

Registered Office

Herrmann-Debrouxlaan 40
1160 Brussel – Belgium

Foundation of Public Utility

VAT BE 406.568.867

Research Centres

Boeretang 200
2400 Mol – Belgium

Chemin du Cyclotron 6

1348 Ottignies-Louvain-la-Neuve – Belgium

Reference N°	Creation Date	
SCK CEN/41938542	2022-09-01	
Alternative Reference N°	Revision	Version
N/A	2.0	6
ISC	Revision Status	
Public	Approved	

BAROMETER 2021

Authors*

Ferdiana Hoti

Approval information for current revision*

Name	Outcome	Date
Tanja Perko	Approved	2022-09-01

Change log*

Revision	Version	Status	Date	Description of change
2.0	6	Approved	2022-09-01	
1.0	4	Approved	2022-08-31	

**This automatically generated cover page shows references and document information as were available in the Alexandria document management system on 2022-09-01. Please refer to Alexandria for current and complete metadata, or to the document contents and/or author for additional information.*

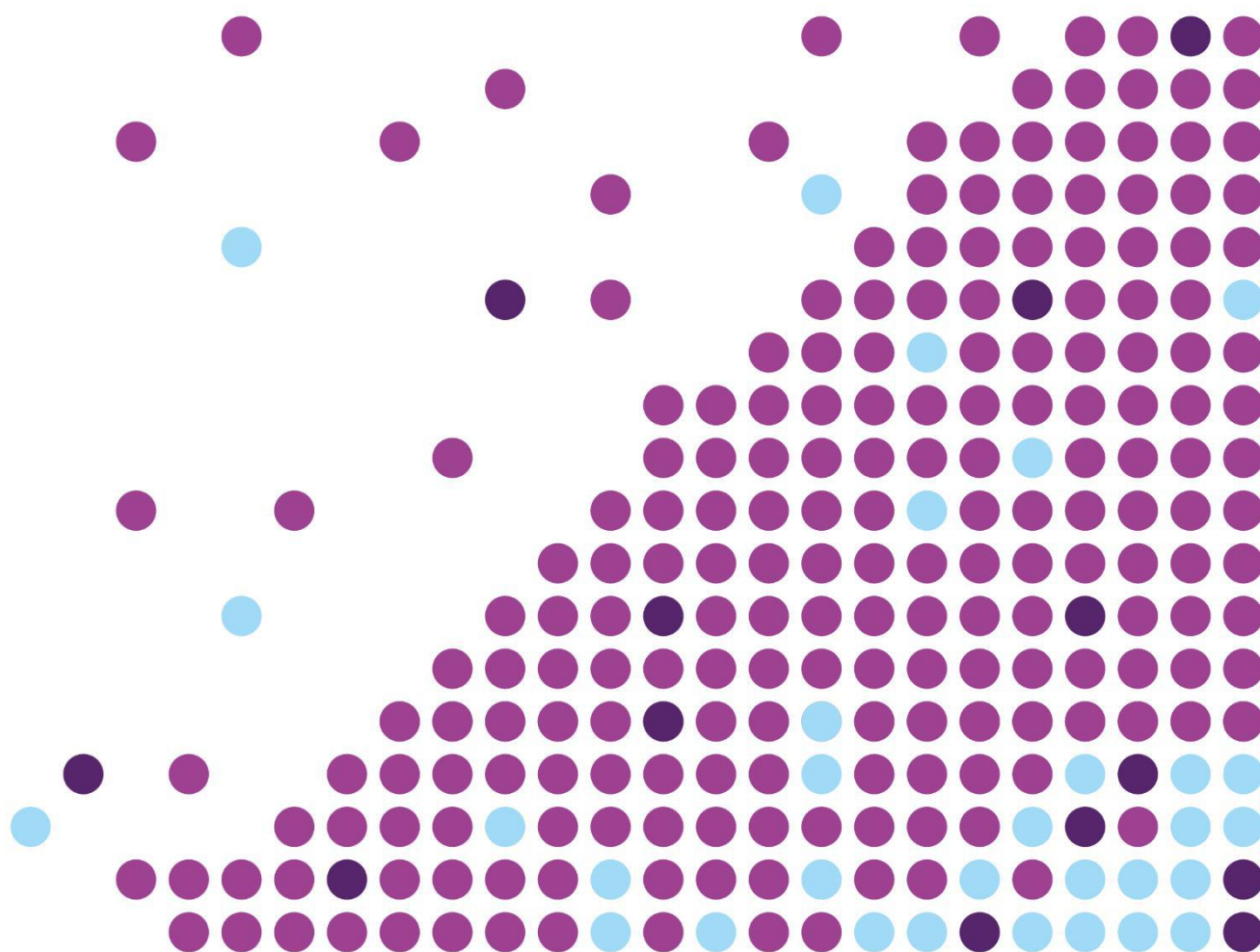


BAROMETER 2021

Survey related to ionizing radiation and related perceptions, attitudes and radiation protection behaviour

Authors: Ferdiana Hoti, Tanja Perko, Catrinel Turcanu

Publication date: 2022-09-01



© SCK CEN – Publication date 2022-09-01

Stichting van Openbaar Nut - Fondation d'Utilité Publique - Foundation of Public Utility

Registered Office:

Avenue Herrmann Debroux 40 - 1160 Brussel – Belgium

Research Centres:

Boeretang 200 - 2400 Mol - Belgium

Chemin du Cyclotron 6 - 1348 Ottignies-Louvain-la-Neuve - Belgium

www.sckcen.be

Copyright rules

All property rights and copyright are reserved to SCK CEN. This document contains data, information and formats for dedicated use only and may not be communicated, copied, reproduced, distributed or cited without the explicit written permission of SCK CEN. Any infringement to this rule is illegal and entitles to claim damages from the infringer, without prejudice to any other right e.g. in case of granting a patent or registration in the field of intellectual property.

Table of content

Acknowledgements.....	5
EXECUTIVE SUMMARY	6
1. INTRODUCTION.....	9
2. METHODOLOGY	11
2.1. Ethical approval and scientific supervision of the study	11
2.1.1. Ethical approval.....	11
2.1.2. Steering committee	11
2.1.3. Consultations with experts on different topics.....	11
2.2. Pilot Study.....	11
2.3. Questionnaire	12
2.3.2. Formulation of survey items	12
2.4. Selection of the opinion research company for the field work	13
2.5. Sampling of households and representativeness of respondents.....	13
2.5.1. Sampling of households.....	13
2.5.2. Timing, reminders and response rate	13
2.5.3. Representativeness of respondents	13
2.6. Data collection	14
2.6.1. The applied method.....	14
2.6.2. Alternation in the method due to Covid-19 pandemic.....	14
2.6.3. Informed consent and motivation of respondents.....	14
2.7. Data analysis.....	15
2.7.1. Quantitative analysis.....	15
3. RISK PERCEPTION AND CONFIDENCE IN AUTHORITIES	16
3.1. Risk perception	16
3.2. Confidence in the authorities related to protective actions	21
4. ATTITUDE TOWARDS SCIENCE AND TECHNOLOGY	25
5. ATTITUDE TOWARDS NUCLEAR ENERGY.....	27
6. CONFIDENCE IN THE MANAGEMENT OF NUCLEAR TECHNOLOGIES	30
7. ACTORS IN THE NUCLEAR FIELD	32
8. DECOMMISSIONING OF NUCLEAR INSTALLATIONS.....	35
8.1. Public attentiveness to nuclear power plants after they've permanently stopped producing nuclear energy	35
8.2. Risk perception concerning nuclear power plants after they permanently stop producing nuclear energy	37
8.3. Expectations about the outcome of decommissioning	38
8.4. Public participation intention concerning decisions about decommissioning.....	39
8.5. Trust in various actors to make good decisions about decommissioning	42
8.6. Feelings evoked by decommissioning	43
8.7. Preference for receiving uncertain information about decommissioning	43
9. RADIOACTIVE WASTE.....	44
9.1. Attitudes towards geological disposal.....	45
9.2. The role of various national actors in decision-making process related to geological disposal of high-level waste.....	46
9.3. Public participation intention concerning decisions about geological disposal	48

9.4. Participation in the public consultation.....	48
10. EMERGENCY SITUATIONS	49
10.1 Public information about protective actions in case of a nuclear accident.....	49
10.2 Awareness of the use of iodine tablets.....	50
11. KNOWLEDGE ABOUT THE NUCLEAR DOMAIN AND PERCEPTION OF RADIATION RISKS.....	53
12. REFERENCES	57
Annex Barometer 2020 Questionnaire	58
PART 1. Socio-demographic variables / Sociaal-demografische variabelen / Variables socio-démographiques	58
PART 2. Risk perception and confidence in authorities / Risicoperceptie en vertrouwen in de overheid / Perception des risques et confiance dans les autorités	60
PART 3. Uncertainty Preference Scale/ Omgaan met onzekerheid / Gérer l'incertitude	63
PART 4. Attitude towards science and technology/Houding tegenover wetenschap en technologie/ Attitude vis-à-vis des science et technologie	65
PART 5. Attitude towards nuclear energy/Mening over nucleaire energie/Opinion vis-à-vis de l'énergie nucléaire	66
PART 6. Confidence in the management of nuclear technologies / Vertrouwen in het beheer van nucleaire technologie / Confiance dans la gestion des technologies nucléaires	68
PART 7: Actors in the nuclear field / Actoren op nucleair gebied / Acteurs du secteur nucléaire	69
PART 8 : Decommissioning/ Declassering / Déclassement	71
PART 9. Radioactive waste / Radioactief afval / Déchets radioactifs.....	84
PART 10. Emergency situations / Noodsituaties / Situations d'urgence	87
PART 12. Knowledge about the nuclear domain and perception of radiation risks / Kennis op nucleair gebied en perceptie van stralingsrisico's / Connaissance en nucléaire et perception des risques du rayonnement	90
PART 13: Intolerance for uncertainty/ Intolerantie voor onzekerheid/ Intolérance à l'incertitude.....	91
Annex: Informed consent.....	92
Annex: Debriefing Form	93
Annex: Ethical approval.....	94
Annex: Summary of the Radon & NORM related Barometer - boost sample.....	95

Acknowledgements

We would like to thank the members of the steering committee for their valuable comments on the methodology of the survey and the helpful discussions:

Prof. Britt-Marie Drottz Sjøberg, Norwegian University for Science and Technology, Trondheim, Norway

Prof. Ortwin Renn, Institute for Advanced Sustainability Studies, Potsdam, Germany

Prof. Peter Thijssen, University of Antwerp, Belgium

Dr. Frank Hardeman, SCK CEN, Belgium (currently FANC-AFCN, Belgium)

Ir. Geert Volckaert, FANC-AFCN, Belgium

We would also like to thank all the participants in the pilot study.

This research received partial funding from the Euratom research and training programme 2019-2020 under grant agreement No 900009 and a research project funded by NIRAS/ONDRAF (CCHO 2015-0304/00/00.NOCA 2014-2878).

EXECUTIVE SUMMARY

Starting from 2002, the Belgian Nuclear Research Centre (SCK CEN) carries out regular surveys related to attitudes and perceptions of nuclear technologies and radiological risks among the Belgian public, using the "SCK CEN Barometer" as the main research tool.

The SCK CEN Barometer is a large-scale public opinion survey with a population sample representative for Belgian adults (18+) with respect to province, region, level of urbanisation, gender, age and professionally active status. The large sample size allows (N>1000) enables the identification of general trends as well as more detailed understandings related to nuclear applications and ionising radiation. The survey includes recurrent issues such as perception of various radiological and environmental risks, confidence in authorities for actions taken to protect the population against those risks, trust in risk regulators, or opinions about the use of nuclear energy for electricity production. Detailed research sections on specific topics, reflecting current societal concerns.

For this edition, Computer-Assisted Web Interviewing (CAWI) was conducted with 1060 respondents selected from stratified random sample, representative with stratification in terms of the total number of inhabitants in the Belgian municipalities. Response rate was 6.6 %. The final sample is representative for the (18+) Belgian population with respect to gender, age, level of urbanisation of the living habitat and province. The interviews had an average duration of 25 minutes and were conducted in the period of December 2020 and January 2021.

Results show that in 2021 the highest risk perception is related to a large scale epidemic (66%) which is not surprising since Belgium was in lock-down due to the second wave of the COVID-19 pandemic during the field work. This value has increased significantly from 2006 (mean= 2.79, SD=.95) and 2009 (mean= 3.8, SD=1.04) to 3.87 (SD=1) in 2021. The second-highest risk perception is related to environmental pollution (57% of people perceive it as very high or high risk). Among radiological risks for people's health within the next 20 years, the highest risk is perceived to be that from malicious use of nuclear technologies by terrorists (52% of people perceive it as very high or high risk). Half of the respondents had a high or very high risk perception for risks due to climate crisis (50% of perceive it as very high or high, risk). Natural radiation (from soil or from space) generates the lowest risk perception among respondents with almost half of the respondents (47%) perceiving it as a low, very low risk, or no risk at all from this risk domain and 16% perceiving it as a high or very high risk.

Confidence in authorities is more or less similar towards different risk domains. The lowest confidence is seen concerning climate crisis: one in two Belgians have no or (very) little confidence. The highest confidence is seen concerning the use of ionizing radiation for medical tests or treatments, with most one in three Belgians having (very) high confidence. Among radiological risks, the lowest confidence is related to indoor air pollution due to radon (mean= 2.48, SD= 1.09), natural radiation (mean= 2.51, SD= 1.18), and naturally radioactive gas- Radon (mean= 2.56 , SD= 1.13). The highest confidence among these radiological risk domains is for the actions that authorities undertake to protect the population against malicious use by terrorists (mean of 2.8, SD= 1.23) as well as an accident in a nuclear installation (mean 2.81, SD= 1.12). While there is an overall decrease in confidence in authorities, the highest decrease is seen concerning large-scale epidemic.

The majority of the Belgian population favors the development of science and technology (S&T). More than half of the population agrees that S&T have made our lives easier, and that future generations will have a better quality of life as a result of it. However, one in three participants is rather neutral when it comes to seeing S&T development as more beneficial or more harmful. While it is clear that adverse effects of S&T are also thought of among the Belgian population, still more than two-third of them agree that we need further development of S&T.

While policy discussion related to nuclear power plants in Belgium seems to be polarized in a sense of "keep them open" or "close them down", the results of this BAROMETER reveal a more diverse view on nuclear energy. The following three options receive most support by Belgians: keep using existing reactors without any replacement (31%), use existing reactors and build new ones (23%) and immediate closure of the nuclear energy program (20%). Overall, 32% support new build. 65% of Belgians believe that renewable sources are not able to cover for our current energy needs. Longitudinal analysis shows that there is a slight increase in the benefit perceptions of nuclear energy, and a slight decrease on risk perceptions (e.g. less people think that nuclear power plants endanger the future of our children).

