scientific audiences was provided.

The plan also ensured that the members of the consortium take a proactive role in the effort to maximise the outreach of the project by participating in relevant workshops, conferences and exhibitions, as well as publishing project results in relevant scientific journals and conference proceedings to allow for high international visibility of RadoNorm. This task also tracked publications to ensure compliance with open access requirements.

The definitions and distinctions between the terms communication, dissemination and exploitation of results are given in *Figure 1 Communication/Dissemination/Exploitation definitions and distinctions*, as presented in the European IPR (Intellectual Property Rights) helpdesk publication [3].

	Communication	Dissemination	Exploitation
Definition	"Communication on projects is a strategically planned process that starts at the outset of the action and continues throughout its entire lifetime, aimed at promoting the action and its results. It requires strategic and targeted measures for communicating about (i) the action and (ii) its results to a multitude of audiences, including the media and the public and possibly engaging in a two-way exchange." (Source: EC Research & Innovation Participant Portal Glossary/Reference Terms)	"The public disclosure of the results by any appropriate means (other than resulting from protecting or exploiting the results), including by scientific publications in any medium." (Source: EC Research & Innovation Participant Portal Glossary/Reference Terms)	"The utilisation of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities." (Source: EC Research & Innovation Participant Portal Glossary/Reference Terms)
Objective	**Reach out to society and show the impact and benefits** of EU-funded R&I activities, e.g. by addressing and providing possible solutions to fundamental societal challenges.	**Transfer knowledge & results** with the aim to enable others to use and take up results, thus maximising the impact of EU-funded research.	**Effectively use project results** through scientific, economic, political or societal exploitation routes aiming to turn R&I actions into concrete value and impact for society.
Focus	**Inform** about and **promote** the project AND its results/success.	**Describe** and **ensure results available** for others to **USE** ➡ focus on results only!	**Make concrete use** of research results (not restricted to commercial use.)
Target Audience	Multiple audiences beyond the project's own community incl. media and the broad public.	Audiences that may take an interest in the potential **USE** of the results (e.g. scientific community, industrial partner, policymakers).	People/organisations including project partners themselves that make concrete use of the project results, as well as user groups outside the project.
Formal Obligations	• Rules for Participants • RIA & IA Proposal Template 2.2 b) • Grant Agreement Art. 38.1	• Rules for Participants • RIA & IA Proposal emplate 2.2 a) • Grant Agreement Art. 29	• Rules for Participants • RIA & IA Proposal Template 1.1, 2.1, 2.2 a) • Grant Agreement Art. 28

Figure 1 – Communication/Dissemination/Exploitation definitions and distinctions [3]

The communication, dissemination and exploitation of results were regularly updated according to the evolution of RadoNorm, and new related documents were adopted.

1.2 Purpose and scope of this report

The purpose of this deliverable 8.6 Communication, dissemination and exploitation final report is to provide final overview of approaches, modifications, changes and adopted solutions based on lessons learned during established strategic approach for communication, dissemination and exploitation of results at the RadoNorm project level and at the participants' level based on the five years of project implementation. It builds on several documents: initial deliverable 8.1 Strategy and plan for communication, dissemination and exploitation of results [2], Milestone 92 Updates of Strategy and plan for communication, dissemination and exploitation of results [4], and deliverable 8.2 Strategy and plan for communication, dissemination and exploitation of results update [5]. This report includes final report on activities in communication, dissemination and exploitation of results and serves as an overview of all related actions. The deliverable incorporates also the feedback from five years of implementation of communication, dissemination and exploitation within the RadoNorm project.

The project undertook a comprehensive approach to stakeholder engagement, communication, dissemination, and exploitation. It began with the careful identification of relevant stakeholders, followed by the development of targeted communication channels and tools tailored to the specific needs of different groups. Custom materials were prepared to ensure that key messages were accessible and meaningful to each audience. To foster engagement and promote project outcomes, a series of both online and face-to-face events were organised. These gatherings enabled direct interaction with stakeholders and encouraged their active participation throughout the project's duration. In parallel, a digital platform was developed to support the use and reuse of data and results generated within the project, ensuring long-term accessibility and facilitating broader knowledge sharing.

Continuous evaluation and feedback processes were built into the communication activities. These mechanisms provided valuable insights that allowed for regular adjustments and improvements, helping to maintain the relevance and effectiveness of outreach efforts.

The project also prioritised collaboration with related initiatives and participated in external events to expand its reach and impact. Such liaisons proved instrumental in strengthening visibility and fostering synergies across the wider community.

Underlying all of these efforts was a strong commitment to two-way communication and meaningful knowledge exchange. This was considered essential not only for raising awareness but also for supporting trust and cooperation among stakeholders. The communication, dissemination and exploitation plan ensured that project information, data and results were shared in a timely and effective manner, using tools for different target audiences. Ultimately, all actions were oriented towards maximising the impact of RadoNorm. Special attention was given to the promotion of deliverables and the strategic distribution of promotional materials, with the goal of reinforcing the project's relevance and ensuring that its outcomes continue to inform and support broader societal and scientific goals.

In recognition of the substantial overlaps between communication and dissemination, particularly in relation to target audiences, messaging, tools, and activities, a single, integrated strategy was adopted to address both domains in a coherent and streamlined manner. This unified approach ensured consistency and effectiveness across all outreach activities undertaken during the project. The exploitation strategy was developed as a complementary component, setting out a clear framework for identifying exploitable results, managing their use, and addressing intellectual property rights (IPR). Several supporting documents were produced to detail specific exploitation efforts, and these are presented in a separate section of the deliverables.

Throughout the project, this strategic framework guided the implementation of communication, dissemination, and exploitation activities, specifically by:

- Maximising RadoNorm's ambitions and expected impacts through targeted outreach to potential user groups,

- Raising awareness of RadoNorm's actions and results, emphasising the added value they offered to all identified stakeholders,
- Promoting the uptake and use of RadoNorm's outputs to support ongoing and future R&D policies, strategies, and initiatives in related fields.

Communication activities were successfully carried out to inform and engage multiple audiences, including the media and the general public, while fostering a two-way exchange of information and perspectives. These efforts highlighted how EU funding contributed to addressing key societal challenges.

Dissemination activities ensured that project results were made available to relevant external stakeholders such as the scientific community, industry, policymakers, and other end users. These activities played a crucial role in transferring knowledge and increasing the visibility of project outcomes.

Exploitation activities enabled the concrete use of project results by both consortium partners and external organisations. These uses included scientific advancement, policy development, technological applications, and societal benefits. All results were considered public unless specifically protected under IPR provisions.

To support open access, all public deliverables, scientific publications, and related outputs were published via the RadoNorm website's online repository in accordance with green open access principles. A limited number of high-impact publications, summarising the project's research findings, were also prepared for gold open access towards the end of the project. Open access to research data was ensured through the use of the STORE^{DB} platform (https://www.storedb.org).

The following specific measures were completed as part of this strategy:

- The Plan for the Exploitation and Dissemination of Results (PEDR) was developed and implemented, ensuring effective communication of all project milestones to targeted audiences with the expected level of impact.
- The communication plan was fully integrated into the PEDR, with a strong focus on two-way stakeholder engagement and proactive outreach.
- A range of RadoNorm-specific channels and tools were established and maintained to ensure the efficient dissemination and exploitation of results and data.
- A continuous monitoring and follow-up mechanism was employed to evaluate the deployment of communication and dissemination activities, allowing for adjustments where necessary.
- All communication and dissemination activities were coordinated among consortium partners, ensuring alignment with the overall strategy.
- The project maintained active liaisons with external stakeholders, including related initiatives, institutions, and media outlets, to maximise outreach and public engagement.

The communication and dissemination strategy was designed to scale progressively, in line with the emergence of project results. In the initial phases, the focus was on building awareness of RadoNorm, while later stages concentrated on enabling wider uptake and exploitation of its findings. These activities were coordinated under WP8, with the involvement of all Work Package Leaders and partners. The implementation of the strategy was regularly monitored and evaluated, allowing for iterative improvements and ensuring its effectiveness throughout the lifetime of the project.

1.3 Structure of the report

The deliverable report follows initial structure of D8.1 with updates and final outcomes. It is divided in 5 sections. After Section 1 with general introduction, purpose and scope, Section 2 identifies stakeholders

and networking groups for communication and dissemination activities. Section 3 highlights the key messages of RadoNorm linked with its objectives, ambitions and expected impacts. Section 4 provides communication and dissemination plan with details on channels, tools, activities, describes open access strategy with access to research data and results, and sets the deployment plan with time distribution of activities. A separate subchapter deals with monitoring, reporting and evaluation. Separate section 5 describes the routes for the exploitation of results that project partners have envisioned at the beginning of the project, and which are being redefined as the project technically progresses. IPR management strategy is briefly outlined and will be further elaborated. The Appendices contain functional additional material.

2. Stakeholders and networks

The general identification of stakeholders which are important for the RadoNorm project and grouping them in the potential networks to be actively involved in the project's activities based on their interests and needs is given. In the separate document MS96 (Stakeholder mapping and establishment of stakeholder' networks) [5], detailed information on stakeholders, their interests and needs is provided. The stakeholder mapping is provided taking into account the division in stakeholder's networks. It also gives also the information on the approach how to engage with stakeholder's networks in RadoNorm project.

The RadoNorm results include different outputs like reports, new skills and knowledge, educational materials, scientific publications and PhD theses, new collected data and prototypes (like new pre-standards, measurements methods). By sharing the research results with the broader scientific community, and beyond, like business partners, policymakers and other interested, the RadoNorm results will contribute to the progress of science in general, and in particular to better implementation of the BSS Directive, which sets the requirements for radon and NORM exposures situations.

Stakeholder involvement was recognised as a cornerstone of an effective and inclusive radiation protection framework throughout the RadoNorm project. Accordingly, the analysis of stakeholder views, needs, and expectations was prioritised and systematically undertaken. A key principle guiding this work was the importance of clear and comprehensible communication regarding the scientific basis of radiation protection, particularly in the context of decision-making under uncertainty. This was considered essential for enhancing public confidence and fostering acceptance of both legal regulations and practical measures aimed at improving radiological protection for citizens, workers, and the environment. The dissemination and exploitation of project findings were carefully tailored to the specific needs of the interested and affected groups. These included professional workers, regulatory bodies, civil society, and other stakeholder groups associated with radon and NORM (Naturally Occurring Radioactive Material) exposure scenarios.

With regard to stakeholders' related communication, dissemination, and exploitation activities, the following steps were implemented:

- Identification of relevant stakeholders essential to the project's success and the future uptake of its results,
- Mapping of these stakeholders based on their interests, attitudes, expectations, and the nature of their interactions with other actors,
- Engagement activities specifically designed to address their identified needs and to facilitate their involvement in the project.