Similar to attitude towards nuclear energy, the confidence in the management of nuclear technologies is almost equally scattered as well. While less than half of Belgians believe that nuclear reactors are operated in a safe manner, this percentage has increased in comparison to previous years. A quarter of Belgians believe that there is sufficient control by authorities,

whereas one in three believes that more control is needed. A quarter of Belgians believes that radioactive waste is handled in a safe manner. This belief has remained stable over time. Only 1 in 3 Belgians feels protected against the risks of nuclear installations. This percentage has slightly increased though in comparison to previous years as well. Almost half of Belgians (43%) believe that Belgian nuclear installations are vulnerable to terrorism.

ENGIE Electrabel was the actor with which our respondents were most familiar with (93%). They were followed by environmental organizations (86%), and afterwards by FANC (48%), SCK CEN (36%), scientists from universities (33%), and ONDRAF/NIRAS (28%). Despite being the most known, ENGIE is the least trusted actor in terms of telling the truth about risks and benefits of nuclear technologies (mean 2.9, SD= 0.97) and the second-lowest in terms of technical competence (mean= 3.39, SD= 0.90). The actors that are appreciated the most in terms of telling the truth and being technically competent are scientists from universities and SCK CEN.

Although most of people are not attentive to what happens with nuclear power plant after they have permanently stopped producing nuclear energy and they feel as rather poorly informed, a big majority of the population is open for any media information related to nuclear power plants after their operational lifetime. Most of people perceive the risk of a nuclear power plant after its operational life time as a low or moderate risk for their health. When asking respondents how they perceive the potential risk to their health from the extension of the operational lifetime of nuclear reactors Doel 1 and Doel 2, we can notice that Belgians are distributed in three similar groups: those perceiving extension of the operational lifetime as risky, those who perceive it as safe and those who perceive it as a moderate risk. An interesting finding relates to public expectations related to decommissioning. In comparison to 2015, there is a significant decrease in the number of people thinking that removing all traces of the nuclear power plant after its operational lifetime is the best option. Public participation intention among the general population has significantly increased in comparison to 2015. However, when we tell participants that “currently there is an initiative” involving members of the public, the percentage of people who do not want to participate at all is 50% higher than in a hypothetical situation. Trust in various actors to make good decisions about decommissioning is rather high, with experts and FANC-AFCN perceived as the most trustworthy actors. When it comes to feelings concerning decommissioning, 38% of the respondents said they are worried and 38% express feelings of tranquility. 66% say they are interested in the topic of decommissioning and 40% indicate they are rather optimistic about it. Finally, 62% of the respondents would like to receive information about decommissioning even if some aspects about it are still uncertain.

Awareness about the current management of high-level radioactive waste remains low. Similar to 2018, one in two Belgians mistakenly believes that high-level radioactive waste is currently buried underground and one in five say they do not know what the current management is. Concerning attitude towards geological disposal, there is still low agreement that the *geological disposal solves the issue of high-level radioactive waste* (17%). Decision making concerning geological disposal of high-level, long-lived radioactive waste is recognized as a multi-actor responsibility, indicating that the nuclear safety authority, the radioactive waste manager and scientific experts are preferred as the main decision-makers related to geological disposal. Belgian citizens wish to participate to some extent in decision-making concerning a geological disposal, should a decision about the construction of such a disposal be taken. The percentage who say they would never agree to the construction of a disposal next to their home, and would protest against it, decreased from 45% in 2011 and 37% in 2018, to 27% in 2021. When asked about a public consultation concerning geological disposal in April-June 2020, awareness of this consultation was very low.

Similar to 2018, a large majority of the Belgian population (more than 80%) agrees or strongly agrees that the authorities should make more efforts to inform the population about protective actions in case of a nuclear accident. One in three Belgians say they know where to find information about protective actions at the moment of the survey, but half of the population, is confident that in the case of a nuclear accident they would find the information needed to protect themselves. After the extension of the planning zone for the preventive distribution of iodine tablets in 2018, a significantly larger proportion of the population know or have heard about the last campaign (2018) for preventive distribution of iodine tablets, compared to similar measurements in previous years. However, awareness about the preventive role and the correct timing of intake of iodine tablets has not changed much and should be further improved.

Knowledge about the nuclear domain remains still rather low among the Belgian population. Only 1 in 3 Belgians knows that exposure to radiation does not always lead to radioactive contamination, and only 22% of the respondents knew that vegetables grown near an NPP are still good for consumption. Similarly, only 1 in 4 respondents (25%) correctly disagreed with the statement that even very low levels of radiation are harmful for human health. Only 1 in 3 Belgians knows that the human body is naturally radioactive. Knowledge related to radon also seems very low among Belgians. 54% of the

respondents said that they do not know whether exposure to indoor radon causes headache, and 61% said that they do not know whether it causes lung cancer. 70% of the Belgian population knows that radioactive waste is not only produced by NPPs, though.

The detailed results of this Barometer are presented in comparisson with results of previous eddtions whenever comparable. In addition, public opinion, views and expecteations on high-level waste disposal also constitutes the object of a separate report (Turcanu et al, 2021) and results of a boost sample related to radon and NORM in a separate report (Perko T. et al, 2022) [[DOI:10.20348/STOREDB/1174/1251](https://doi.org/10.20348/STOREDB/1174/1251)].

1. INTRODUCTION

Starting from 2002, the Belgian Nuclear Research Centre (SCK CEN) carries out regular surveys related to attitudes and perceptions of nuclear technologies and radiological risks among the Belgian public, using the "SCK CEN Barometer" as the main research tool.

The SCK CEN Barometer is a large-scale public opinion survey with a population sample representative for Belgian adults (18+) with respect to province, region, level of urbanisation, gender, age and professionally active status. The large sample size allows (N>1000) enables the identification of general trends as well as more detailed understandings related to nuclear applications and ionising radiation. The survey includes recurrent issues such as perception of various radiological and environmental risks, confidence in authorities for actions taken to protect the population against those risks, trust in risk regulators, or opinions about the use of nuclear energy for electricity production. Detailed research sections on specific topics, reflecting current societal concerns.

This research is developed within SCK CEN's Programme for Integration of Social Aspects into nuclear research (PISA). The data collection method employed up to the 2018 edition was Computer Assisted Personal Interviewing, consisting of personal interviews carried out at the home of the respondents, with answers being directly recorded on portable devices. In the 2020-2021 edition, however, the chosen method was mail-to-web data collection. This entails inviting people by mail to participate to an online survey, the link of which they receive in the invitation letter. The data collection method was changed compared to the previous editions due to the COVID-19 situation and its related measures, as it was not possible to conduct face-to-face interviews.

At every edition, the field work is performed by a market research company with professional interviewers. The company is chosen based on a public tender with evaluation criteria including cost, methodology, quality control and professionalism and experience. For the 2018 edition, the field work was carried out by KANTAR Belgium.

Previous editions

The first edition of the SCK CEN Risk Perception Barometer took place in 2002 (Carlé, and Hardeman, 2003). The questionnaire used at the time was based on the IRSN French Barometer and allowed for comparisons between the French and the Belgian population. An additional research section addressed expert functioning.

The second SCK CEN Barometer was realised in 2006 (Van Aeken et al, 2006). It focused on the acceptance of food legal norms, public acceptance of countermeasures for the food chain in the aftermath of a nuclear accident and related consumer's behaviour.

The third edition of the SCK CEN Risk Perception Barometer took place in 2009 (Perko et al, 2010). The special topic of this survey was information processing in nuclear/radiological emergency management and aimed at highlighting potential predictors for information reception and acceptance. Three settings were used to validate the research hypotheses: the campaign for preventive distribution of iodine tablets, communication in the context of a real radiological incident and communication in emergency preparedness.

The fourth SCK CEN Barometer was carried out in 2011 (Turcanu et al, 2011) and focused on the accident at Fukushima, factors opposing or supporting nuclear energy, stakeholder participation in nuclear decision making, the iodine campaign, and the management of high level radioactive waste.

The fifth edition of the Barometer was carried out in 2013 (Turcanu and Perko, 2013). Specific research sections were dedicated to the perception of the accident in Fukushima, the use of information sources in nuclear emergency situations and communication about ionising radiation.

The sixth, 2015 edition, (Turcanu et al, 2016) introduced new topics on citizens' involvement in radioactivity monitoring, decommissioning of nuclear power plants, fusion energy and knowledge about the position of political parties with respect to nuclear energy.

The seventh, 2018 edition (Turcanu et al, 2018) was carried out in November 2017 through to February 2018 and had the following research topics in focus: expected behaviour and public information issues in emergency situations; communication in emergency and post-accident situations; attitudes towards geological disposal for high-level waste; knowledge and opinions about SCK CEN's MYRRHA project.

The latest edition of the SCK CEN Barometer included dedicated research sections related to the forthcoming decommissioning of nuclear installations in Belgium. Two waves of participant recruitment were applied. In wave one 8.000 letters were sent to the households that were randomly selected. Based on the response on the first wave, Kantar sent 6.657 reminders together with 8.000 additional letters to a fresh sample. Letters for the first wave were sent on December 7th (with the online survey available as of December 8th), while reminders and the additional 8000 letters were sent out on 4th of January, 2021. The fieldwork was closed on 18th of January, 2021 with a sample of N=1077 respondents. Out of these, 1,060 valid interviews were retained after quality control.

A summary of the questionnaire's main sections is presented in section 2.3. The full questionnaire is included in Annex.

The sections on high-level waste disposal also constitutes the object of a separate report (Turcanu et al, 2021) and the section on radon and NORM a separate report (Perko T. et al, 2022) [[DOI:10.20348/STOREDB/1174/1251](https://doi.org/10.20348/STOREDB/1174/1251)].

2. METHODOLOGY



Computer-Assisted Web Interviewing (CAWI) was conducted with 1060 respondents selected from **stratified random sample**, representative with stratification in terms of the total number of inhabitants in the Belgian municipalities. Response rate was 6.6 %. The final sample is representative for the (18+) Belgian population with respect to gender, age, level of urbanisation of the living habitat and province. The interviews had an average duration of 25 minutes and were conducted in the period of December 2020 and January 2021.

In comparison to the previous editions of the SCK CEN Barometer, this year data were collected using mail-to-web data collection. This method entails inviting people by mail to participate on our online survey whose link they could find on the invitation letter. The reason why the data collection method has been changed from the previous editions is that due to the COVID-19 situation and its related measures, it was not possible to conduct face-to-face interviews.

2.1. Ethical approval and scientific supervision of the study

2.1.1. Ethical approval

The ethical approval for this study was issued by the ethical committee of the University of Antwerp in Belgium on 16th of December, 2020 (dossier number: SHW_20_77). This ethical committee reviewed and approved the following documents: the methodology of the study; invitation letter; consent form; the full questionnaire as well as the handling and processing of the contact information of the participants.

2.1.2. Steering committee

A meeting with the scientific steering committee of the Barometer was held online due to COVID-19 measures on 8th and 9th of May, 2020. The main purpose was to improve the scientific quality of the questionnaire by collecting general feedback and advise on the (preliminary) questionnaire as well as have a quality check for each of the items in the survey. The steering committee consisted of 5 members, each of them expert on specific aspects such as public opinion survey methodology, social behavior, risk perception and nuclear waste policy and research. These members were: Prof. Dr. Britt-Marie Drott Sjøberg (Norwegian University of Science and Technology, Norway), Prof. Dr. Ortwin Renn (University of Stuttgart, Germany), Prof. Dr. Peter Thijssen (University of Antwerp, Belgium), Dr. Frank Hardeman (Federal Agency for Nuclear Control, Belgium), and Mr. Geert Volckaert (Federal Agency for Nuclear Control, Belgium). In this meeting participated also the 3 principal investigators from SCK CEN, Dr. Catrinel Turcanu, Dr. Tanja Perko and PhD Candidate Ferdiana Hoti.

2.1.3. Consultations with experts on different topics

The formulation of the introductory texts and the questions to be used in the survey were further consulted with experts on various topics. For instance, for the radioactive waste questions we consulted experts from NIRAS/ONDRAF, for the decommissioning part we consulted decommissioning experts from SCK CEN and for the radon-related questions we consulted experts from the RadoNorm project.

2.2. Pilot Study

A pilot study with 20 respondents was carried out as a pre-test of the survey in the period of June - July, 2020 with an online version of the questionnaire. The pilot study was conducted with employees of the Belgian Nuclear Research Centre (SCK CEN) as well as with doctoral and postdoctoral researchers from University of Antwerp. Prior to respondents starting to fill in the questionnaire, the interviewers made an introduction that briefly explained the purpose of the study and also included messages that are known to encourage people to respond: (a) assure the respondents that data will remain anonymous; (b) explain the purpose of the pilot study; (c) explain the selection of the respondents (if requested); (d) communicate the estimated time needed to fill in the questionnaire (initial estimation: 35 min); (e) emphasize that all the respondents' comments will be analysed together with the interviewer in individual discussions.

The questionnaire of the pilot study was offered in 3 languages (i.e. English, Dutch and French). 12 of the respondents chose for the Dutch version, 8 of them chose the English version, and 2 of them chose the French version of the questionnaire.

When filling-in the questionnaire, respondents were also asked to write comments next to the questions, if necessary. Online individual discussions with the interviewer were held with each respondent and this helped identifying any problems, e.g. terms or phrases that were confusing or questions that were deemed too difficult to answer. In addition, this allowed verifying that the questions were interpreted in the same way by different respondents.

A qualitative analysis of the comments obtained was used to produce an improved version of the questionnaire. Every comment of the pilot study respondents was discussed and considered by the principal investigators for the final version of the improved questionnaire.

2.3. Questionnaire

The sequence of sections in the Barometer 2021 questionnaire is: 1) Socio-demographic items (10 items); 2) Risk perception and confidence in authorities (30 items); 3) Uncertainty preference (8 items); 4) Attitude towards science and technology (5 items); 5) Attitude towards nuclear energy (8 items); 6) Confidence in the management of nuclear technologies (5 items); 7) Knowing actors in the nuclear field and their trustworthiness and competences (18 items); 8) Decommissioning of nuclear installations (26 items); 9) Radioactive waste (18 items); 10) Emergency situations (9 items); 11) Knowledge about the nuclear domain (10 items); and 12) Intolerance for uncertainty (6 items).

The figure below visually presents the sequence of the topics included in the Barometer 2020-2021 survey.

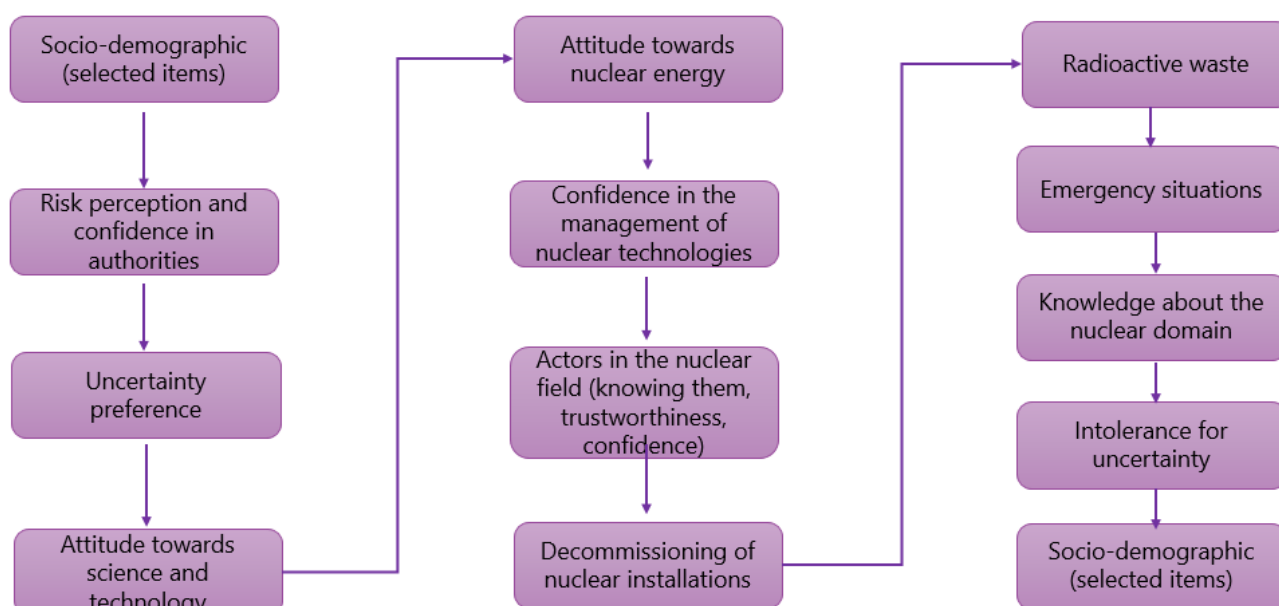


Figure 1: The sequence of sections in the barometer survey.

2.3.2. Formulation of survey items

Most items in the survey are formulated as questions or statements, with answering categories expressed by means of Likert-scales and/or adjusted to the context of the statement or question. Agreement with a statement is typically measured on a scale ranging from "strongly disagree", through to "disagree", "neither agree, nor disagree", "agree", to "strongly agree". The answering category "Other" was included for all closed questions with predefined answering options in order to ensure completeness. The option of "no answer" or "I don't know" was also available.

In addition, great attention was given to the translation of the questionnaire in French and Dutch language, in order to assure the equal understanding of statements and questions investigated. For this, official translation has been done by a Belgian translation company (M&M translations - Belgium). In addition, native speakers were also asked to verify the translations from Dutch to French and from French to Dutch.

2.4. Selection of the opinion research company for the field work

Selection of the market research company to carry out the field work followed the standard procedure for tendering, with technical specifications drafted by the SCK CEN team. The criteria for the evaluation of offers included the following: 1) cost (weight 0.5); 2) methodological approach including clarity of the offer, sampling adequacy, information about the sampling provide, possibility to randomize the order of questions in certain sections, data collection for open questions, software utilized and possibility for the SCK CEN team to test the software used for the field work, recruitment of respondents, planning and preparation of field work, reporting of results (weight 0.25); 3) professionalism of the company with similar research (weight 0.1); and 4) quality control, e.g. quality control of field work, possibility for SCK CEN for control during field work, control of data collection, and control of sampling (weight 0.15). Based on the evaluation of two offers received, KANTAR – Belgium was selected for the field work.

2.5. Sampling of households and representativeness of respondents

2.5.1. Sampling of households

The (gross) sample of households was randomly drawn by Kantar from the central reference address files in Flanders (CRAB), Brussels (Urbis) and Wallonia (ICAR). All Belgian municipalities have been selected where 1 address has been drawn per 1.715 inhabitants for each municipality. For instance, Mol has 37.022 inhabitants, so 22 addresses were drawn for Mol. Company addresses have been removed from the address list.

Within each randomly selected household that received the invitation letters the last birthday person in the household (+18) was asked to participate in a study with a link to the online survey and a unique code to log in to the questionnaire.

2.5.2. Timing, reminders and response rate

Two waves of participant recruitment were applied for this survey. In wave one 8.000 letters were sent to the households that were randomly selected. Based on the response on the first wave, Kantar sent 6.657 reminders together with 8.000 additional letters to a fresh sample in the second wave.

The letters of the first wave have been sent on 7th of December and the online survey was available on 8th of December (= Day +1), considering the delay of 2 days that it takes for the letters to arrive by post. The reminders and the additional 8000 letters for the second wave were sent out on 4th of January, 2021. The fieldwork was closed on 18th of January, 2021 with a sample of N=1077 respondents. Out of these, 1,060 valid interviews were retained after quality control.

Response rate for this study was 6.6% which is similar to the previous Barometer studies.

2.5.3. Representativeness of respondents

The final sample of this survey consists of N=1060 Belgian adults and is representative for the (18+) Belgian population with respect to gender, age, level of urbanisation of the living habitat and province. The weighting for each of these categories as well as education is explained on table 1.

Table 1. Socio-demographics of the sample, weighted and unweighted.

Variable		Belgian population 18+ (N= 9,180,601) %	Unweighted survey sample (N= 1060) %	Weighted survey sample (N= 1060) %
Sex	Male	48.7	53.4	48.7
	Female	51.3	46.5	51.2
	Other	0.1	0.1	0.1

<i>Age</i>	18-34	26.3	26.5	26.2
	35-54	33.5	33.5	33.5
	55+	40.2	40	40.3
<i>Education</i>	Primary	20.9	9.9	20.7
	Secondary	43.2	29.8	43.1
	High	36	60.3	36.2
<i>Habitat</i>	Big cities	29.1	30	29.1
	Urban towns	21.9	22.8	21.9
	Municipalities	23.6	22.5	23.6
	Other	25.4	24.7	25.4
<i>Province</i>	Antwerp	16.1	16.9	16.1
	Brussels	10.2	11.1	10.3
	Henegouwen	11.6	10.1	11.6
	Limburg	7.8	8.7	7.8
	Luik	9.7	10.1	9.7
	Luxemburg	2.5	1.9	2.5
	Namen	4.4	3.9	4.4
	East-Flanders	13.5	13.5	13.5
	Vlaams-Brabant	10.2	9.5	10
	Waals-Brabant	3.4	4.3	3.4
	West-Flanders	10.7	10	10.7

2.6. Data collection

2.6.1. The applied method

The method used for the data collection of this survey was Computer-Assisted Web Interviewing (CAWI). CAWI is an internet surveying technique where the respondent fills in a survey provided online. The questionnaires are made in a program for creating web interviews. The program used for our survey is called Nfield NIPO and it allows for the questionnaire to contain text, pictures, audio and video clips, links to different web pages, etc. The advantage of CAWI and using the Nfield NIPO program is that the survey can be used on different devices (e.g. computer, mobile phone), at different preferred times, is user-friendly, allows for flexible data management and ensures unrivalled data security.

Respondents could choose to fill in the survey in Dutch or French language. 57.8% of the respondents chose the questionnaire in Dutch and 42.2% in French. The average interview duration was 25 minutes.

2.6.2. Alternation in the method due to Covid-19 pandemic

Initially, the questionnaire was designed for Computer-Assisted Personal Interviewing (CAPI) which was reviewed during steering committee and pilot study. However, during the preparations for the field work it was clear that the government measures concerning face-to-face meetings were still very strict due to the COVID-19 situation, therefore we switched to CAWI as a data collection method. The response rate of this survey is very similar to the previous Barometer surveys which were conducted face-to-face, which shows that the change of the method did not have any impact on the quality of the survey concerning the response of the participants.

2.6.3. Informed consent and motivation of respondents

Before participants started to fill-in the survey, they were first introduced to a consent form. This consent form explained the main goals of the study, explained who is conducting the research and who is collecting the data, and ensured the participants that their answers will be used for scientific research purposes and will be held anonymously and confidentially in keeping with the General Data Protection Regulation (GDPR) (see annex). After reading the information on the consent form, the participants could choose whether or not they wanted to continue to participate in the study.

Respondents that finished the survey until the end received an incentive of 10 euros or could choose for a donation of the same amount to the food bank. 392 respondents decided for the donation to the food bank (3920 euro has been donated to the food bank in February 2021). The respondents also received motivational slides throughout the survey indicating the percentages of how far they've gone and how much they have left so that they would be motivated to finish the survey till the end.

2.7. Data analysis

2.7.1. Quantitative analysis

The data analysis for this report has been carried out using either the statistical package SPSS version 27 or Microsoft Excel 2016. For the quantitative analysis, we have looked at the frequencies of the answers within each question as well as we have conducted longitudinal comparison with the previous versions of the Barometer survey. For the graphical presentation of the figures we have used the Microsoft Excel 2016 or the Visme programme.

Data in figures are reported mostly as percentages rounded to up to integer numbers. For a sample $N > 1000$ respondents, the sampling error margin for all estimated proportions (e.g. the proportion of people saying they strongly agree with a statement) corresponding to a 95% confidence interval is 3%.

All data files underlying the study as well as the literature references are available for consultation and are stored at Alexandria (internal data storage system) with a limited access.

3. RISK PERCEPTION AND CONFIDENCE IN AUTHORITIES

3.1. Risk perception



In 2021 the highest risk perception is related to a large scale epidemic (66%) which is not surprising since Belgium was in lock-down due to the second wave of the COVID-19 pandemic during the field work. This value has increased significantly from 2006 (mean= 2.79, SD=.95) and 2009 (mean= 3.8, SD=1.04) to 3.87 (SD=1) in 2021. The second-highest risk perception is related to environmental pollution (57% of people perceive it as very high or high risk). Among radiological risks for people's health within the next 20 years, the highest risk is perceived to be that from malicious use of nuclear technologies by terrorists (52% of people perceive it as very high or high risk). Half of the respondents had a high or very high risk perception for risks due to climate crisis (50% of perceive it as very high or high, risk). Natural radiation (from soil or from space) generates the lowest risk perception among respondents with almost half of the respondents (47%) perceiving it as a low, very low risk, or no risk at all from this risk domain and 16% perceiving it as a high or very high risk.

Risk perception is a recurrent theme in the SCK•CEN surveys since the first edition in 2002. From 2015, it focuses on personal, rather than general risk perception. The question asked to the respondents is: *"How do you perceive the potential risk to your health within the next 20 years from each of the following sources?"*. The answering categories consists of a 6-point likert scale ranging from *"no risk at all"* (1) to *"very high risk"* (6).

To evaluate the perception of potential risks to respondents' own health within the next 20 years, we investigated 15 risk domains. These risk domains were: Environmental pollution; Radioactive waste; Chemical waste; An accident in a chemical installation; An accident in a nuclear installation; Natural radiation (from the soil or from space); The use of ionizing radiation for medical tests or treatments; The use of ionizing radiation for food sterilization; The use of recycled material with low levels of radioactivity for buildings; Extension of the operational lifetime of nuclear reactors Doel 1 and 2; Malicious use of nuclear technologies by terrorists; Large scale epidemic; and Climate crisis. In the present edition we also added two items measuring perception of radon risks. Respondents were divided in two groups where each of them received one item about radon, but framed in a different way than in the other group. This way, one group (N= 558) received the framing "Indoor air pollution due to radon" and the other group received the framing "The presence of the naturally radioactive gas- Radon".

As the results in the figures below show, in 2021 the highest risk perception (**with a mean of 3.87, SD= 1.0**) is related to a **large scale epidemic**, where **66% of people perceive it as very high or high risk**. It is important to note, that the field work was conducted during the second wave of Covid-19 and during the second lock-down in Belgium. The results clearly reflect the impact of COVID-19 on risk perception concerning this risk domain. Other risk domains showing large proportions of respondents with **high or very high risk perception among the respondents are environmental pollution (57%, with a mean of 3.65, SD of 1), malicious use of nuclear technologies by terrorists (52%, with a mean of 3.54, SD of 1.23), and climate crisis (50%, with a mean of 3.51, SD of 1.12).**

Among **radiological risks**, most risky for the health within the next 20 years is perceived to be the malicious use of nuclear technologies by terrorists (mean 3.54, SD of 1.23), followed by radioactive waste (mean 3.36, SD of 1.36), an accident in a nuclear installation (mean 3.3, SD= 1.41). Other radiological risks, such as indoor air pollution due to radon (mean 2.91 , SD=1.2), extension of the operational lifetime of nuclear reactors Doel 1 and 2 (mean 2.87, SD=1.32), the use of recycled material with low levels of radioactivity for buildings (mean 2.83, SD=1.19) and the presence of the naturally radioactive gas- Radon (mean 2.72, SD=1.31) are, on average, perceived as lower risks. The use of ionizing radiation for medical tests or treatments (mean= 2.64, SD=1.15) and the use of ionizing radiation for food sterilization (mean 2.63 and SD=1.22) were perceived among the lowest risks. **Natural radiation (from soil or from space) constitutes the lowest risk perception among respondents (mean of 2.36, SD of 1.21) with 47% of them perceiving this as very low or low risk, or no risk at all** and only 16% considering it as a high or very high risk.

It is interesting, that many respondents had difficulty to express their perceptions related to the health risks from indoor air pollution due to radon: 19% of the population chose the "I don't know" answer. A similar result was recorded for the risks coming with the use of ionizing radiation for food sterilization where 17% of respondents selected the "I don't know" answer.

How do you perceive the potential risk to your health within the next 20 years from each of the following sources?