The general process of stakeholder identification was carried out early in the project, followed by the establishment of potential stakeholder networks. These networks were created to support ongoing engagement and to ensure that the participation of stakeholders was meaningful and aligned with their

specific areas of interest. This process and its outcomes were documented in detail in milestones MS96 Stakeholder mapping and establishment of stakeholder networks [6], which provided a comprehensive overview of stakeholder categories, their needs, and the strategy for sustained engagement throughout the project lifecycle. Also, Deliverable D8.4 Report on stakeholder engagement [7] provides related details.

The stakeholder mapping exercise took into account not only the diversity of stakeholder groups but also their potential roles within the different stakeholder networks relevant to RadoNorm. It also outlined approaches for fostering dialogue and participation with these networks, ensuring that the project remained responsive to their inputs and expectations.

The results generated through RadoNorm included a wide range of outputs: deliverable reports, policy recommendations, educational and training materials, peer reviewed scientific publications, PhD theses, newly collected datasets, and technical prototypes, such as novel pre-standardisation documents and improved measurement methods. By sharing these results with the scientific community, business partners, regulatory bodies, and other interested parties, the project contributed not only to the advancement of scientific knowledge but also to the practical implementation of the Basic Safety Standards (BSS) Directive, specifically in relation to radon and NORM exposure scenarios.

In terms of communication and dissemination efforts, two broad target audiences were addressed:

1. Internal audiences, composed of RadoNorm consortium participants and affiliated researchers, and
2. External audiences, including scientific peers, industry stakeholders, policymakers, professional networks, and the general public.

By successfully involving and addressing the interests of these diverse groups, the RadoNorm project ensured that its results were not only scientifically robust, but also socially relevant, applicable, and capable of guiding future radiation protection policies and practices.

2.1 RadoNorm participants

The RadoNorm consortium comprised 57 partners from 19 European Union Member States, as well as from Norway, Switzerland, the United Kingdom, and Ukraine (see Appendix A). Each partner institution included several representatives to the project, with approximately 170 individuals attending the Kick-off Meeting in September 2020 and similar participation levels maintained throughout subsequent Annual Meetings. By July 2025, a total of 255 individual participants from partner organisations were included in the internal RadoNorm Contact Database. RadoNorm partners brought together extensive and complementary expertise spanning dosimetry, physics, biology, molecular epidemiology, medicine, social sciences, and data management. The consortium included a broad mix of national radiation protection institutions, regulatory authorities, national research centres, universities, small and medium-sized enterprises (SMEs), and also non-profit organisation. This interdisciplinary composition was essential for delivering on RadoNorm's objectives and facilitated effective coordination across scientific, technical, and societal work packages.

Participants maintained strong institutional ties to national and international structures in radiation protection. Many were members of, or actively contributed to, strategic European and global organisations and platforms. These included the IAEA (e.g., RASSC), WHO, UNSCEAR, the Euratom Article 31 Group of Experts, OECD-NEA, HERCA, ICRP, the European ALARA Network, and European platforms such as MELODI, ALLIANCE, EURADOS, NERIS, EURAMED, and SHARE. This ensured that RadoNorm findings and deliverables were positioned for direct uptake into national and international policy, standards, and regulatory frameworks.

The diverse affiliations and ongoing collaborations of RadoNorm participants enabled the wide dissemination of project results and promoted synergies with related projects, both within and outside

of Europe. The presence of key regulatory and advisory institutions within the consortium ensured that RadoNorm outputs could inform legal, executive, and operational practices in radiation protection, particularly in relation to the implementation of the BSS Directive.

Communication and dissemination within the consortium followed a cascading model, whereby Work Package Leaders (WPLs) coordinated efforts among their respective participants. All internal partners were registered in the RadoNorm Contact Database, which allowed sorting by country, institution, participant name, email, work package, and specific tasks. The database, hosted on the internal RadoNorm website, was regularly updated to reflect personnel changes and organisational developments.

Additionally, liaisons connected to partner organisations such as collaborators in aligned projects or international committees were tracked in a separate database. These contact management systems were instrumental in planning outreach, supporting coordination among partners, and aligning communication efforts with the broader dissemination and exploitation strategy defined in Deliverable D8.1 and its updates.

Altogether, the structure and engagement of RadoNorm participants formed a robust foundation for the successful delivery of the project's goals. Their deep integration into national and international systems guaranteed high-level visibility of RadoNorm results and ensured their relevance for a wide spectrum of end users, including policymakers, regulators, researchers, and the public.

2.2 External stakeholders

The objective of the RadoNorm project was to support European Union Member States, Associated Countries, and the European Commission in implementing the Council Directive 2013/59/EURATOM, which lays down BSS for protection against the dangers arising from exposure to ionising radiation. To this end, the project aimed to significantly reduce scientific, societal, and technical uncertainties throughout the radiation risk management cycle for radon and NORM, including aspects of TENORM (Technologically Enhanced NORM) exposure situations

Based on this objective, a wide range of external stakeholders was identified and engaged. These included:

- established scientific communities, such as the European radiation protection research platforms MELODI, ALLIANCE, EURADOS, and SHARE, as well as professional associations including ERA, ENA, IRPA, and ICRP,
- next generation of researchers, including students, PhD candidates, and early-career professionals,
- radiation protection regulatory authorities at national and European levels, including HERCA, relevant ministries, health institutions, municipalities, and implementing bodies,
- decision-makers and politicians,
- public building managers and private house owners,
- building professionals, industrial representatives, construction engineers, and architects,
- residents in radon-prone and NORM-affected areas,
- workers exposed to radon and NORM and their representative organisations (e.g. unions),
- media, and
- broader civil society, including citizen science networks and the general public.

These stakeholders were involved across the full cycle of communication, dissemination, and exploitation of RadoNorm results as presented in Figure 2 Influence of RadoNorm. Scientific and technical outputs, ranging from publications, recommendations, and data to prototypes and educational materials, were disseminated to the broader scientific community, regulatory bodies, operational institutions, and societal actors. Special attention was paid to including stakeholders such as residents

and workers in selected activities to gather feedback and assess the societal relevance of results. The media served as a tool for public outreach, enabling dissemination to general audiences. RadoNorm also strategically employed social media platforms as one of its primary communication channels, reflecting contemporary outreach practices and maximising engagement across diverse demographic and professional groups.

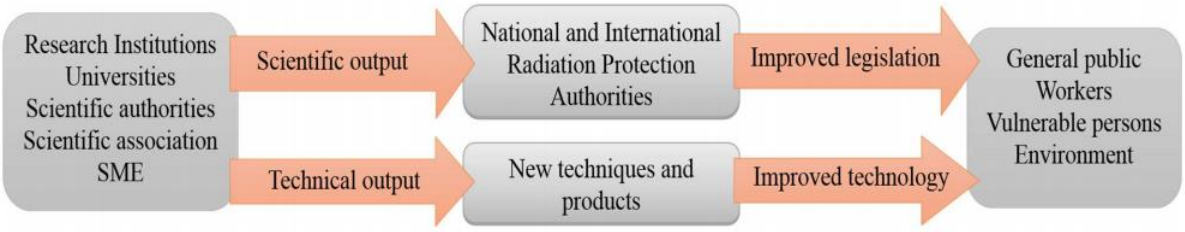

Figure 2 – Influence of RadoNorm [1]

Stakeholders were identified at multiple governance levels, local, national, European, and international. This multilevel structure allowed for a more tailored and scalable approach to stakeholder engagement, ensuring that the influence and application of RadoNorm outputs were amplified across jurisdictions and sectors.

All identified stakeholders were progressively integrated into the RadoNorm stakeholder database. This was achieved through ongoing dialogue, participation in project events, dedicated research efforts, and direct promotion via the RadoNorm website and related communication tools. Stakeholder recruitment and participation were regularly reviewed and refined by the project's Executive Board to ensure continued relevance and responsiveness to evolving contexts.

Where needed, stakeholder participation was financially supported, particularly to enable involvement in events and collaborative activities. The RadoNorm team used tools and approaches defined in the communication and dissemination strategy (D8.1 and updates) to actively motivate participation, build lasting interest, and ensure that stakeholder feedback was consistently incorporated into the project's development.

Ultimately, the involvement of external stakeholders helped ground RadoNorm's scientific outputs in real-world contexts, facilitating more effective implementation of findings and promoting sustainable, evidence-based radiation protection strategies across Europe and beyond.

2.3 Stakeholder network groups

To facilitate meaningful and targeted engagement, RadoNorm external stakeholders were systematically grouped into networks based on their professional interests, levels of influence, and informational or operational needs. These networks supported the structured involvement of stakeholders across a variety of project activities, including the pilot testing of communication tools (particularly in WP6 – Societal Aspects), participation in technical workshops and seminars, and contributions to the broader RadoNorm event programme.

The following eight stakeholder network groups were established and actively maintained throughout the project:

- **Scientific community and researchers**: including the RadoNorm research community, early-career researchers, and members of related research platforms such as MELODI, ALLIANCE, EURADOS, and SHARE, along with representatives of professional associations such as ERA, ENA, ICRP, IRPA, and IAEA;

- **Authorities**: encompassing responsible ministries (e.g. health and environment), the European Commission, national regulatory bodies for radiation protection and nuclear safety (including HERCA), municipalities, and implementing authorities;
- **Policy makers**: including decision-makers and elected officials involved in the development or approval of legislation and public health policy;
- **Implementers:** such as public building managers, private property owners, industry representatives, building professionals, construction engineers, and architects;
- **Related stakeholders**: including partners from similar projects and representatives of citizen science networks;
- **Impacted groups:** composed of workers exposed to radon and NORM, and residents in affected areas;
- **Media:** representing national and local press, science journalists, and communicators; and
- **General public:** members of the wider public with interest or concern about radon and NORM exposures.

RadoNorm proactively invited all interested external stakeholders to join the RadoNorm stakeholder network, enabling them to remain informed and participate in activities aligned with their interests. Invitations were issued in 2021 and 2023 (Appendix B), and the registration process was made available via a dedicated webpage on the RadoNorm website https://www.radonorm.eu/stakeholders/. Registered stakeholders were included in the RadoNorm Stakeholder Contact Database, which collected essential information such as name, email address, institutional affiliation, country, stakeholder group, and optional comments. This internal database supported targeted communication, efficient dissemination, and ongoing coordination during the project lifecycle.