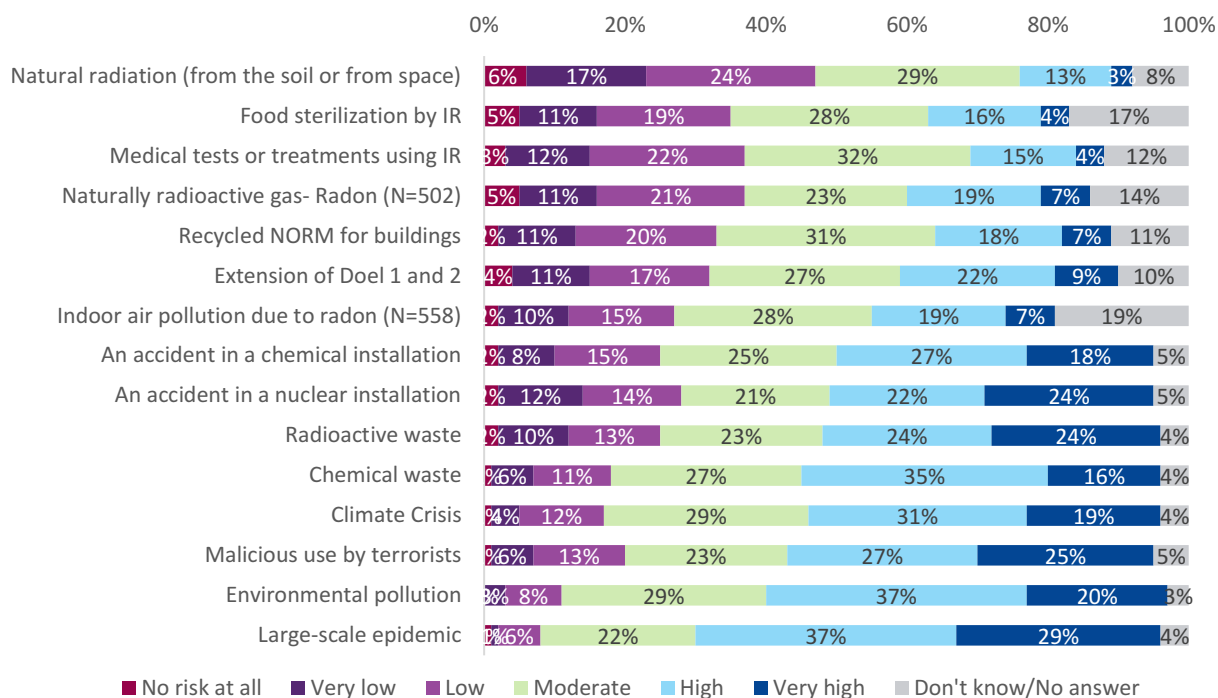


Figure 2. Respondents' perception of risk from various domains. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

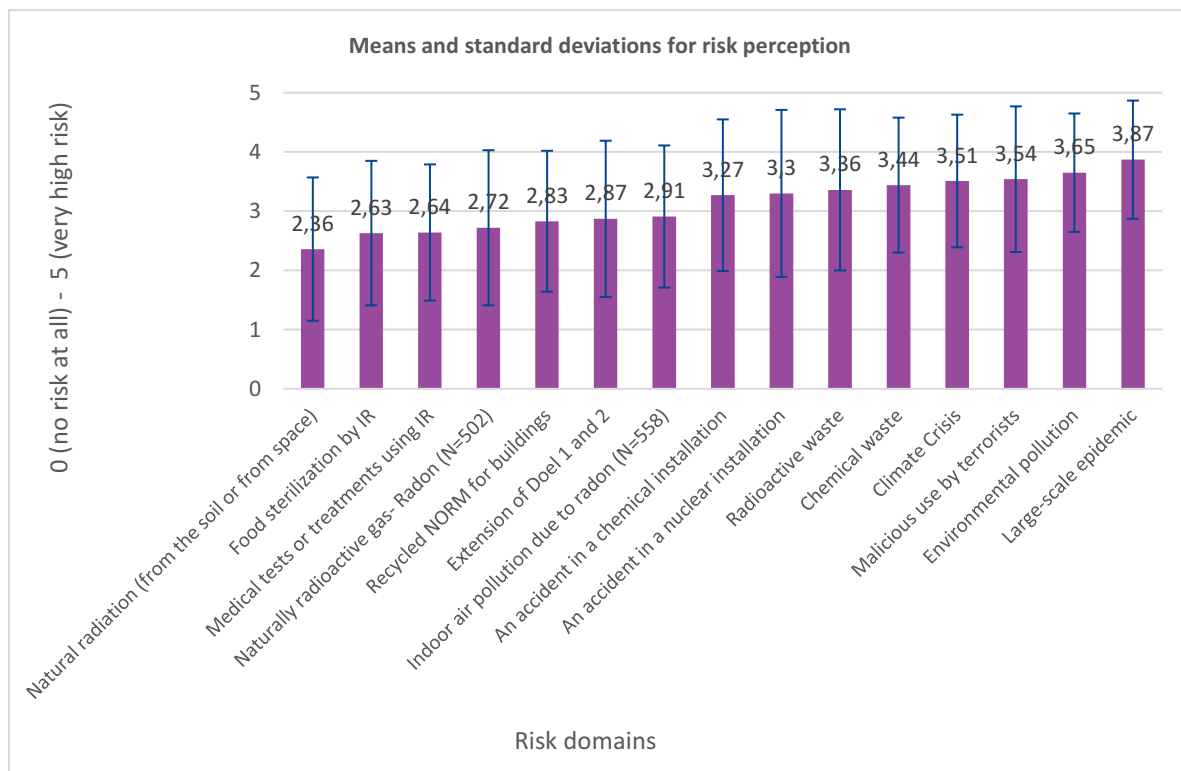
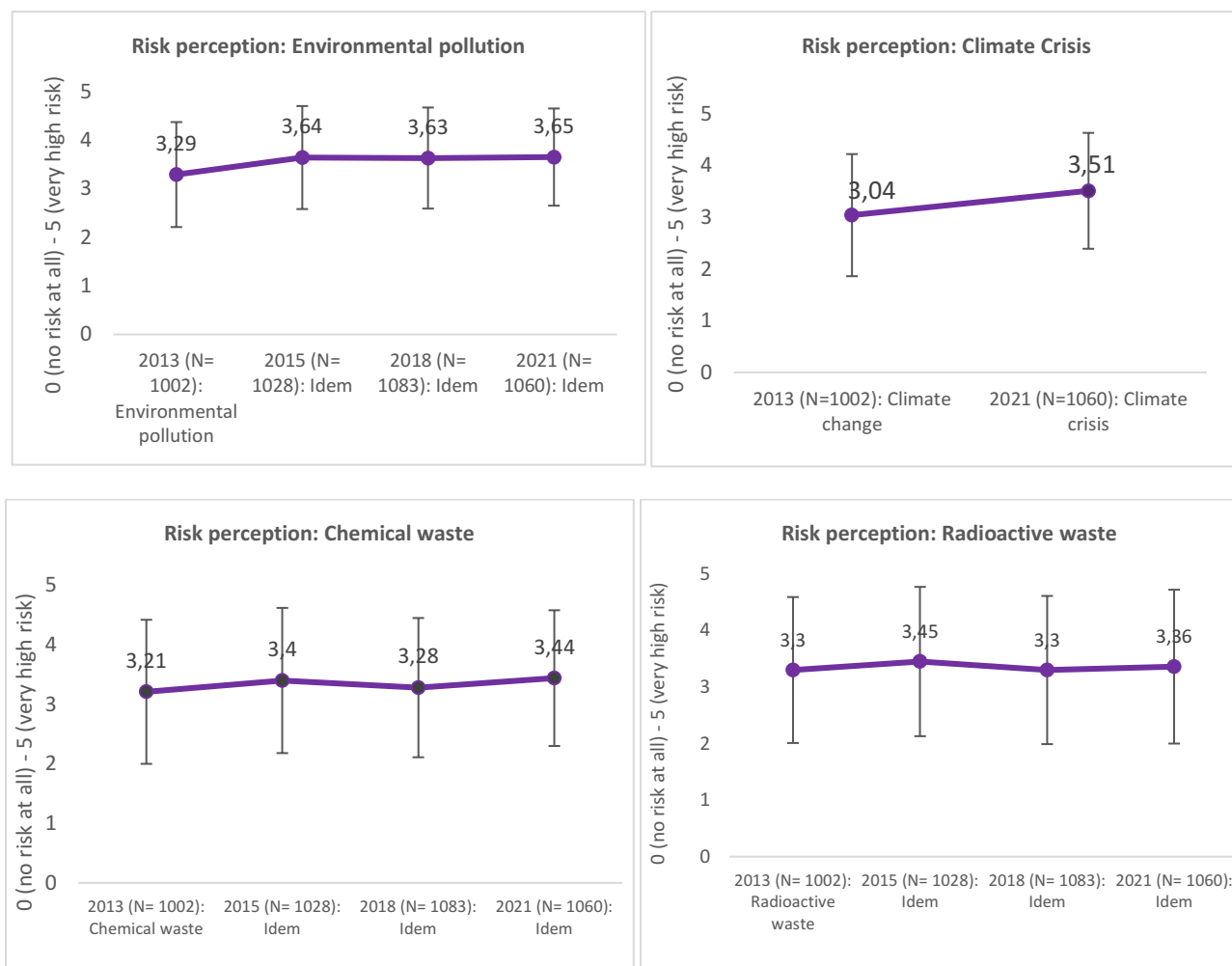
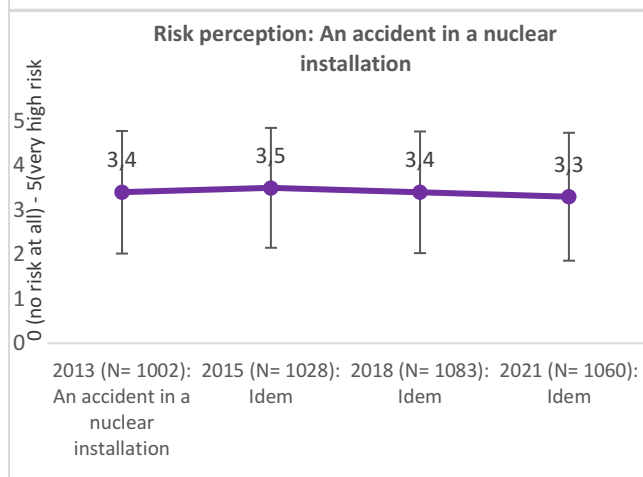
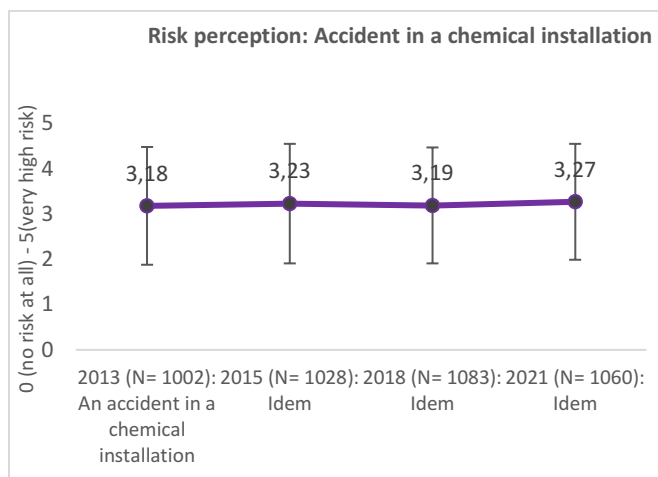


Figure 3. Means and standard deviation of respondents' perception of risk from various domains. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

In the longitudinal analysis we see that for environmental pollution there is an increase in risk perception in 2021 in comparison with 2013 (mean of 3.29, SD=1.08) but in comparison with the results of 2015 (mean 3.64, SD=1.06) and 2018 (mean 3.63, SD=1.04), it remains more or less similar. There is also an increase in the perception risk related to climate (mean 3.51, SD=1.12 in 2021 for climate crisis and mean 3.04, SD= 1.18 in 2013 for climate change). An increase in the risk perception can also be noticed when it comes to the malicious use of nuclear technologies by terrorists. In 2015, risk perception concerning this risk domain had a mean of 3.29 and SD=1.39, whereas in 2021 it has a mean of 3.54 and SD=1.23. A slight decrease in comparison with the previous years can also be noticed in terms of risk perception towards an accident in a nuclear installation (mean 3.3, SD=1.41 in 2021 and mean 3.5, SD= 1.35 in 2015) as well as the use of ionizing radiation for food sterilization (mean 2.63, SD=1.22 in 2021 and mean 2.89, SD=1.39 in 2013).





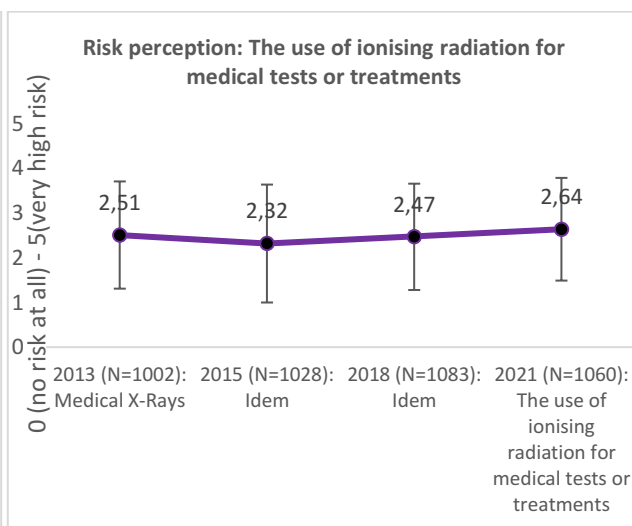
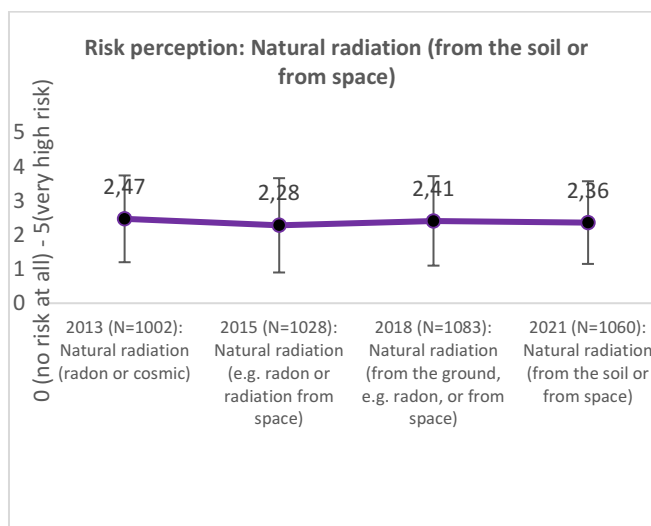
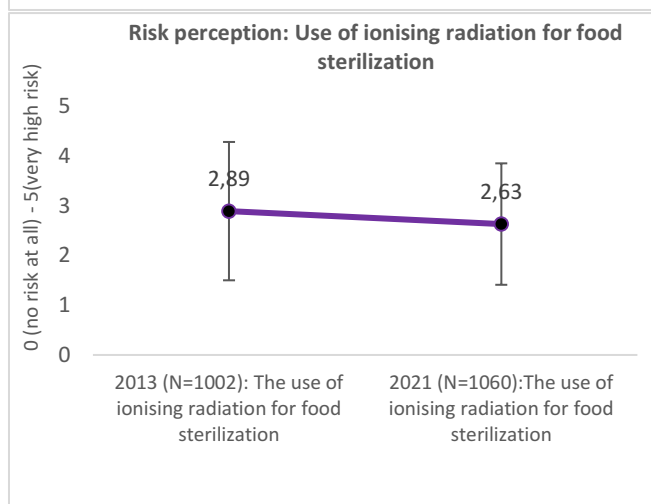
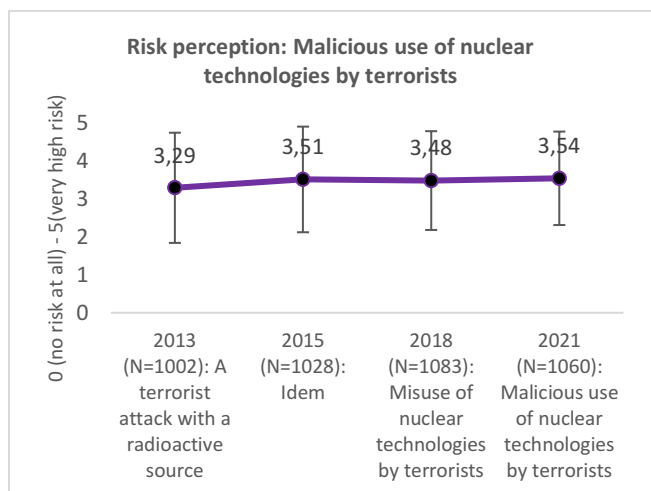


Figure 4. Longitudinal analysis of risk perception items. Answering categories from 0 (no risk at all) to 5 (very high risk). Means and standard deviations for 2013 (N=1002), 2015 (N=1028), 2018 (N=1083), and 2021 (N=1060). Weighted samples.