All personal data were collected and managed in strict accordance with the General Data Protection Regulation (GDPR – Regulation (EU) 2016/679). The design and administration of the database were guided by the recommendations of the designated Data Protection Officer, ensuring full compliance with applicable data protection standards. The data collection process initially focused on stakeholders already engaged through existing networks, past collaborations, or ongoing related projects. Opportunities to join the network were also extended during RadoNorm events and partner participation in external engagements. As of July 2025, a total of 123 external stakeholders were formally registered in the RadoNorm network

The network-based approach proved highly effective in supporting tailored communication and focused dialogue. By grouping stakeholders according to their professional roles, priorities, and geographical or thematic relevance, RadoNorm was able to deliver customised materials and organise targeted interactions. Thematic meetings, issue-specific dialogues, and country-based engagement sessions facilitated productive exchanges and enabled the project to respond directly to the specific concerns and expectations of each group. This structure also provided clear routes for two-way feedback and ongoing collaboration, which were central to the project's broader engagement strategy.

3. Key messages

3.1 The RadoNorm project

The RadoNorm project was established to initiate and implement research and technical development in support of the European Union Member States, Associated Countries, and the European Commission in their efforts to implement the European BSS Directive for radiation protection. This multidisciplinary and inclusive initiative addressed all critical stages of the radiation risk management cycle for exposure situations involving radon and NORM. RadoNorm project aimed to reduce scientific, technical and societal uncertainties by (i) initiating and performing research and technical developments, (ii)

integrating education and training in all research and development activities, (iii) and disseminating the project achievements through targeted actions to the public, stakeholders and regulators.

RadoNorm enhanced the scientific and technical foundation for the entire radiation risk management cycle through its highly integrated and inclusive approach. The inclusive character of RadoNorm was given at different levels, by (i) targeting research and development on all steps of the management cycle, (ii) combining biomedical, and ecological research with mitigation development and social science research, (iii) integration of researchers from national radiation protection institutions, research centres, universities, and SME, (iv) incorporation of E&T activities in all undertakings, and (v) linking dissemination efforts directly to knowledge achievements and new recommendations.

The specific stages addressed by RadoNorm include:

a) characterisation of radon and NORM exposures,
b) advancements in dosimetry,
c) risk and effect assessments for humans and the environment,
d) development and refinement of mitigation technologies,
e) investigation of societal aspects and public engagement, and
f) broad dissemination of results and policy-relevant findings.

Furthermore, the project delivered an ambitious pan-European education and training programme, fostering competence development and ensuring the long-term sustainability and societal impact of the project's findings.

3.2 The RadoNorm objectives

The main objective of RadoNorm project was to improve radiation protection in radon and NORM exposure situations by initiating, supporting and performing multidisciplinary, innovative, integrated research and technical developments, integrating education and training (E&T) in the research and development work of the project, disseminating the project achievements through special actions targeted at the public, other stakeholders including regulatory authorities and policy makers.

This objective was reached by focussing resources and efforts in seven key directions:

1) **Strengthening the scientific and technical basis** in all key steps of the radiation risk management cycle for radon and NORM exposure situations (a) by improved characterisation of these exposure situations, (b) via improving measurements and dosimetry, (c) by providing improved risk assessment for humans and for the environment, (d) via evaluating and improving mitigation strategies, (e) via incorporating a better understanding of societal aspects, (f) by disseminating and communicating the project activities and results.
2) Stimulating and **fostering excellence in research and technological development** by bringing together well known and scientifically respected research groups from a broad range of disciplines, as well as from universities, research centres and national radiation protection institutions from numerous European countries.
3) **Integrating E&T activities** into the scientific and technical development work of the project by initiating a PhD and Postdoctoral grant programme which was open to talented students and early career scientists from all European countries. They were embedded in a joint postgraduate programme organised by RadoNorm and were organised in such a way that the PhD and PostDoc projects were hosted in RadoNorm partner institutions.
4) **Exchanging and communicating with stakeholders**, including the general public, affected populations, professional and regulatory organisations across Europe as well as international communities of scientific, technical, legal, and other professional experts in radiation protection.
5) **Bringing together variety of competences** from the fields of radiation effects and risks, radioecology, dosimetry, mitigation, civil engineering, and social sciences, health communication and participation, whose joint expertise was essential in a multidisciplinary

approach to achieving the project goals. RadoNorm dwelt on the specific scientific outputs from past projects as well as on the specific joint programming work of the European radiation protection research platforms, especially MELODI, ALLIANCE, EURADOS, and SHARE and build links to professional associations like ERA, ENA, IRPA and ICRP.

6) **Fostering the application of well-balanced radiation protection measures** by making available state of the art scientific knowledge, by providing evidence-based recommendations to the public as well as legal and executive level, from all fields of radiation protection. Moreover, RadoNorm empowered citizen science initiatives and improved collaboration between experts and society.
7) **Preserving the close and fruitful partnerships** between research groups from universities and national research centres on one side and research institutions having a regulatory mandate for radiation protection research in their country on the other. Maintained connections and interactions between more basic radiation protection research, translational research, technological development, and science-based standard setting.

To reach its goals RadoNorm had five research Work Packages (WPs): assessment of radon and NORM exposure situations (WP2), radon and NORM dosimetry (WP3), effects and risks from exposures to radon and NORM (WP4), mitigation of radon and NORM exposure situations (WP5), and societal aspects of radiation protection regarding radon and NORM exposures (WP6). The cross-cutting topics includes education and training (WP7), dissemination, communication and exploitation (WP8) and ethical issues (WP9). The management of RadoNorm was the responsibility of WP1.

3.3 RadoNorm ambition

The implementation of the BSS poses major challenges for the European Member States. The ambition of RadoNorm project was to generate scientific evidence tailored to the needs of societies, stakeholders and decision makers in Europe and beyond to optimise radiation protection with regards to radon and NORM and to develop scientific and operational capabilities based on the latest scientific and technical knowledge for a robust, improved protection system in the future.

Within the RadoNorm project the following was addressed:

- **Improvement of understanding of the uncertainties regarding radon and NORM exposure assessments (WP2)** including (i) development in metrology for radon and thoron progeny, (ii) acquisition of new scientific knowledge and identification of new processes/factors to consider to predict radon and NORM concentrations at different places (including indoor for radon) and timescales, (iii) transfer of this knowledge into radioecological models of dispersion and transfer at various spatial scales (from indoor/outdoor, local – near contaminated areas – to European scale). WP2 provided (i) recommendations or guidelines for radon–radon progeny measurement, (ii) workplace-type-specific measurement protocols for correct assessment of radon exposure of workers, (iii) methods as support to the Member States for the identification of high indoor radon levels at the European level, and (iv) recommendations to support the revision of the EC Radiation Protection document relative to NORM (RP 1351 as an example) in consideration of new types of NORM industries, processes, environmental standards and types of releases.
- **Improvement of assessment of radon and NORM dose–effect relationship (WP3):** absorbed organ doses were calculated for miners with updated biokinetic and dosimetric models, taking into account the most recent recommendations of ICRP. Biokinetic and dosimetry models were further developed for specific groups with potentially higher sensitivity (different lung diseases) or higher public concern (pregnant women, children including breast-fed babies, embryos and foetuses). Intraorgan dose distribution following radon exposure was well characterised by the stochastic lung model, IDEAL, and computational fluid dynamics (CFD) techniques for some parts of the human respiratory tract. This approach, along with

microdosimetry, was extended to other parts of the human respiratory tract including the larynx and pharynx. In a rat exposure model, dose to rat lungs was characterised in order to support the analysis of epidemiological data (e.g. incidence of pharyngeal and laryngeal cancer) and experimental data (mutations in rat lungs). Based on the effects of inhomogeneous dose distributions for relevant radon exposures, potential ways for the introduction of a new weighting factor accounting for dose inhomogeneity were explored.

- **Improvement in understanding of effects and risks from exposures to radon and NORM (WP4):** major knowledge gaps in human health risk assessment of radon and NORM were addressed, such as (a) interaction between radon and smoking for lung cancer, (b) risks of radon outside of the lung, (c) risks associated with radon exposure during childhood, (d) risks from radon and NORM in drinking water, (e) mechanisms of radiation action in the disease processes, and (f) quantification of various sources of uncertainties in risk inference. Studies were carried out to validate radon measurements and predictive models. Furthermore, major knowledge gaps for the risk assessment of non-human biota were addressed related to (g) combined effects of NORM and other stressors, and (h) determining adverse outcome pathways leading to such effects. To study the molecular changes and driver mutations in lung tumours among never-smokers, a collection of lung tumour samples was organised, and the radon exposure of the patients was evaluated. In parallel, biobanked materials from lung cancers from prior studies on rats exposed to radon were used to investigate whether the same molecular pathways and driver mutations appeared in both human and animal models.
- **Improvement of mitigation of radon and NORM exposure situations (WP5):** innovative mitigation techniques were developed to optimise the current mitigation systems with respect to analysis of all information collected on lessons learned and experience gained in mitigation of radon in buildings, workplaces, and natural radiation exposures in NORM industries in EU Member States, in order to improve regulatory tools and procedures leading to the reduction of occupational and public exposures to ionising radiation.
- **Societal aspects of radiation protection regarding radon and NORM exposures (WP6):** public awareness of radon risks was improved, methods to achieve behavioural change in order to increase the application of mitigation actions were evaluated, and policy support for radiation protection from radon and NORM on national and local levels was ensured.
- **Continuous education and training (WP7):** the explicit and extensive E&T programme of RadoNorm was intended to send a strong and effective signal to counteract this development by offering profound education and training to a large number of future researchers and radiation protection experts. Radon prevention and radon mitigation called for new competencies and new experts entering the field. NORM activities covered a range of new duties, such as notification of activities such as mining and underground work, dose assessment/exemption from dose assessment, measures to reduce exposure, licensing, baseline survey and monitoring, approval for waste exceeding clearance levels, and approval for discharge other than “minor discharge”. Reference levels were set for exposure to natural radiation, and optimisation and graded approaches were used.

3.4 RadoNorm impacts

The key aim of RadoNorm was to provide answers to open questions related to radon and NORM exposure of humans and the environment and to provide sound, feasible and applicable solutions for radiation risk reduction which would be widely acceptable to individuals and the public. RadoNorm intended to have an impact on the radiation protection of humans and the environment in many ways.

First of all, it supported the implementation of the European Basic Safety Standards and helped to cope with the new requirements on radon and NORM. RadoNorm addressed both human protection as well

as the protection of the environment. The inclusive approach of RadoNorm covered both exposure and risk assessment on one side and risk management on the other. In addition, RadoNorm developed tools, methods and best practices to cope with the issues related to radon and NORM, throughout the different steps of the radiation risk management cycle, thus making a major impact on society. Authorities operating in radiation protection, environmental and public health, and environmental protection benefited from surveys and investigations carried out by RadoNorm.