The question related to a large scale epidemic was also asked in the barometer surveys of 2006 and 2009. In these two years the item was called "*large scale influenza epidemic*". In this year's barometer, we added back this item due to COVID-19 and labelled it as "*large scale epidemic*". As can be seen in the figure below, personal risk perception related to a large scale epidemic has significantly increased from 2006 (mean= 2.79, SD=0.94) and 2009 (mean= 3.34, SD=1.04). It should be noted that in 2006 and 2009 this question related to societal risk perception (risk for an ordinary citizen in Belgium), whereas in 2021 we measured personal risk perception. In 2021, this item had the highest risk perception among our respondents with a mean of 3.87, SD=0.998 This clearly reflects the increase in risk perception due to the COVID-19 situation at the time of the field work.

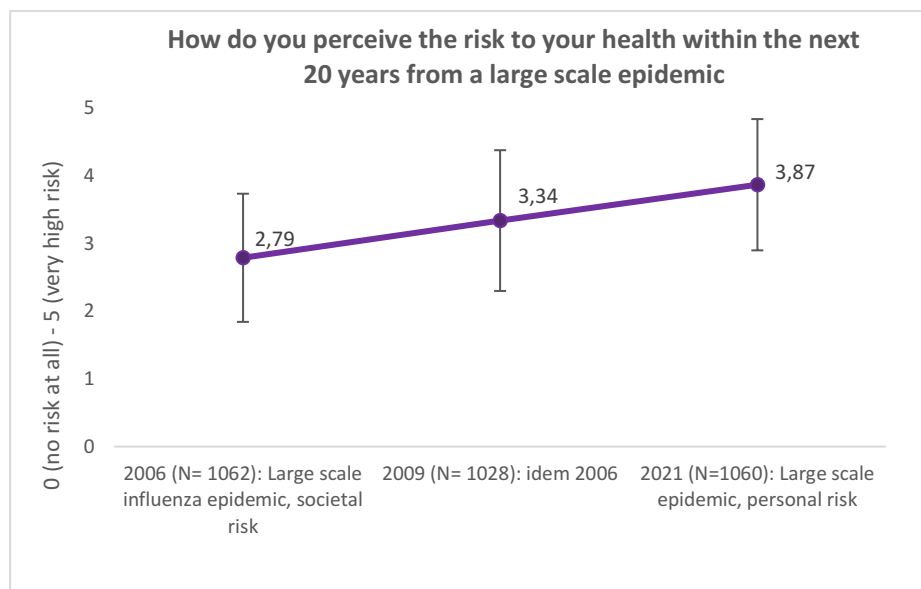


Figure 5. Risk perception concerning large scale epidemic throughout the years. 2006 (N= 1062), 2009 (N= 1028), and 2021 (N= 1060). Weighted samples.

3.2. Confidence in the authorities related to protective actions



Confidence in authorities is more or less similar towards different risk domains. The lowest confidence is seen concerning climate crisis: one in two Belgians have no or (very) little confidence. The highest confidence is seen concerning the use of ionizing radiation for medical tests or treatments, with most one in three Belgians having (very) high confidence. Among radiological risks, the lowest confidence is related to indoor air pollution due to radon (mean= 2.48, SD= 1.09), natural radiation (mean= 2.51, SD= 1.18), and naturally radioactive gas- Radon (mean= 2.56 , SD= 1.13). The highest confidence among these radiological risk domains is for the actions that authorities undertake to protect the population against malicious use by terrorists (mean of 2.8, SD= 1.23) as well as an accident in a nuclear installation (mean 2.81, SD= 1.12). While there is an overall decrease in confidence in authorities, the highest decrease is seen concerning large-scale epidemic.

Confidence in authorities for the actions taken to protect the population against various risks has also been measured since 2002. This year we measured the confidence in authorities for the actions they undertake to protect the population against risks from 15 various sources. These are: Environmental pollution; Radioactive waste; Chemical waste; An accident in a chemical installation; An accident in a nuclear installation; Natural radiation (from the soil or from space); The use of ionizing radiation for medical tests or treatments; The use of ionizing radiation for food sterilization; The use of recycled material with low levels of radioactivity for buildings; Extension of the operational lifetime of nuclear reactors Doel 1 and 2; Malicious use of nuclear technologies by terrorists; Large scale epidemic; and Climate crisis. Similar to risk perception, this year we also added two items measuring confidence in authorities to protect the population from the risks of radon. Here too, respondents were divided in two groups where each of them received one item about radon, but framed in a different way than in the other group. This way, one group (N= 558) received the framing "*Indoor air pollution due to radon*" and the other group received the framing "*The presence of the naturally radioactive gas- Radon*". The answering categories consisted of a 6-point likert scale ranging from "*none*" to "*very high*". In 2021 the answering category "*none*" was thus added to the original scale used in previous years which ranged from 1=very low to 5=very high.

As the figures below show, confidence in authorities is more or less similar towards different risk domains with **the lowest confidence showed when it comes to the climate crisis (49% have no or (very) little confidence, mean of 2.36, SD=1.18)** and **the highest confidence showed when it comes to the use of ionizing radiation for medical tests or treatments (27% have (very) high confidence, with a mean of 2.95, SD= 1.09).**

Among radiological risks, the **lowest confidence is related to indoor air pollution due to radon (39% saying they have no or (very) little confidence), natural radiation (40% no or (very) little confidence), and naturally radioactive gas-Radon (35% have no or (very) little confidence).** It is important to state, though, that the percentage of respondents that opted for "I don't know" option among these three domains is quite high as well (20%, 14%, 17%, respectively). The **highest confidence among these radiological risk domains is for the actions that authorities undertake to protect the population against malicious use by terrorists (mean of 2.8, SD= 1.23) as well as an accident in a nuclear installation (mean 2.81, SD= 1.12).**

The confidence level remains below average also for other risk domains such as extension of Doel 1 and 2 (mean= 2.62, SD= 1.25), recycled NORM for buildings (mean= 2.64, SD= 1.1), chemical waste (mean= 2.65, SD= 1.28), large-scale epidemic (mean= 2.69, SD= 1.21), radioactive waste (mean= 2.73, SD= 1.23), and food sterilization by ionizing radiation (mean= 2.78, SD= 1.12).

How much confidence do you have in the authorities for the actions they undertake to protect the population against risks from each of the following sources?

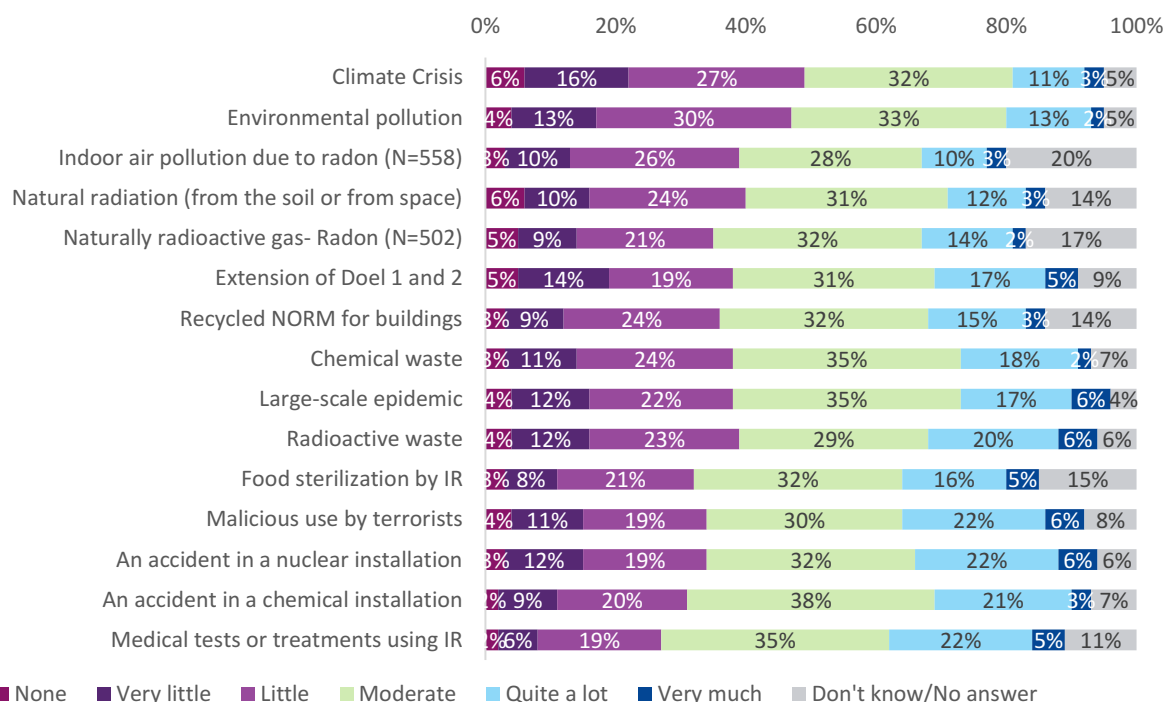


Figure 6. Respondents' confidence in the authorities for the actions they undertake to protect the population against various risk sources. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

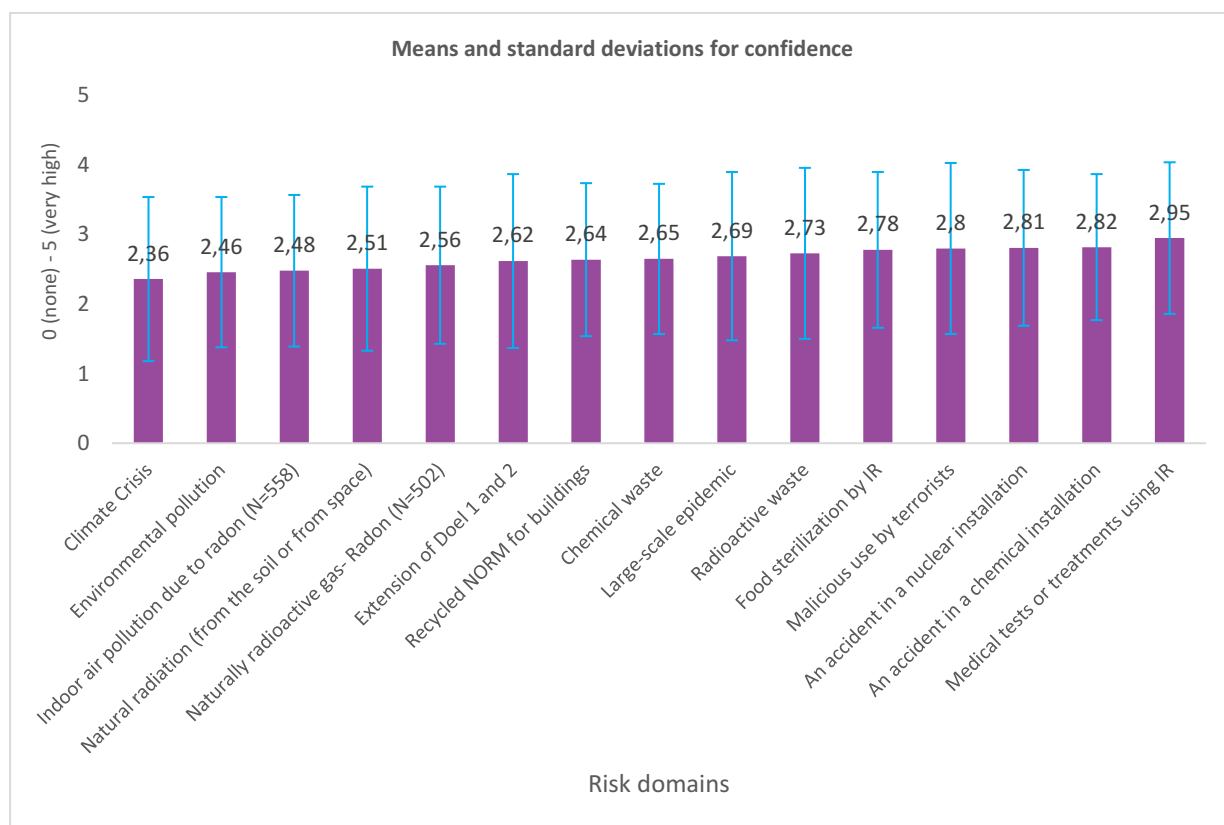
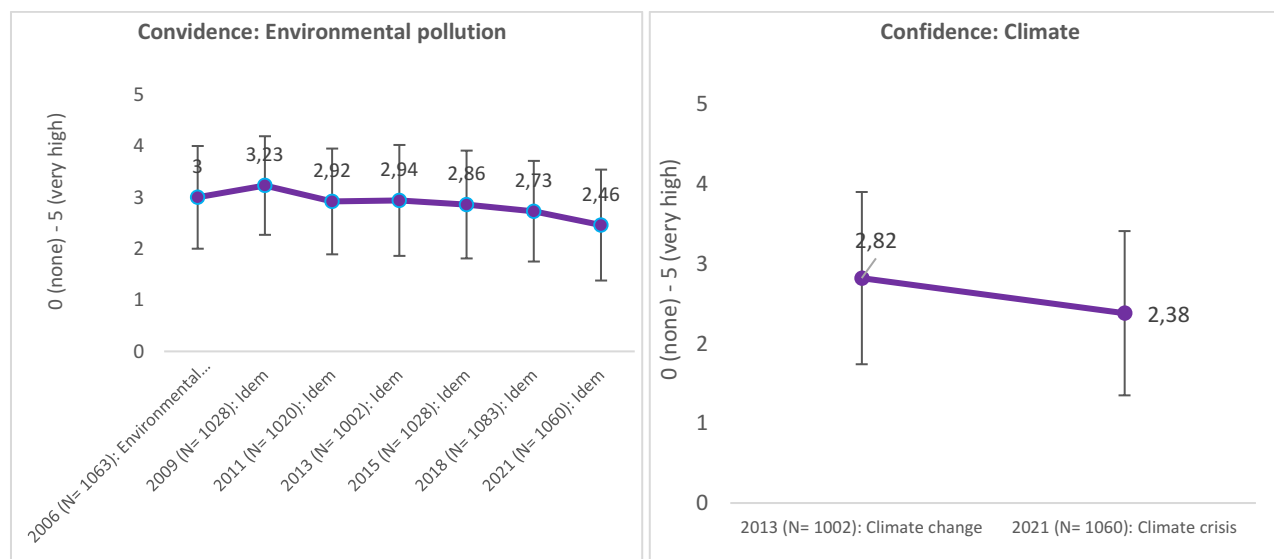
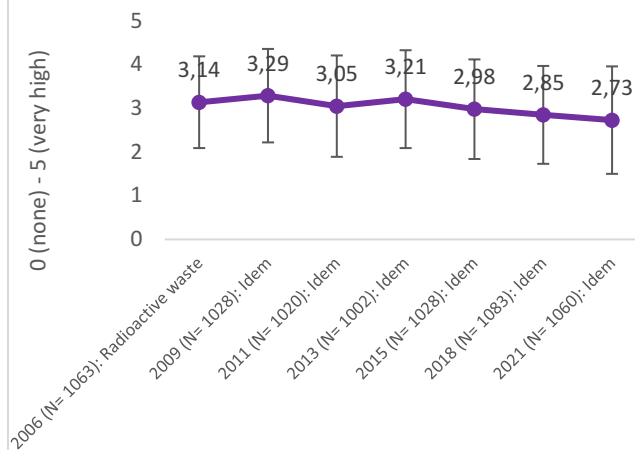
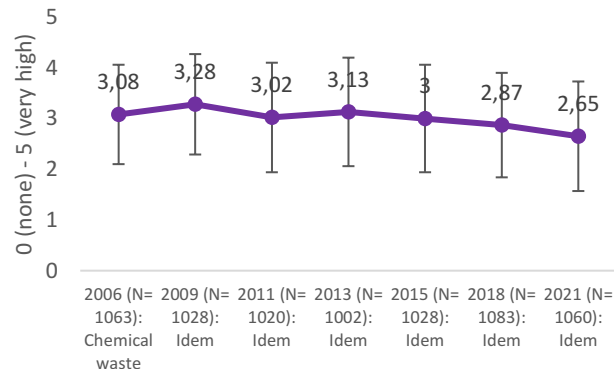
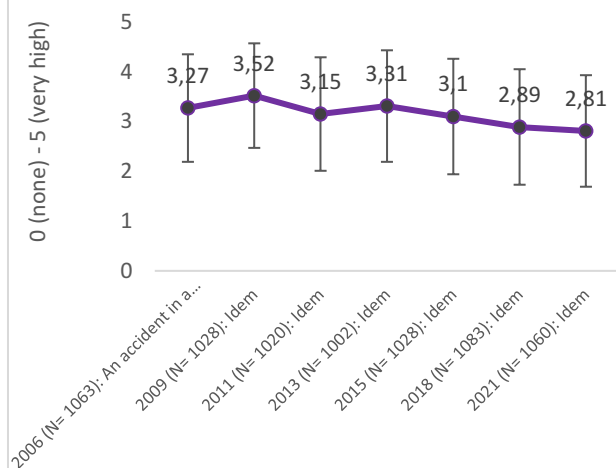
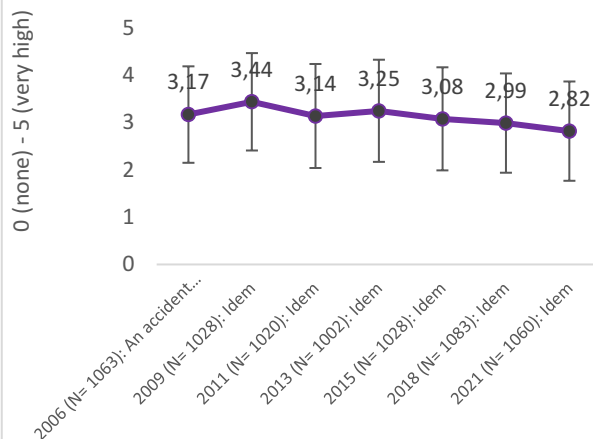
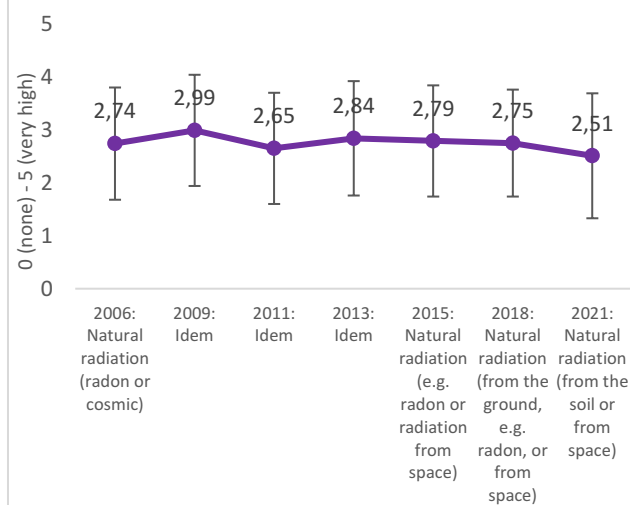
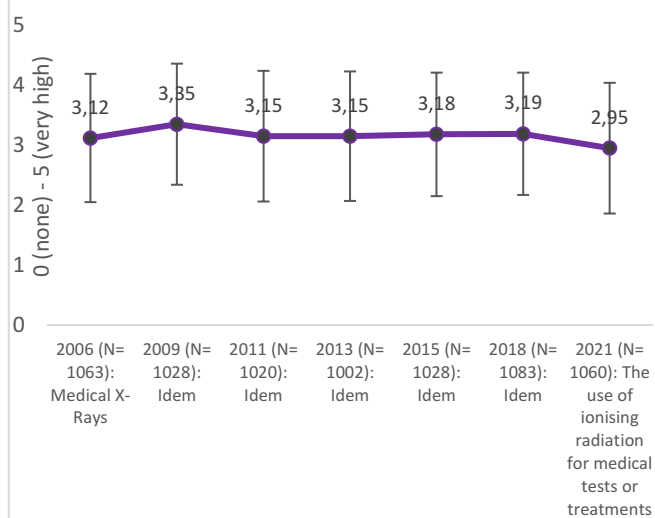


Figure 7. Mean and standard deviation values concerning respondents' confidence in the authorities for the actions they undertake to protect the population against various risk sources. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

For the longitudinal analysis, it has to be taken into account that in previous editions, a scale of 1=very low confidence to 5=very confidence was used, whereas in 2021 an additional category was used: "no confidence at all " (coded 0). Notwithstanding this change of scale, confidence in authorities seems to have decreased over time for several domains such as environmental pollution, climate crisis, radioactive waste, chemical waste, an accident in nuclear or chemical installation, natural radiation, and malicious use of nuclear technologies by terrorists. Taking into consideration that the fieldwork for this survey has been done during the 2nd lock-down of COVID-19 pandemic, it is interesting to see that confidence in authorities to protect the population against large-scale epidemics has significantly decreased from 2009 (mean= 3.19, SD= 0.94) to 2021 (mean= 2.69, SD= 1.21). There is higher confidence in the actions that authorities undertake to protect the population against the risks of the use of ionizing radiation for food sterilization, though. In 2013 the mean value was 3.04 (SD= 1.07), in 2021, it is 3.78 (SD= 1.12).



Confidence: Radioactive waste**Confidence: Chemical waste****Confidence: An accident in a nuclear installation****Confidence: An accident in a chemical installation****Confidence: Natural radiation (from soil or from space)****Confidence: use of ionising radiation for medical tests or treatments**

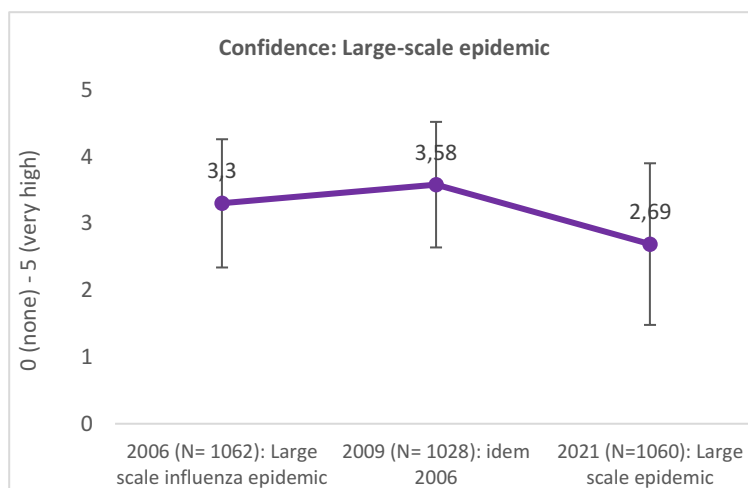
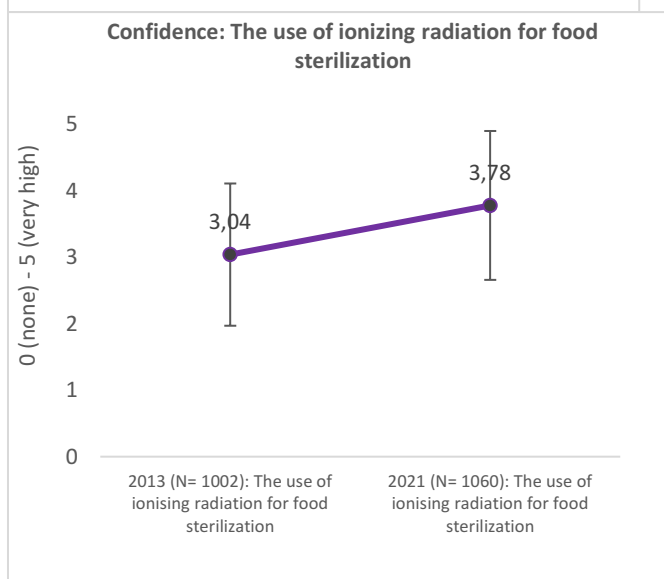
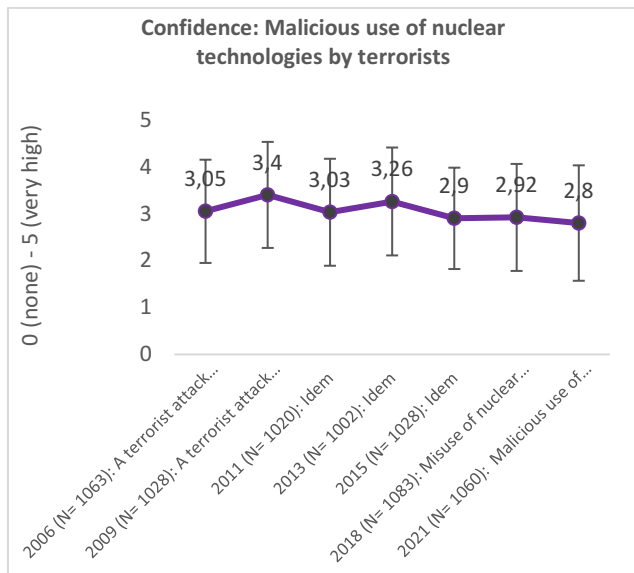


Figure 8. Longitudinal comparison of confidence in authorities for the actions they undertake to protect the population against risks from various sources. Answering categories starting from 0 (no confidence at all) in 2021 and 1=very low confidence in other years, ..., up to 5 (very high confidence). Weighted samples.

4. ATTITUDE TOWARDS SCIENCE AND TECHNOLOGY



The majority of the Belgian population favors the development of science and technology (S&T). More than half of the population agrees that S&T have made our lives easier, and that future generations will have a better quality of life as a result of it. However, one in three participants is rather neutral when it comes to seeing S&T development as more beneficial or more harmful. While it is clear that adverse effects of S&T are also thought of among the Belgian population, still more than two-third of them agree that we need further

Items measuring attitude towards science and technology (S&T) have been included in several of the past editions of the SCK CEN Barometer. In this edition, we included 4 items including positive and negative connotation regarding attitude towards S&T to which our participants were asked to agree or disagree with. As figure 9 shows, there is a rather positive attitude towards S&T. **63% of our participants agreed or strongly agreed that “future generations will have a better quality of life as a result of S&T”**, whereas only 9% of the participants (strongly) disagreed with this statement. 20% of the participants were rather neutral about this statement. Even a higher percentage of our participants (**76%**) believe that **“S&T makes our lives easier”**, with only 5% disagreeing with this statement and 17% being neutral about it. However, less than half of the respondents (**48%**) agree or strongly agree that **“the benefits of S&T are greater than its harmful effects”**. 32% of the respondents are neutral about this statement whereas 14% (strongly) disagree with it. Although the adverse effects of S&T are pointed by our respondents apart from the benefits, still **74% of them (strongly) disagree that “we do NOT need further development of S&T”**, with only 7% (strongly) agreeing with this statement. 15% of our respondents neither agreed nor disagreed with this statement.