Radon prevention and radon mitigation called for new competencies and new experts entering the field, and NORM activities covered a range of new duties. Guides, recommendations and regulations were needed, along with good practices and reliable methods for field and laboratory work. A graded approach in risk management was needed, and RadoNorm helped in putting exposures and risks into perspective. Lifting uncertainties in the project provided more reliable risk assessment, new scientific knowledge and evidence-based risk communication. Technological development brought new standards, technological innovations and improved capabilities, all improving the resilience of society and helping to cope with situations and sites with enhanced levels of radon and/or NORM.

Radon and NORM risk mitigation is, on the one hand, risk prevention or reduction; for example, there is great potential for radon prevention and reduction in new buildings, while radon mitigation in older houses is more demanding and could fail to achieve significant exposure reduction. The implementation of the RadoNorm work programme had a direct and widespread impact on radiation protection in Europe. In particular, the project's findings and the derived recommendations enabled consolidated, harmonised and robust decision-making in the field of radiation protection throughout Europe and beyond. The impacts of RadoNorm are presented on *Figure 3 – Impact of RadoNorm on radiation protection of humans and the environment*.

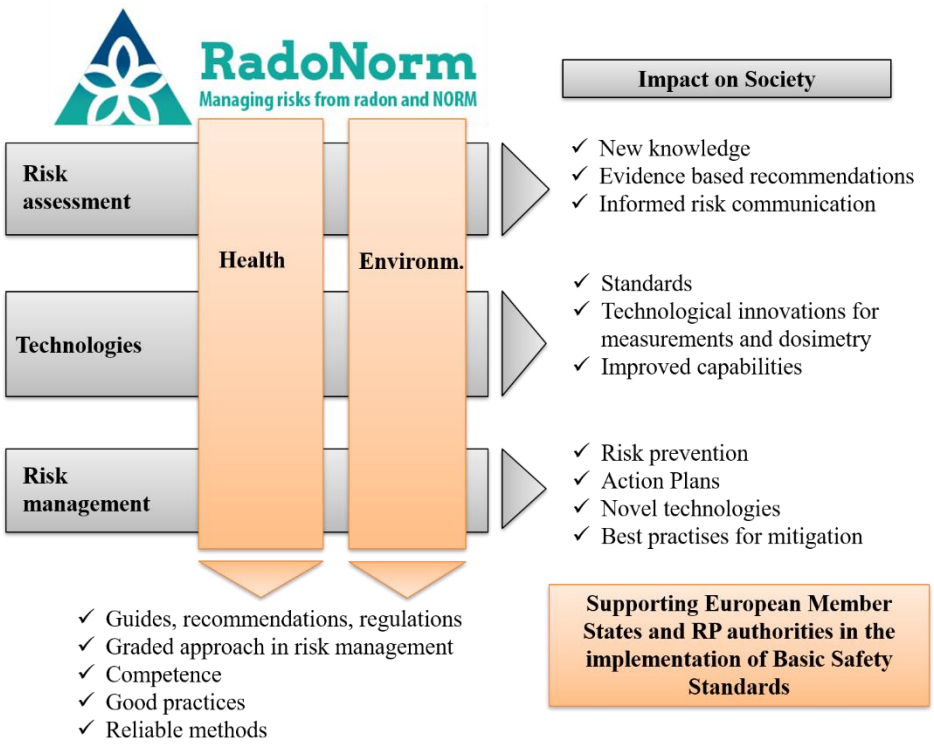

Figure 3 – Impact of RadoNorm on radiation protection of humans and the environment [1]

4. Communication and dissemination plan

4.1 General

The draft Plan for the Exploitation and Dissemination of Results (PEDR) and the draft Communication Plan were developed already as part of the RadoNorm proposal and now part of GA [1] according to the EC reference documents Fact Sheet - the Plan for the Exploitation and Dissemination of Results in Horizon 2020 [8] and Communicating EU research and innovation guidance for project participants [9]. The strategy gives an orientation towards the organisation of the RadoNorm project communication and dissemination activities and therefore addresses the following questions:

- What kind of needs does the project respond to?
- What kind of problems the proposed solutions will solve and why these solutions will be better than existing ones and in which areas?
- What new knowledge (results) the project will generate based on assessment of the state of the art?
- Who will use these results?
- What benefits will be delivered and how much benefit?
- How will end users be informed about the generated results?

The Strategy and plan for communication, dissemination and exploitation of results provided the answers to the identified questions in all sections of deliverable to the appropriate level of details, so the plan can be implemented from beginning. The following timing of activities was foreseen:

- Initial awareness phase (month 0-6): this especially included establishment of RadoNorm project website, analysis of relevant information resources, identification of communication and dissemination opportunities (activities and channels), stakeholders' mapping and engagement, creation of basic communication and dissemination channels and tools including graphical identity of the project (i.e. project logo, project website, templates for project documents and for project presentations, databases), development of related plans including Data Management Plan and first activities to foster initial knowledge exchange.
- Targeted communication and dissemination phase (month 7-36): the consortium enriched the website, used the social media continuously and in a harmonised way, publish project documents designed to the target groups (poster, brochures, leaflets, newsletters, press releases), conduct events (with proceedings) and attend other related events. Preliminary project results were presented to the target audiences.
- Deliverable phase (month 37-60): this represents the second period of the project, when RadoNorm consortium partners deliver the majority of project outputs. This phase was focused on informing the target audience of the exploitable results.

As of now, the deliverable phase is ending. All activities were performed as planned. Most of the information is available on RadoNorm website which is presented in the next subsection and therefore available freely without any limitation. Social media is used continuously in a harmonised way with information on the website. Many scientific papers have been published and are available on the project website.

As stated, the plan was annually updated to ensure the integration of feedback from communication and dissemination activities, to assure improved alignment with the project development and to respond to the contextual changes (from inside the project or from other related developments in the field of radon and NORM exposures).

Within RadoNorm the following results were communicated and disseminated:

- RadoNorm project itself (general scope, coverage, goals, milestones and plans to reach them),

- publishable research results (reached objectives and achievements as in open access policy for publications and research data, also deliverables),
- developed techniques and methodologies (in view of pre-industrial research impacts),
- developed tools and technologies (in respect of industrial IPR issues),
- innovation aspects (in an “open innovation” perspective),
- developed recommendations (as mechanisms for improved policy).

Focus of the communication activities was to inform about and promote RadoNorm and its results to the multiple audiences, including the media and the public, in a two-way exchange. The dissemination activities described and ensured that the results were available for others interested, like scientific communities, industrial partners, policymakers and other end users. The exploitation activities enabled concrete use of project results through scientific, economic political or societal routes by interested organisations within project partners or other user groups outside the project. WP8 enabled open access to research data by use of STORE^{DB} platform (https://www.storedb.org.) developed for the archiving and sharing of the primary data outputs from research on low dose radiation and which had been further developed for RadoNorm results’ exploitation for all user groups. The RadoNorm results were public unless the decision to protect the outputs was taken (such as patenting or other forms of protection). Green open access at the website’s project online repository was used (https://www.radonorm.eu/publications/) and also gold open access for limited number of publications near the end of the project. An agreement with Springer Nature Group was signed for publishing of five scientific papers in RadoNorm E-Collection: Radiation and Environmental Biophysics Journal (https://link.springer.com/collections/jffacaghgd).

4.2 Communication & Dissemination strategy

4.2.1 Open access

According to the guidance on open access for H2020[2], the appropriate measures to grant open access to all scientific publications and research data resulting from RadoNorm was adopted by the consortium. Each beneficiary must ensure open access (online access for any user, free of charge) to all peer-reviewed scientific publications relating to their results. The RadoNorm website was serving as a platform to enable open access of the project outputs.

In particular, each partner must:

i. As soon as possible, and at the latest upon publication, send an electronic copy of the published version or final peer-reviewed manuscript accepted for publication to the coordination and WP8-leader to be posted on the RadoNorm website.

ii. Ensure open access to the scientific publications via the RadoNorm website:

   a. Immediately upon publication if a free electronic version is available via the publisher, or

   b. Within six months of publication in any other case that involves delayed access.

The Gold Open Access in Open Access Journals for five scientific articles was foreseen in the project.

4.2.2 EU identity

Unless the European Commission requests or agrees otherwise or unless it is impossible, any dissemination of results (in any form, including electronic) must:

[2] H2020 Programme: Guidelines to the Rules on Open Access to Scientific Publications And Open Access to Research Data in Horizon 2020, http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

a) Display the EU emblem and
b) Include the following text: “This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 900009”.

When displayed together with another logo, the EU emblem must have appropriate prominence. For the purposes of their obligations under this Article, the beneficiaries may use the EU emblem without first obtaining approval from the Commission.

This does not however give them the right to exclusive use. Moreover, they may not appropriate the EU emblem or any similar trademark or logo, either by registration or by any other means.

4.2.3 Disclaimer and IP rights

Any communication and dissemination activity related to the RadoNorm had to indicate that these only reflect the author's view and that the European Commission was not responsible for any use that may be made of the information it contains.

The following sentence was used for this purpose and was included at the beginning of each project deliverable:

“This document reflects only the author’s view and the European Commission was not responsible for any use that might be made of the information it contains.”

Consequences of non-compliance

If a beneficiary breaches any of its obligations under Article 29 of the Grant Agreement, the grant might be reduced.

IP rights

Dissemination activities in RadoNorm project were deeply wedded with the intellectual property (IP) rights protection which was clearly stated in Grant Agreement Articles 23a [1]. Practical application of IP rights protection agreed among RadoNorm project partners was adjusted in the Consortium Agreement (CA) [10] in Section 8: Results, Section 9: Access Rights and Section 10: Non-disclosure of information. The IP rights in RadoNorm followed the proposals as given in the EU IP Helpdesk [11].

4.2.4 Communication and dissemination approach

All partners of the consortium had to contributed to the dissemination and communication according to their foreseen role and efforts using all available tools. The WP8 and the WP8 leader coordinated all related activities. It was foreseen that the proposals from participants in WPs are transferred by WPLs to the WP8 leader as all WPLs were participants in WP8. The final approval was given by the project coordinator (PC and also WP1 leader).

It was proposed to communicate between project partners in cascades:

- Project Coordinator (PC) to all WP Leaders (WPLs),
- WPLs to WP members in their particular WP,
- PC to all partners’ main contacts in case of information important to all.

However, for the more effective internal communication still the contact Database of all participants with regards to different WPs, tasks and subtasks had been established on the internal RadoNorm webpage and was regularly updated by the PC.

The main contact point for the RadoNorm communication and dissemination was the email address radonorm@bfs.de which was managed by the PC (WP1).

To increase efficiency, a standard email subject title has to be used. This allowed the project partners to quickly recognise RadoNorm related emails. These should have included in the subject title the project

name RadoNorm and WP number (if applicable), followed by a more specific description of the subject and a deadline for feedback or reply (if applicable). You could see here an example of a subject line:

RadoNorm-Kick-Off_presentations

To keep traffic down, it was advised to reply just to the sender, and sending emails only to the individuals directly concerned with the subject matter

4.3 Communication & Dissemination activities, channels and tools

A wide range of activities, channels and tools was used specifically or commonly for communication and dissemination purposes. Different activities, channels and tools are briefly described below, in a separate subsection the indication is given for which purpose the activity/channel/tool was used and for which targeted audience they were suitable for.

4.3.1 RadoNorm Website

The main communication and dissemination channel/tool of RadoNorm project targeting all audiences was a public website. The RadoNorm website was registered in the "eu" domain with intuitive URL to increase the hit rates: https://www.radonorm.eu/. It was the main channel for the provision of information and updates about the RadoNorm project and served as a repository for all public deliverables of the project and other project's results as part of the open access policy (green open access).

It had public area, external for anybody to be able to connect and non-public (internal) area intended for internal communication and dissemination between project partners which was protected with login and password.

Public RadoNorm external website

The RadoNorm website had the following structure (folders):

- *Home* with basic overview information about the project, and latest News is displayed at the top of the page to be more visible,
- *About* with main objectives of the project,
- *Participants* with overview of the geographical coverage and short information about all members of consortium and with links to their home websites,
- *Work Packages* with short descriptions, objectives and tasks,
- *Publications*, divided to the deliverables, scientific papers, other contributions (like presentations or related reports), videos (with links to the RadoNorm YouTube site) and Radon Behavioural Atlas (with link to the particular website with all information https://radonbehaviouratlas.wixstudio.com/radonorm),
- *News* with RadoNorm's interesting information and updates, including separate subfolder for Newsletters with subscription option and Researchers in a spotlight presenting researchers who contribute to the objectives and achievements in the project,
- *Calls* with information on RadoNorm Calls for courses (with flyers and detailed information about courses) and travel grants,
- *Events* with monthly and yearly calendar of different events that are of RadoNorm interest (RadoNorm events, RadoNorm related events – events that RadoNorm is a part of, and internal project events for members only), and events material, organised by years https://www.radonorm.eu/event/event-material/,
- *Stakeholders* with groups of networks based on their interests and needs to be actively involved in the project's activities, with registration option; the registrations are than connected to the RadoNorm stakeholder Contact Database (in the internal part of RadoNorm),
- *Important links* with connections to the related platforms and associations, and to facts about radon and NORM, links to the respected websites are given,

- *Contact* with information about how to get in touch,
- Direct access to the RadoNorm social media channels (X, LinkedIn, YouTube).

At the bottom of the RadoNorm website there was a legal notice and privacy statement to inform the users about the terms and conditions of use of the internet website, and to inform about the personal data management. The European Green Deal policy was supported with special statement *"When planning your activities please consider the possibility of reducing the carbon footprint. Actions to be considered include preferential choice of train transportation and minimising printing of any paper material."*

In addition, there was on website a connection to the STORE^{DB} https://www.storedb.org/store_v3/ intended to store the research data from RadoNorm to fulfil open assess policy for research data. According to the GA a separate deliverable D8.7 Open Research Data Pilot and project Data Management Plan [12] had been prepared. It included information about research data, which were collected, generated or processed within the project and beyond, which methodology & standards were applied, whether data were shared/made open access and how data are preserved & curated after the end of the project. It also includes the information about the STORE^{DB} as a main tool/channel for open access to research data.

The RadoNorm website was regularly updated with on-going activities (about the progress in WPs), public reports/deliverables, publications, upcoming events (3 categories: RadoNorm, related to RadoNorm, internal for RadoNorm partners), scientific meetings and workshops, as well as trainings, courses and PhD and postdoctoral activities. Different information, received by the RadoNorm partners or interesting for participants, was also published on the News folder (https://www.radonorm.eu/news/) where the content and also further links for more data were available. The new information received was updated at minimum two times per month, for the first and second period of the month, if there were any news. All participants and WPLs were expected to contribute to feed the RadoNorm website with news about their work package (like issue of an important deliverable and other results, reach of an important milestone, new training or event related to the WPs). The website administrator was EIMV with its subcontractor. New contents for the RadoNorm website were managed by WP8 leader (EIMV) and approved by the PC.

Website hits, page views and deliverables/documents' downloads were monitored in order to measure the impact of the RadoNorm website. The collected information was used anonymously (without the personal data of the users) for the purpose of the RadoNorm project.

Internal website (Member space)

The non-public area was intended for common file-sharing, for the collection of the various reports produced during the project as well as a central platform for the communication between consortium partners. All reports, deliverables, results and relevant material were accessible to all project partners at all time. The internal website had the general structure:

- General folder with General Documentation (including GA, CA, …), Deliverables (it is linked with public website Publication area), Reports, Scientific Publications, Meetings, Contact Database (RadoNorm participants and RadoNorm stakeholder groups), Monitoring of activities, Logo and Templates, and
- WPs area (for WP2 to 9) with substructure free agreeable with the WPLs.

Project partners had the permission to upload any digital file (documents, pictures) by a simple drag and drop function. Documented user guide and online training to partners were available upon request.

To keep the repository functional, the following guidelines were considered:

- Creation of directories/folders when needed,
- When communicating on uploaded/changed documents, indicate in which folder, if not obvious, e.g. RadoNorm/Meetings/…,
- If it is needed to upload Word and/or Excel files containing complex formatting, figures, graphs etc., it must be checked whether these features are preserved when uploaded. If not, convert to pdf before uploading,
- Notifications on changed documents by email is an option, but preferred way is to include relevant authors only (to avoid notification spamming).

4.3.2 Social media

In addition to the internet website, also other online tools were established for the communication and dissemination activities of RadoNorm project as in H2020 Social media guide for EU funded R&I projects [13]. The following web based social media were formed:

- **X@RadoNorm** https://x.com/RadoNorm,
- **LinkedIn** (RadoNorm.eu) www.linkedin.com/in/radonorm-eu-b0205a1bb and
- **YouTube** (RadoNorm) https://www.youtube.com/channel/UC6yCORiPX5DXgmu5AaGLn9Q.

They were available from the RadoNorm website and followed to the extent possible the RadoNorm graphical design. The Twitter account was intended for short messages up to 280 characters to be posted for some specific audiences like media, policy makers, but also general public. Besides the RadoNorm X name @RadoNorm the contributions were encouraged also to include related hashtags such as #radiationprotection, #radon, #NORM, #Horizon 2020, #EUcollaboration etc. The LinkedIn account had no limitations for the publishing and the profile could include many interesting information, like important results, events or development within PhDs or postdoctoral research, and also links to the RadoNorm website. This social media was mainly used for professional networking, including participants of the RadoNorm. The YouTube account enabled to share interesting videos about the project, with special attention to the presentations of the RadoNorm results, including the contributions from PhD and postdoctoral researchers and RadoNorm events.

All the online tools were regularly maintained and updated with on-going activities. The news and other information were uploaded several times per month, on all social media, more intensively with LinkedIn and X, and less with YouTube. All together approximately 300 news articles have been published until end of the project which accounts for five new information published on website and on social media per month. The connection and harmonisation of all information on website and social media was assured. All participants and WPLs were expected to contribute to feed the RadoNorm social media with news about their work packages. The social media administrator was EIMV with its subcontractor. New contents for the RadoNorm website were managed by EIMV and approved by the PC.

4.3.3 RadoNorm material

As part of the communication and dissemination activities, RadoNorm material had been prepared including the project's visual identity and logo to be used within different channels and tools depending on the targeted group. The development of material was continuous with new information as the project evolve. The Deliverable 8.3 reports in detail about the approach and priorities [14]. The material was also available on the RadoNorm internal website for RadoNorm partners to be used.

The official ***RadoNorm leaflet*** was produced to inform about RadoNorm project objectives and expected results as well the methods which were used. The leaflet was used for on-line communication and dissemination, and also to be distributed to the different stakeholder networks. The level of detail was at first level generic, therefore was intended for most of the stakeholders' network groups. The RadoNorm leaflet was electronic (as PDF) and could be also printed to be used during different events.

The RadoNorm leaflet was reviewed and upgraded on yearly bases to provide information on the RadoNorm development.

The ***RadoNorm poster*** (A0 format) was another form of the information about RadoNorm project. It had the similar content as leaflet but was prepared in PPT format in order to be used more for different events. The content could be more oriented for different professionals, like scientific community and researchers, authorities and implementers. The RadoNorm poster was also in electronical form (as PPT or PDF) so it could be also modified for the particular purposes and printed.

The ***RadoNorm presentation*** was another form of presentation about RadoNorm project and consisted of approximately 15 slides in PPT to be used for the events where participants would promote RadoNorm and the results from beginning. It was continuously updated and enriched with the latest results from the project so it could serve for continuous communication and dissemination activities within RadoNorm.

The ***WPs brochures/leaflets*** were the forms of material with more specific content devoted to the particular scientific areas which were covered by WPs 2 to 6. In addition, the WP7 leaflets were prepared for promoting the activities in the WP on trainings, mobility programme and doctoral and postdoctoral activities. The flyers with details about the RadoNorm courses during RadoNorm were available https://www.radonorm.eu/calls/call-for-courses/. The PhD and postdoctoral research details were also presented within WP2-WP6 as they are part of them. Such brochures and leaflets are intended for the professionals.

The ***WPs videos*** were recorded as short movies about each WPs narrated by WPLs. They would present the WPs objectives and planned results in a short 2-3 minute video or as important presentations at different events https://www.radonorm.eu/publications/video/. The WPs videos fed the social media, especially YouTube as modern and attractive inputs about the project and expected or realised results. These contributions were recorded and used in the first period of the project. In a section on RadoNorm "researchers in a spotlight", the RadoNorm researchers who contribute to the objectives and achievements in the project were presented (as videos and link to YouTube channel https://www.radonorm.eu/researchers-in-a-spotlight/). "Researchers in a spotlight" featured regular news and was based on the interviews with more visible researchers or those who developed a new achievement. Later, more detailed ***interviews*** were produced on particular aspects of WPs (like, methods, addressed challenges, important outcomes and recommendations) to be used for communication and dissemination activities.

The bi-annual ***RadoNorm E-Newsletter*** was developed as a main source of information about updates and news of the RadoNorm project, like results in WPs, past and upcoming events, publications, trainings, etc. The content for each of the issue reflects and incorporates the latest developments in the project as well as recent or upcoming dissemination activities; success stories; presentations, workshops; reports, publications and media interest, etc. The E-Newsletter was published on RadoNorm website as electronic version (for example issue no.1 https://www.radonorm.eu/newsletter/no1/, to the end of project 10 issues published), promoted also by other social media and distributed to the RadoNorm contact database of partners and stakeholders. All issues are published in specific publication.