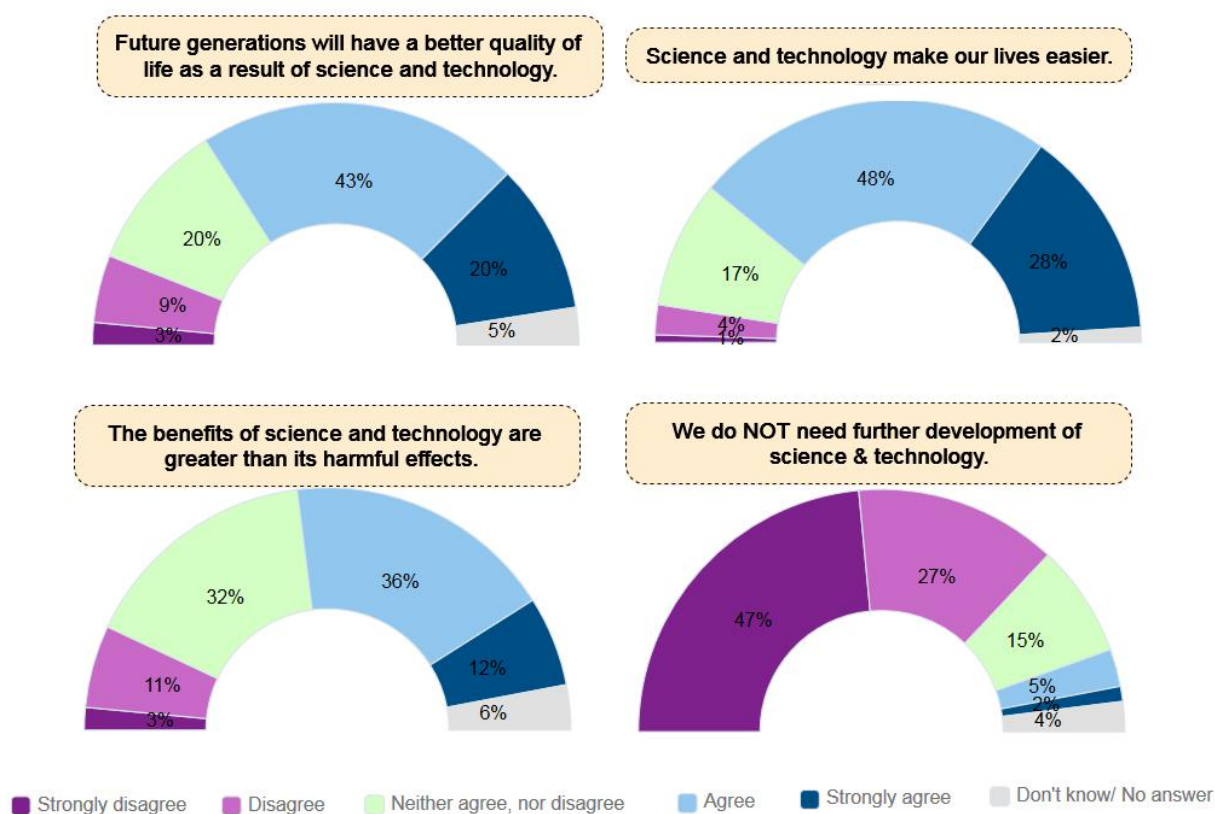


Figure 9. Public attitude towards science and technology. N= 1060, weighted sample

Afterwards, we wanted to measure our participants' overall favorable or unfavorable stance concerning S&T. As figure 10 displays, **there is an overall positive attitude towards S&T with a mean of 4.08 in 2021**. There is an increase comparing to 2018 where this attitude was slightly less positive (mean= 3.97) whereas it does not change much from the other previous years of 2015 (mean= 4.07), and 2013 (mean= 4.07).

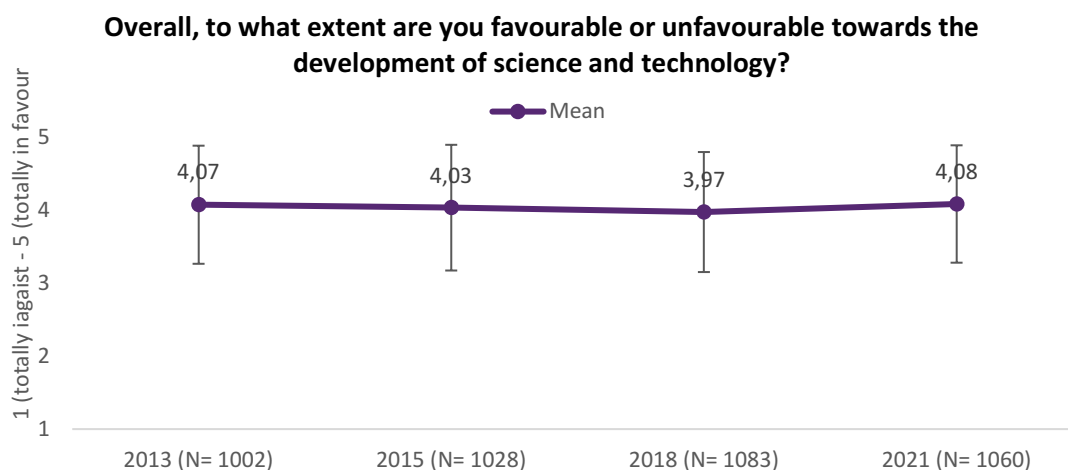


Figure 10. Longitudinal analysis of public opinion towards the development of science and technology. Weighted samples.

5. ATTITUDE TOWARDS NUCLEAR ENERGY



While policy discussion related to nuclear power plants in Belgium seems to be polarized in a sense of “keep them open” or “close them down”, the results of this BAROMETER reveal a more diverse view on nuclear energy. The following three options receive most support by Belgians: keep using existing reactors without any replacement (31%), use existing reactors and build new ones (23%) and immediate closure of the nuclear energy program (20%). Overall, 32% support new build. 65% of Belgians believe that renewable sources are not able to cover for our current energy needs. Longitudinal analysis shows that there is a slight increase in the benefit perceptions of nuclear energy, and a slight decrease on risk perceptions (e.g. less people think that nuclear power plants endanger the future of our children).

General attitudes toward nuclear energy are not polarized in pro, or contra nuclear energy, but they are rather diverse, with only a relatively small part of the population being strongly in favor or strongly against nuclear energy. When asking participants about their opinion concerning the use of nuclear energy for electricity production, we see that **37% are totally or rather in favor of nuclear energy** (11% strongly in favour), **29% neither agree nor disagree**, and **30% rather or totally against** (9% totally against). Preference for nuclear energy has slightly increased, though, in comparison to 2018 where the mean was 3 (SD= 1.15) out of 5, and now is 2.87 (SD= 1.16) (towards the “in-favor” side).

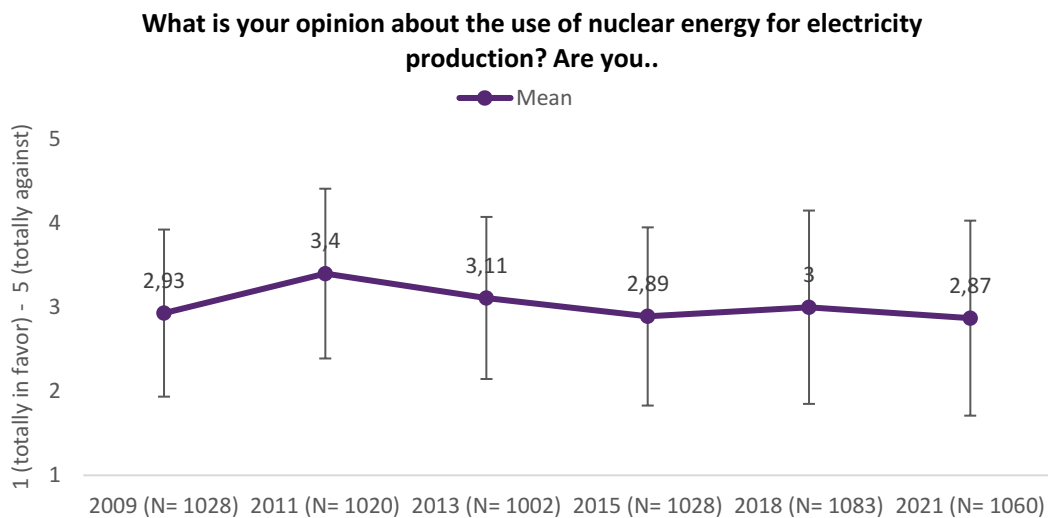


Figure 11. Longitudinal analysis of public opinion about the use of nuclear energy for electricity production. Weighted samples.

As figure 12 displays, **while 45% of the Belgian population (strongly) agrees that the reduction of NPPs in Belgium is a good thing**, 26% (strongly) disagree with this, and 24% are neutral. Similarly, **44% of Belgians (strongly) agree that NPPs endanger the future of our children**, whereas 25% (strongly) disagree with it, and another quarter are neutral about it. Still, **40% of the Belgian population (strongly) agrees that the benefits of nuclear energy outweighs the disadvantages**, 24% is neutral about it, and 25% of the respondents (strongly) disagrees with this statement. Additionally, **nuclear energy technology is seen as a climate friendly technology by one third of the population (34%)**, while another third of the population (31%) doesn't agree with this view and 25% neither agree or disagree with this view.

When asked about renewable energy, **37% of Belgians (strongly) agreed that they are willing to pay more for electricity in order to support renewable energy use**. One third (34%) (strongly) disagreed with this statement and a quarter of the population was neutral about it. **65% of Belgians believe, though, that renewable energy sources are currently not able to cover our energy needs**. Only 11% (strongly) disagreed with this statement, whereas 16% neither agreed, nor disagreed.

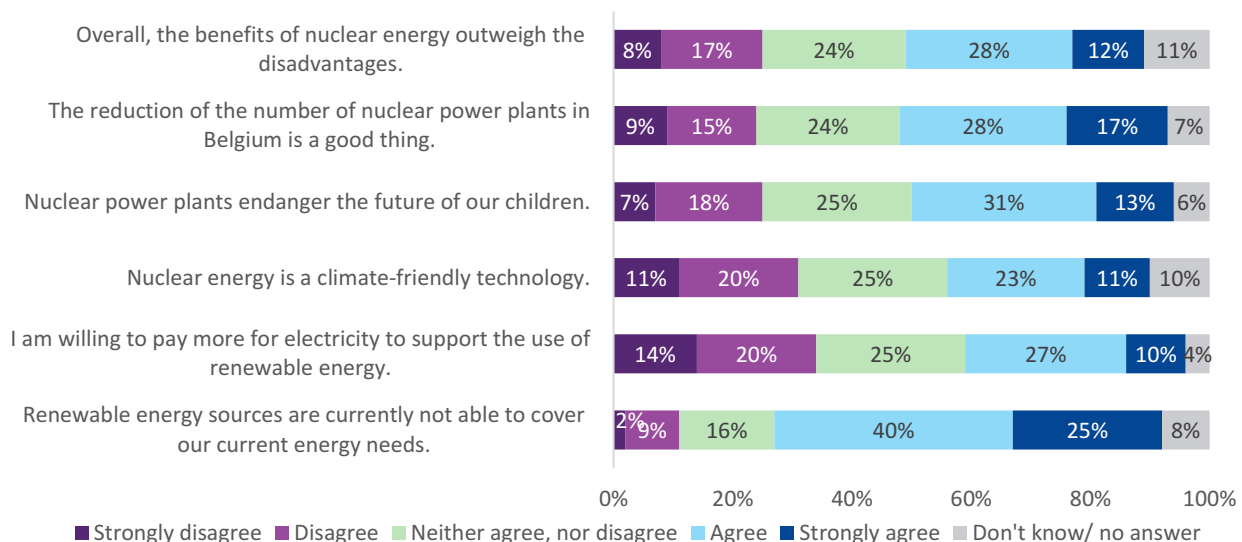


Figure 12. Public attitude towards nuclear energy. N= 1060, weighted sample.

Longitudinal analysis shows that there is an **increase in people's perception of the benefits of nuclear energy in comparison to previous years (mean 3.21, SD= 1.15)**. The **reduction of the number of NPPs in Belgium is seen less of a good thing now (mean 3.31, SD= 1.23)** in comparison to all previous years since 2002. Similarly, **perceived danger from NPPs concerning future generations is now slightly decreased from 3.7 (SD= 1.2) in 2018, to 3.27 (SD= 1.14) in 2021**.

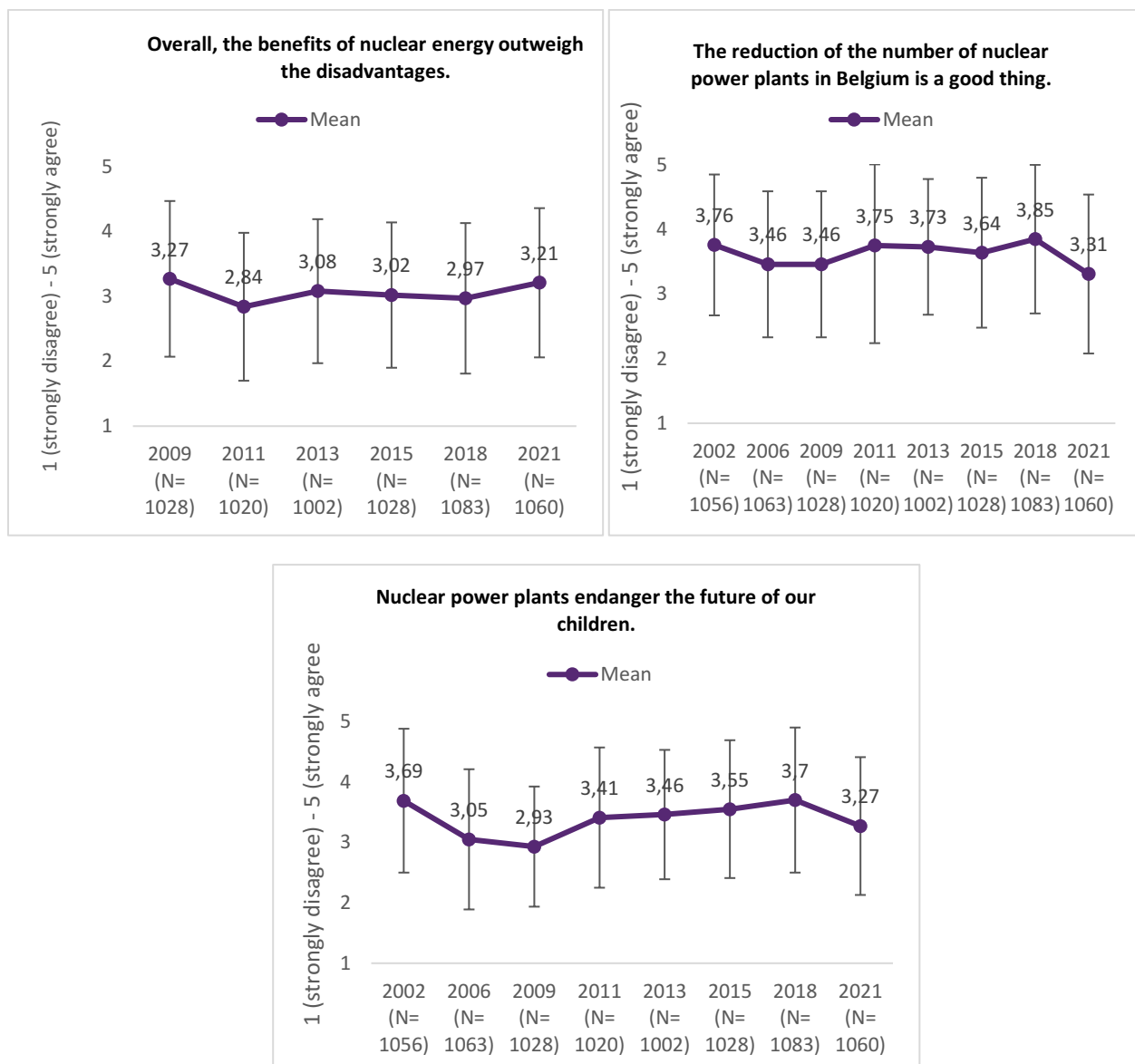


Figure 13. Longitudinal analysis of public attitude towards nuclear energy. Weighted samples.