In order to achieve a broader distribution and facilitate the engagement of as many stakeholders as possible, the RadoNorm partners were encouraged to distribute the newsletters to their contacts who may be interested in the project. A specific option for subscription to the list of newsletter recipients, had been included on the RadoNorm website.

As a tool for important news, the ***RadoNorm Press releases*** were published on RadoNorm on-line channels, and also distributed to stakeholder groups, in particular to media, or to other identified groups. It was expected that such releases, especially if properly prepared (use of understandable language, interesting information, supported by photos, graphs, videos or other material) would be re-published

and with this, increase the impacts of RadoNorm. Over time, as the RadoNorm project evolved and the situation regarding journals changed, all information became electronic, and printed journals were no longer widely used. Therefore, the News became the main tool for communication and dissemination of results using established RadoNorm channels.

The RadoNorm material was initially developed during the first year of the project, beginning with the basic leaflet, poster, and slides (by month 6), followed by the Newsletters, WP-specific brochures/leaflets, and videos (by month 12). By the end of the project, the primary means of sharing information within RadoNorm consisted of News items highlighting key achievements and progress. These were disseminated through harmonised channels — the website and social media — to effectively reach different target groups. Presentations were tailored for specific events, addressing the topics and needs of each occasion. All participants and WP Leaders actively contributed to the development of RadoNorm materials by providing news related to their work packages. The activity was coordinated by EIMV, with contributions from WP Leaders, and all RadoNorm material was approved by the PC.

4.3.4 Deliverables and scientific publications

The RadoNorm project foresaw a number of milestones and deliverables to be developed during the project within each of the WPs. Each of the milestones or deliverables was already briefly described in the GA [1] with lead participant and other participants which were involved. The milestone documents were reviewed and approved and published on internal RadoNorm website. The deliverables were reviewed, approved and submitted to the EC according to the adopted timetable in GA [1]. Only when approved by EC, they were uploaded as non-watermarked documents on the public RadoNorm website under the Publications/Deliverables https://www.radonorm.eu/publications/deliverables/. With such an approach, the Green Open Access was assured for all interested with the aim of making research outputs more transparent and their use more efficient. Scientific articles/papers were also uploaded to the RadoNorm website under Publications/Scientific papers https://www.radonorm.eu/publications/scientific-papers/ to assure Open Access policy as soon as possible (and in line with GA). Some other publications and videos were also available.

For a limited number of peer reviewed publications summarising the RadoNorm results the Gold Open Access in Open Access Journals was assured at the end of the RadoNorm project. The agreement with Springer Nature Group was signed for publishing of five scientific papers in RadoNorm E-Collection: Radiation and Environmental Biophysics Journal (https://link.springer.com/collections/jffacaghgd) presenting the main achievements in the work packages. Other papers from RadoNorm could be also submitted in line with the journal's policies.

4.3.5 Events

Events were the most engaging activities because they provide the possibility to have direct or indirect contact with a wider audience and increase RadoNorm visibility (physical and online) across branding identities through the use of e.g. the logo etc. Opportunities to take part in events organised by RadoNorm, the European Commission and other partners were continuously sought after.

The partners participated at conferences, events, workshops etc. relevant to the project in order to:

- present the project and project results to the audience,
- promote the project on a formal basis, through a presentation at the conference/event, participation in a workshop panel discussion etc., and
- increase the project visibility.

A number of ***RadoNorm events*** were planned as part of the project. One scientific RadoNorm event per year (in total 5 events) was foreseen at the end of each project year. The 1st Annual Meeting was held virtually in September 2021 due to COVID restrictions, engaging over 120 participants online. Day 1

focused on internal discussions among consortium members, with detailed presentations on progress and early results from all WPs. Day 2 was an open event involving stakeholders, where summaries of RadoNorm's early findings, stakeholder inputs, and feedback from the Advisory Board helped refine the project's future direction [15]. The 2nd Annual Meeting took place in a hybrid format in October 2022 in Germany. It offered the first in-person gathering since the project's start, bringing together over 200 participants from around 77 institutions. The event featured scientific talks from the five scientific WPs (2 – 6) and a vibrant discussion with stakeholders [16]. The 3rd Annual Meeting took place in September 2023 in Poland and was also held in a hybrid format, enabling broad participation despite geographical limitations. The programme included cross-WP thematic sessions, ECR Council presentations, and strategic planning discussions [17]. The 4th Annual Meeting, hosted in June 2024 in Slovenia, was the largest gathering as it took place alongside the 10th RICOMET conference, attracting both scientific and policy audiences. Thematic sessions were organised under the headings of Fundamentals, Recommendations, and Applications, highlighting the translational value of RadoNorm's research, including the stakeholders' perspectives in the panel discussions [18]. The RadoNorm Showcase Meeting, held in March 2025 in Belgium, was a key dissemination event where project results were presented to the EC, radiation protection platforms and relevant stakeholders. This event was not planned from the start but it became clear that such meetings should be organised to feature achievements in the RadoNorm project and discussions on implementation challenges and future research needs to some key stakeholders. The special edition of Newsletter no. 9 summarised the main presented results (https://www.radonorm.eu/newsletter/). The Final Project Meeting, convened in June 2025, summarised the main outcomes, lessons learned, and proposed pathways for post-project sustainability. Alongside the official presentations, a stakeholder panel explored the potential for future research, policy uptake, and standardisation efforts [19].

Besides this, several other RadoNorm events were organised. One important conference, regularly co-organised with RadoNorm, was RICOMET-International Conference on Social Sciences and Humanities in Ionising Radiation Research, coordinated by the SHARE platform. The events were held over four successive years (2021-2024) to present the main outcomes from societal investigations on radon and NORM exposures or to address topics on the interdisciplinarity and transdisciplinarity. The material from RadoNorm-related RICOMET conferences is available on https://www.radonorm.eu/event/event-material/#245-245-wpfd-top and SHARE platform.

Additionally, ***online RadoNorm events*** were organised at least once a year to attract other related target audiences (like, younger generation, other related scientific communities, building professionals, citizen science members). The online events covered issues like liquid NORM[3] (from sources to impact assessment and treatment), debates on the need for collaboration of different disciplines in research (RICOMET), webinars for support of open calls for citizens science in which RadoNorm involved citizen science initiatives, inviting interested parties such as local communities, schools, NGOs, universities, and social civil groups to apply for funding to conduct radon-related projects for a six-month duration. In addition, RadoNorm to organise monthly Research Seminars from January 2024, generally held every second Wednesday of the month. The recordings from online events are accessible on the RadoNorm YouTube channel https://www.youtube.com/playlist?list=PLmTvmsnkOYoQGRtDmCpDRg8EUhYrdOYft including presentations https://www.radonorm.eu/event/event-material/#245-451-wpfd-radonorm-research-seminars.

Within the WP7 Education and Training, RadoNorm training courses were organised with the aim to provide training, in particular for PhD students and early career researchers, covering all aspects of the scientific research areas relevant to radon and NORM in order to develop expertise in the field. The activities are reported in WP7 documents. Also two online Early Career Researcher (ECR) days were

[3] https://www.radonorm.eu/event/event-material/#245-246-wpfd-liquid-norm-feb-2021

organised with PhD and postdoctoral researchers involved in RadoNorm who gave short presentations about the researches, available at https://www.radonorm.eu/event/event-material/#245-255-wpfd-1st-phd-ecr-day-april-2021 and https://www.radonorm.eu/event/event-material/#245-263-wpfd-2nd-phd-ecr-day-may-2021. The founded Early Career Researcher (ECR) Council was established with specific online regular meetings throughout the project.

Apart from RadoNorm events, also **participation in thematically associated events** were promoted as far as possible, organised by other related platforms, associations or organisations. Already established connections with events were used to obtain the information and contribute to the content (like European Radiation Protection Week, RICOMET, related platforms' events (MELODI, ALLIANCE, EURADOS and SHARE), associations' events (ERA, ENA), activities of ICRP, IRPA, IAEA.) As the RadoNorm participants were members of many of these organisations, events could be also co-organised with RadoNorm project. The main aim of such involvement was to communicate and disseminate RadoNorm project and results. All WPLs were involved in collection of information and prioritisation of participation. On the RadoNorm internal website, there was a table established to monitor all related participations. Where active presentations had taken place, the news ware added to the webpage and social media.

4.3.6 Contact Database

To assure active stakeholder engagement, the Contact Database was developed and regularly maintained as a basic tool for communication and dissemination activities, as well as for some actions within WPs (like pilot testing in WP6, involvement in different events, discussion of draft deliverables, …). It was uploaded on the internal RadoNorm website, and it followed the stakeholders network groups division: Scientific community and researchers, Authorities, Policy makers, Implementers, Related, Impacted, Media and General public. The collection of data about stakeholder network groups respected Regulation (EU) 2016/679 of the EU Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (GDPR). The RadoNorm Privacy policy (published on the RadoNorm website) with regards to data protection management was applied. The Database was structured to provide possibilities for effective interactions and engagement, so it included the following data: name, email, institution, stakeholder group and country. The network groups were than involved in RadoNorm activities to engage, to obtain feedback, to be used in the pilot tests, always based on their consent. The option to change the mind and to withdraw from the database was also given. The management of the collected data was organised carefully for purpose of RadoNorm project only. The collection of data focuses first on the radon and NORM related stakeholders, including the scientific community, representatives from regulatory authorities, health institutions and other responsible ministries, municipalities and implementing authorities, public building managers and house owners, building professionals, construction engineers and architects, residents and media representatives. The updates and further collection of data followed the development of the RadoNorm project. At the end of RadoNorm 145 stakeholders were registered altogether.

All WPLs and project partners contributed to development of active stakeholder engagement, with a stronger participation of BfS and SCK CEN in the stakeholder engagement.

For active dissemination, exchange and communication, the RadoNorm participants database was also organised on the website internal pages following similar principles as for stakeholder database.

4.4 Channels/tools/activities vs networks

Presented channels/tool/activities were used for communication and dissemination of RadoNorm project and results to different stakeholder network groups: Scientific community and researchers, Authorities, Policy makers, Implementers, Related, Impacted, Media and General public. Most of the measures were used for both, for communication about the project and its results, and for dissemination of RadoNorm

results and knowledge as an input for further use. The exception used for dissemination purpose only were RadoNorm events and scientific articles. The Contact Database was used as a basic tool for support of implementation measures. Table 1 below presents the main results to be communicated/disseminated to particular groups and connect with appropriate measures presented in the previous subsection.

Table 1 – Measures for communication and dissemination to targeted groups

Target group	Results to be communicated/disseminated	Measures
Scientific community and researchers	New knowledge in the fields of research: metrology measurements, dosimetry, radiobiology and toxicology, epidemiology, modelling, mitigation techniques and technologies, radioecology, behavioural and social science.	• Publications and reports, RadoNorm material • RadoNorm events and other face to face meetings • Social Media and Website, online events • Green and Gold Open Access • RadoNorm STORE^{db} • Citizen sciences
Authorities	New knowledge on standards, approaches, guidelines and recommendations to address the needs.	• Publications, reports and recommendations • RadoNorm material • Devoted events • Feedback from involvement • Social Media and Website, online events • Green Open Access
Policy makers	Advice to regulatory framework and inclusion of new standards in legal framework.	• Publications, reports and recommendations • Devoted events • RadoNorm material • Feedback from involvement • Social Media and Website • Green Open Access
Implementers	Guidelines and advice on the best approaches to fulfil standards and regulatory requirements, approaches to remediation.	• Publications, reports and recommendations • Devoted events • RadoNorm material • Feedback from involvement • Social Media and Website • Green Open Access
Related	New knowledge supporting the research activities and directions for future research.	• Publications and reports • RadoNorm events and other face to face meetings • Social Media and Website, online events • Green and Gold Open Access • RadoNorm STORE^{db}

Impacted	Approaches how to improve conditions in homes and guides for remediation Guidelines for radiation protection, better awareness of related health risk, new standards based on the research	• Publications, reports and recommendations • Devoted events • RadoNorm material • Feedback from involvement • Social Media and Website
General public	Information about activities and raising of awareness for radon and NORM	• Publications, reports and recommendations • RadoNorm material • Social Media and Website • Citizens science
Media	Findings and recommendations from RadoNorm, relevant for general public to promote and enable information for all	• Publications, reports and recommendations • Devoted events • Press releases and other RadoNorm material • Social Media and Website • Citizens science

4.5 Reporting, monitoring and evaluation

Several approaches were used for reporting, monitoring and evaluation of the communication and dissemination activities in the RadoNorm project with the aim to improve the activities and to advance the used material. Although WP8 coordinated the communication and dissemination activities, all RadoNorm project partners were expected to actively participate in activities.

The results of each communication/dissemination activity were reported after they were implemented. The reports were part of the GA and consist of milestones and deliverables as presented in the Appendix C (WP8 milestones and deliverables). The first results were developed in the first half year after the project started and were then yearly prepared based on activities. The reports included beside the content also feedback gathered from the target audience (if applicable) and eventually gained contacts to be added to the Contact Database (as a separate, confidential part) to be used for further communication and dissemination activities. All partners sent the communication and dissemination material (any type of material, like papers, articles, presentations or the audio file of an interview for example) to the WP8 leader. The material was according to the procedure uploaded on RadoNorm website.

For monitoring purposes, all communication and dissemination activities were followed-up, as given in separate Table 2 where related information were collected. This Excel file was available for all at the internal RadoNorm website.

In addition, also publications (Journal, Proceeding, Book, etc.) developed in the RadoNorm project were collected with information about the DOI, type of publication, link to the repository, information about the publication (number, date, title, ISBN, publisher), title of contribution with authors and similar. The information was available in special section on website (under Publications).

Table 2 – Communication/Dissemination monitoring (template)

No	Type of activity	Main leader	Title	Date	Location or publication	Network group	Size of audience	Countries addressed
1	Press release	BfS	BfS coordinates European radon research project	12/3/2020	https://www.bfs.de/SharedDocs/Pressemitteilungen/BfS/EN/2020/005.html	Media, all	-	global
2	Co-organisation of conference	SCK CEN	Pre-RICOMET	2/9/2020	https://www.radonorm.eu/news/radonorm-project-started-with-three-webinars-as-part-of-the-on-line-pre-ricomet-2020/	Scientific community and researchers	300	global
3	Meeting	BfS	Kick Off meeting	9+10/09/2020	Internal RadoNorm website	Consortium, EC	170	EU

The WP8 meetings were organised every 6 months to reassess the activities based on the collected data from monitoring, as part of the Executive Board meetings. The information gathered during the entire lasting period was incorporated to the updates of the communication and PEDR report (foreseen as milestone and deliverables).

The collected information from reports and monitoring served as a basis for RadoNorm impact evaluation. The effectiveness of communication and dissemination activities was reviewed during WP8 meetings, on the basis of quantitative and qualitative criteria: quality of media references, number and impact factors of scientific publications, video views and comments (neutral, positive, negative), website visits, social media feedback, attendance numbers at RadoNorm events, e-newsletter distribution, interactions with related initiatives and projects. These measures helped to achieve the expected impact of the project by addressing the full range of potential users and uses.

4.6 Networking with other EU funded projects

RadoNorm collaborated and liaises with other projects (previous and ongoing) and initiatives that could complement its activities and provide synergies in order to avoid overlaps and taking advantage of possible new ideas that could arise from such correspondence. Furthermore, it also enhanced the dissemination of the project results to a specialised and professional audience.

Also, participants collaborated in other multilateral European projects, like PIANOFORTE, international activities of organisations like WHO, UNSCEAR, ICRP, IAEA, OECD/NEA and related platforms: MELODI, ALLIANCE, EURADOS and SHARE. The details of RadoNorm relevance were given in GA, annex 1 and 2 [1]. Opportunities such as the annual European Radiation Protection Week, the RadoNorm annual meetings and the RadoNorm Showcase Meeting in 2025 provided the possibility to interact with the PIANOFORTE leadership, with the EURAMET partnership and its associated projects, and also with the new EU-funded NuClim project.

After the adoption of Deliverable 8.1, the contacts with on-going and previous projects have been established to benefit from synergies and to exchange information. WP1 coordinates the interactions.

4.7 Visual identity and templates

4.7.1 RadoNorm Logo

The RadoNorm project logo was placed on all the project dissemination material, documents and communication tools throughout the project lifetime. The RadoNorm project logo was developed in two variants as presented in Figure 4, one with the explanation title and the other with just sign and name. Both variants were intended to be used in the RadoNorm project.

Figure 4 – RadoNorm logo variants

The main colours of RadoNorm project were defined from start of project (presented in Figure 5) and were used in all RadoNorm channels/tools/activities.

Figure 5 – RadoNorm basic colours

4.7.2 RadoNorm additional graphical elements

Some other graphical elements in Figure 6 were proposed to be used in presentations, posters, leaflets, brochures and all other RadoNorm material and as background for documents. Internal RadoNorm websites included several graphical elements to be used in the development of material.

Figure 6 – RadoNorm graphics and examples of backgrounds

4.7.3 RadoNorm templates

RadoNorm project was presented in several events, conferences, meetings as well as other occasions to disseminate project developments and results, enhancing the overall dissemination efforts. Different templates had been made available to Consortium partners via the project's internal repository and were used for milestones, deliverables, presentations (PPT), meeting minutes, poster or any other product/occasion in order to have a homogeneous strategy and approach to execute dissemination activities as well as to report on them. It was recommended that participants agree with WP8 leader and PC on any modified version of templates.

Additionally, as required per Article 29.4[4] of the Grant Agreement, all material used for communication and dissemination purposes of RadoNorm, demonstrated the EU emblem along with the statement that the project received funding from the H2020 Research and Innovation programme:

This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 900009.

A disclaimer that excludes the responsibility of the European Commission for any use that may be made of the information was contained in any communication and dissemination activity related to the RadoNorm as required by Grant Agreement Article 29.5.

[4] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

5. Exploitation Activities

The exploitation plan has been described in D8.1 [2], further presented in D8.7 [12] and remained valid true the project. In accordance with Article 28.1 (Obligation to exploit the results) of the Grant Agreement, RadoNorm partners took measures to ensure that project results were exploited both during the lifetime of the project and in the years following its completion. The objective of the exploitation strategy was to maximise the impact of RadoNorm's solutions and innovations, to prepare for the transition towards industrial and commercial uptake, and to achieve the expected impacts outlined in the Description of Work [1].

Exploitation of results was pursued through four principal pathways:

- Further research – results were used to initiate and support follow-on scientific studies beyond the scope of RadoNorm.
- Product and process development – findings were applied in the creation or improvement of technologies, tools and methodologies for radon and NORM risk management.
- Service provision – selected outcomes were transformed into operational services for regulators, industry and the general public.
- Standardisation activities – project outputs informed the development and revision of standards, guidelines and policy frameworks at national and European levels.

The exploitation strategy was built on a systematic analysis of RadoNorm results, the identification of potential user groups, and an assessment of financial sustainability where applicable. All WPLs, together with task and subtask leaders, contributed to this analysis. Particular attention was paid to user needs, market opportunities and potential adoption barriers. Intellectual Property Rights (IPR) and confidentiality constraints were identified early, and opportunities for transfer or licensing were explored.

A dedicated seminar, held in the second half of the first project year, was organised to explore the full range of exploitation opportunities. This event brought together partners from across the consortium to discuss how outputs could be applied in practice and to refine targeting of dissemination activities towards clearly defined user groups. The exploitation activities were coordinated by the PC and supported by the leader of WP 8.

The strategy was closely linked with RadoNorm's data management framework. Research data collected and generated during the project were managed in accordance with the project's Data Management Plan [12]. This ensured that data were made FAIR and deposited primarily in the STORE database, complemented by domain-specific public repositories. Approximately 66% of project data were shared openly, with restrictions applied only in cases involving IPR, privacy or ethical considerations. Where possible, software developed during the project was released under open licences. The long-term preservation of data was secured, with availability in STORE guaranteed for at least 10–15 years beyond the project's end, thus supporting future reuse and potential commercial or policy exploitation.

Responsibilities for exploitation were clearly defined. The PC provided overall oversight and strategic direction, while the WP8 leader coordinated operational exploitation activities. WPLs and Task Leaders were responsible for identifying and developing exploitation opportunities in their respective areas, while dedicated data wranglers ensured that data quality, curation and FAIR compliance were maintained.

Through this structured approach, RadoNorm ensured that its results were not only disseminated during the project but were positioned for tangible use and impact in research, practice, regulation and innovation long after the project's conclusion.

6. References

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[16.] John, W. et al. (2022): Minutes from the 2nd Annual Meeting, D1.3, RadoNorm, October 2022.

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[18.] John, W. et al. (2024): Minutes from the 4th Annual Meeting, D1.5, RadoNorm, October 2024.

[19.] John, W. et al. (2025): Minutes from the 5th Annual Meeting, D1.6, RadoNorm, August 2025.

[20.] Milestone 99: Report from online events, September 2021

Appendix A. RadoNorm consortium

Participant number, participants' organisation name and country

1 BUNDESAMT FUER STRAHLENSCHUTZ (coord) DE

2 INSTITUT DE RADIOPROTECTION ET DE SURETE NUCLEAIRE FR

3 MAGYAR TUDOMANYOS AKADEMIA ENERGIATUDOMANYI KUTATOKOZPONT HU

4 SATEILYTURVAKESKUS FI

5 STÁTNÍ ÚSTAV RADIAČNÍ OCHRANY, V.V.I. CZ

6 STUDIECENTRUM VOOR KERNENERGIE / CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE BE

7 STOCKHOLMS UNIVERSITET SE

8 ELEKTROINSTITUT MILAN VIDMAR SI

9 UNIVERZITA MATEJA BELA V BANSKEJ BYSTRICI SK

10 ENVIRONMENTAL PROTECTION AGENCY OF IRELAND IE

11 UNIVERSITEIT ANTWERPEN BE

12 MERIENCE SCP ES

13 CENTRE SCIENTIFIQUE ET TECHNIQUE DU BATIMENT FR

14 OSTERREICHISCHE AGENTUR FUR GESUNDHEIT UND

ERNAHRUNGSSICHERHEIT GMBH AT

15 KARLSRUHER INSTITUT FUER TECHNOLOGIE DE

16 PHYSIKALISCH-TECHNISCHE BUNDESANSTALT DE

17 PRIVATE JOINT STOCK COMPANY RADIATION PROTECTION INSTITUTE

OF THE ACADEMY OF TECHNOLOGICAL SCIENCES OF UKRAINE UA

18 RIJKSINSTITUUT VOOR VOLKSGEZONDHEID EN MILIEU NL

19 UNIVERSITEIT HASSELT BE

20 KRAEFTENS BEKAEMPELSE DK

21 THE PROVOST, FELLOWS, FOUNDATION SCHOLARS & THE OTHER MEMBERS OF BOARD OF THE COLLEGE OF THE HOLY & UNDIVIDED TRINITY OF QUEEN ELIZABETH NEAR DUBLIN IE

22 DEPARTMENT OF HEALTH UK

23 LABORATORY OF RADIOCHEMISTRY - CHEMISTRY DEPARTMENT - HELSINKI UNIVERSITY FI

24 ITA-SUOMEN YLIOPISTO FI

25 UNIVERSIDAD DE GRANADA ES

26 ACADEMISCH ZIEKENHUIS LEIDEN NL

27 HELMHOLTZ-ZENTRUM DRESDEN-ROSSENDORF EV DE

28 INSTITUTUL NATIONAL DE SANATATE PUBLICA RO

29 CENTRO DE INVESTIGACIONES ENERGETICAS, MEDIOAMBIENTALES Y TECNOLOGICASCIEMAT ES

30 UNIVERSITAT DE BARCELONA ES

31 CESKE VYSOKE UCENI TECHNICKE V PRAZE CZ

32 STATNI USTAV JADERNE, CHEMICKE A BIOLOGICKE OCHRANY VVI CZ

33 UNIVERSIDADE DE AVEIRO PT

34 UNIVERSIDADE DO PORTO PT

35 COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES FR

36 CENTRE D'ETUDE SUR L'EVALUATION DE LA PROTECTION DANS LE DOMAINE NUCLEAIRE FR

37 INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE FR

38 HAUTE ECOLE SPECIALISEE DE SUISSE OCCIDENTALE CH

39 LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN DE

40 UNIVERSITE PARIS DESCARTES FR

41 HELMHOLTZ ZENTRUM MUENCHEN DEUTSCHES FORSCHUNGSZENTRUM FUER GESUNDHEIT UND UMWELT GMBH DE

42 ISTITUTO SUPERIORE DI SANITA IT

43 GLOWNY INSTYTUT GORNICTWA PL

44 TAMPEREEN KORKEAKOULUSAATIO SR FI

45 UNIVERSITAET BERN CH

46 CONSORCI INSTITUT D'INVESTIGACIONS BIOMEDIQUES AUGUST PI I SUNYER ES

47 INSTITUT GUSTAVE ROUSSY FR

48 THE CHANCELLOR MASTERS AND SCHOLARS OF THE UNIVERSITY OF CAMBRIDGE UK

49 ASSOCIACAO DO INSTITUTO SUPERIOR TECNICO PARA A INVESTIGACAO E DESENVOLVIMENTO PT

50 STRÅLSÄKERHETSMYNDIGHETEN SE

51 GSI HELMHOLTZZENTRUM FUER SCHWERIONENFORSCHUNG GMBH DE

52 CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS FR

53 DIREKTORATET FOR STRÅLEVERN OG ATOMSIKKERHET NO

54 FOLKEHELSEINSTITUTTET NO

55 NORGES MILJØ OG BIOVITENSKAPELIGE UNIVERSITET NO

56 EUROPEAN ORGANISATION FOR RESEARCH AND TREATMENT OF CANCER B

57 AARHUS UNIVERSITET

Appendix B. Invitation to RadoNorm stakeholders' groups

RadoNorm
Managing risks from radon and NORM

Invitation to become a member of RadoNorm wider stakeholders' groups

1 April 2021

Dear Madam/Sir,

My name is Ulrike Kulka, as coordinator of the RadoNorm project I am writing to invite you to become a member of RadoNorm stakeholders' networks and to be regularly and proactively informed about the project and involved in related activities.

The EU-funded RadoNorm project https://www.radonorm.eu will support European Union Member States, Associated Countries and the European Commission in the implementation of the Council Directive 2013/59/EURATOM for protection against the dangers arising from exposure to ionising radiation at the legal, executive and operational level.

The multidisciplinary project combines biomedical and ecological research with mitigation techniques and strategies development and social science research. It intends to address scientific, technical and societal concerns in all steps of the radiation risk management cycle for radon and NORM exposure situations by introducing research and technical developments, integrating education and training and disseminating project results through targeted actions to the public, stakeholders and others. RadoNorm will also lead to the development of recommendations and protection measures against radon and NORM.

To assure communication, dissemination and engagement activities in the RadoNorm project the following stakeholders' networks groups have been identified:

1. **Scientific community and researchers:** RadoNorm community, young researchers, related research platforms (like MELODI, ALLIANCE, EURADOS and SHARE), associations (ERA, ENA), ICRP, IRPA, IAEA, ….
2. **Authorities**: EC, responsible ministries (health, environment, …) at different levels, regulatory authorities (radiation protection, nuclear safety, HERCA,…), municipalities and implementing authorities,
3. **Policy makers**: decision makers at different levels and politicians,
4. **Implementers**: public building managers and house owners, building professionals, construction engineers and architects, industry,
5. **Related:** stakeholders with similar project, citizen science networks,
6. **Impacted:** workers, residents,
7. **Media** and
8. **General public**.

The groups may have many times different interests and needs, therefore the RadoNorm project would like to actively involve different representatives in the project's activities, such as pilot testing of communication tools, development of new regulatory standards, discussions on scientific findings or to be just informed about the RadoNorm results.

www.radonorm.eu

This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 900009.

For this purpose, we are establishing the RadoNorm Contact Database with the following information:

- First name, Last name, E-mail, Institution, Website URL, Country and Stakeholder group with possibility for comments.

The management of the collected data will be organized carefully for purpose of the RadoNorm project only[1] and regularly maintained.

If you find this invitation interesting, please register at the RadoNorm https://www.radonorm.eu/stakeholders/. After registration we will inform you regularly about the activities and involve you in the activities. Your involvement is voluntary, free, unconditional and you have no obligations.

Thank you for your cooperation.

Sincerely yours.

Ulrike Kulka
RadoNorm coordinator

Invitation to become a member of RadoNorm wider stakeholders' groups

January 2023

Dear Madam/Sir,

The EU-funded RadoNorm project supports European Union Member States and Associated Countries in the implementation of the Council Directive 2013/59/EURATOM for protection against the dangers arising from exposure to ionising radiation at the legal, executive and operational levels.

After two and half years of impactful research and community outreach, we kindly invite you to be a part of the movement by becoming a member of the RadoNorm stakeholders' network. This will allow you to be regularly and proactively informed about our latest research, and involved in our diverse activities in strengthening radiation protection.

This multidisciplinary project combines computational, biomedical and ecological research with mitigation strategies and social science research. It intends to address scientific, technical and societal concerns in all steps of the radiation risk management cycle for radon and NORM exposure situations. The RadoNorm consortium has produced several important scientific papers describing the latest results and activities and ensured these results are disseminated broadly through participation in global events.

The challenges that the radiation protection community currently face are especially regarding the implementation of national radon action plans across EU Member States, communication of the dangers of ionising radiation, and implementing mitigation strategies to reduce exposure to radon and other forms of ionising radiation. These come alongside other issues such as establishing good dose coefficients for dosimetry. Through the stakeholders' network, we offer you the opportunity to share your expertise in tackling these challenges as well as bring in your point of view and needs.

To assure effective communication and dissemination in the RadoNorm project, the stakeholders' network groups have been created and include different audiences. Stakeholders are regularly involved in the project's activities, and may participate in the annual meetings, in pilot testing of communication tools, development of new regulatory standards, and discussions on scientific findings. Information for registration can be found on the RadoNorm website https://www.radonorm.eu/stakeholders/[1]. Your involvement is voluntary, free of charge, and without any obligations.

Thank you for your cooperation.

Sincerely yours,
Ulrike Kulka
RadoNorm coordinator

Appendix C. WP8 milestones and deliverables

Following milestones and deliverables are planned for the WP8 Communication, Dissemination and Exploitation of results (information includes number, title and month to be developed):

Milestones:

- MS91 Establishment of project website (external –project repository, internal – project place): M3 and regular updates
- MS92 Updates of Strategy and plan for communication, dissemination and exploitation of results: M12, 24, 36, 48
- MS93 Data Management Plan: M6 and yearly update DMP document
- MS94 Establishment of web based social media for RadoNorm: Twitter, LinkedIn: M3 and regular updates
- MS95 Printed and digital materials' reports: M6, and updates every 6 months
- MS96 Stakeholder mapping and establishments of stakeholder'networks: M4, and yearly updates
- MS97 Upgrading of STORE^{db} platform for easy handling of big data: M6 and yearly updates
- MS98 Proceeding from project events: M12, 24, 36, 48, 60
- MS99 Report from online events: M12, 24, 36, 48, 60

Deliverables:

- D8.1 Strategy and plan for communication, dissemination and exploitation of results (M3)
- D8.2 Strategy and plan for communication, dissemination and exploitation of results update (M36)
- D8.3 Printed and digital materials' final report (M60)
- D8.4 Report on stakeholder engagement (M59)
- D8.5 RadoNorm STORE^{db} report (M60)
- D8.6 Communication, dissemination and exploitation final report (M60)
- D8.7 Open Research Data Pilot and Data Management Plan (M6)