When asking participants to choose among a number of statements about the future nuclear power plants in Belgium that is closest to their opinion, **one third of the Belgian population agrees with continuing to use the existing nuclear power plants, without building new ones**. 23% of Belgians is of opinion, that Belgium should use the nuclear power plants it already has, and build new ones to replace the old ones. 20% of people is of opinion that Belgium should close all its nuclear power plants as soon as possible, and 9% of people thinks that Belgium should close existing nuclear power plants and building new ones. Some people (6%) was of another opinion than any of the above statements, for instance suggesting that Belgium should switch from nuclear energy to renewable energy as fast as possible.

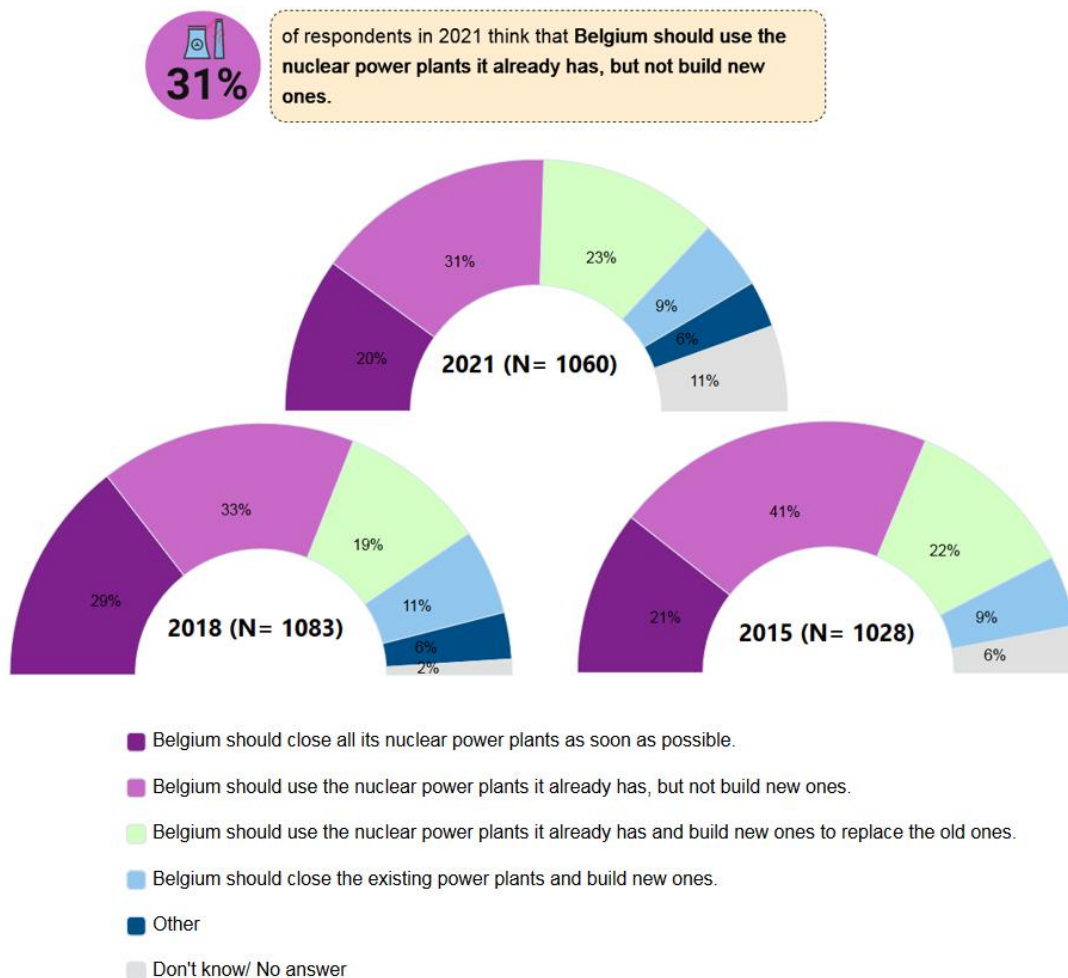


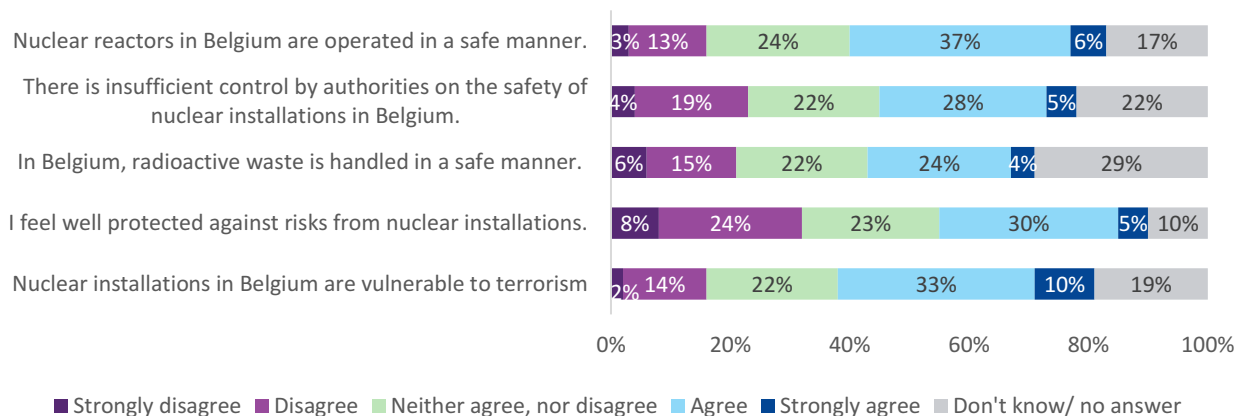
Figure 14. Longitudinal analysis of public opinion concerning what Belgium should do with its nuclear power plants. Weighted samples.

6. CONFIDENCE IN THE MANAGEMENT OF NUCLEAR TECHNOLOGIES



Similar to attitude towards nuclear energy, the confidence in the management of nuclear technologies is almost equally scattered as well. While less than half of Belgians believe that nuclear reactors are operated in a safe manner, this percentage has increased in comparison to previous years. A quarter of Belgians believe that there is sufficient control by authorities, whereas one in three believes that more control is needed. A quarter of Belgians believes that radioactive waste is handled in a safe manner. This belief has remained stable over time. Only 1 in 3 Belgians feels protected against the risks of nuclear installations. This percentage has slightly increased though in comparison to previous years as well. Almost half of Belgians (43%) believe that Belgian nuclear installations are vulnerable to terrorism.

When measuring confidence in the management of nuclear technologies in Belgium, **43% believe that Belgian nuclear reactors are operated in a safe manner**. 24% neither agree or disagree, whereas 16% (strongly) believe that they are not operated in a safe manner. Concerning control by authorities on the safety of nuclear installations, **23% believe there is sufficient control**, 22% are neutral about it, and **33% (strongly) agree that there is insufficient control**. 22% of the respondents did not have an answer to this question. Opinions are almost equally scattered concerning the safety of handling radioactive waste as well. **28% (strongly) agree that it is handled in a safe manner**, 22% are neutral about it, 21% believe it is not safely handled, and one in three (29%) did not have an answer about it. **A bit more than one-third of Belgians (strongly) agrees that they feel protected against risks from nuclear installations**. Another 32% (strongly) disagree with this statement, and 23% are neutral about it. Finally, **43% of Belgians (strongly) believe that Belgian nuclear installations are vulnerable to terrorism**. 16% (strongly) disagree with this statement, 22% neither agree, nor disagree, whereas 19% do not know what to say about it.



The belief that **nuclear reactors in Belgium are operated in a safe manner has increased to a mean of 3.39 (SD= 0.94)** in comparison to 2018 (mean 3.17, SD= 1.13). a similar increase is also seen in the extent to which Belgians feel protected against risks from nuclear installations. In 2018 the mean value was 2.78 (SD= 1.26), whereas now it is 3 (SD= 1.08)

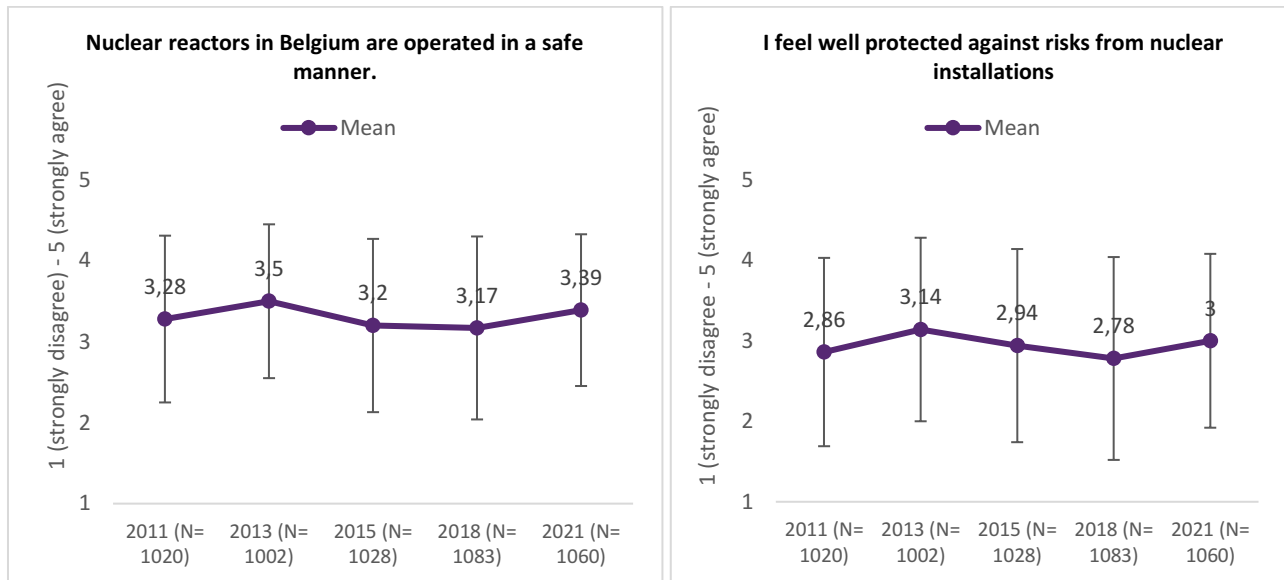


Figure 15. Public confidence in the management of nuclear technologies. N=1060, weighted sample.

Confidence in the safety of the handling of radioactive waste and safety of nuclear installations in Belgium has remained more or less similar through time. We see a similar mean value in 2021 as compared to previous editions.

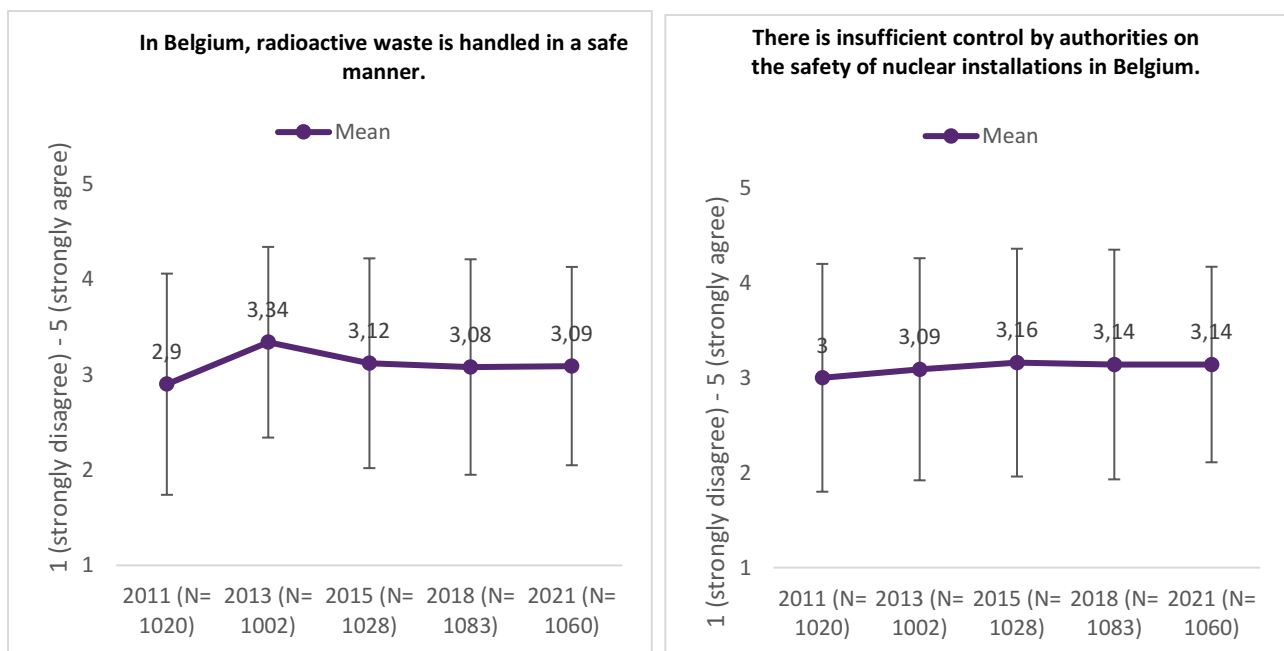


Figure 16. Longitudinal analysis of public confidence in the management of nuclear technologies. Means and standard deviations. Weighted samples.

7. ACTORS IN THE NUCLEAR FIELD



ENGIE Electrabel was the actor with which our respondents were most familiar with (93%). They were followed by environmental organizations (86%), and afterwards by FANC (48%), SCK CEN (36%), scientists from universities (33%), and ONDRAF/NIRAS (28%). Despite being the most known, ENGIE is the least trusted actor in terms of telling the truth about risks and benefits of nuclear technologies (mean 2.9, SD= 0.97) and the second-lowest in terms of technical competence (mean= 3.39, SD= 0.90). The actors that are appreciated the most in terms of telling the truth and being technically competent are scientists from universities and SCK CEN.

The investigation of perceived competence and trustworthiness of nuclear actors is a recurring topic in the BAROMETER surveys. Similar to the previous editions, the respondents were asked to indicate if they knew various actors in the nuclear field. For those actors they knew, they were asked to state their opinion whether the actor “*is telling the truth about risks and benefits of nuclear technologies*” and how they evaluated the actor as “*technically competent in this domain*”.

Results show that among the most known actors is ENGIE Electrabel, which was known by 93% of our respondents. ENGIE is followed by environmental organizations (86%), and afterwards by FANC (48%), SCK CEN (36%), Scientists from universities (33%), and ONDRAF/NIRAS (28%).

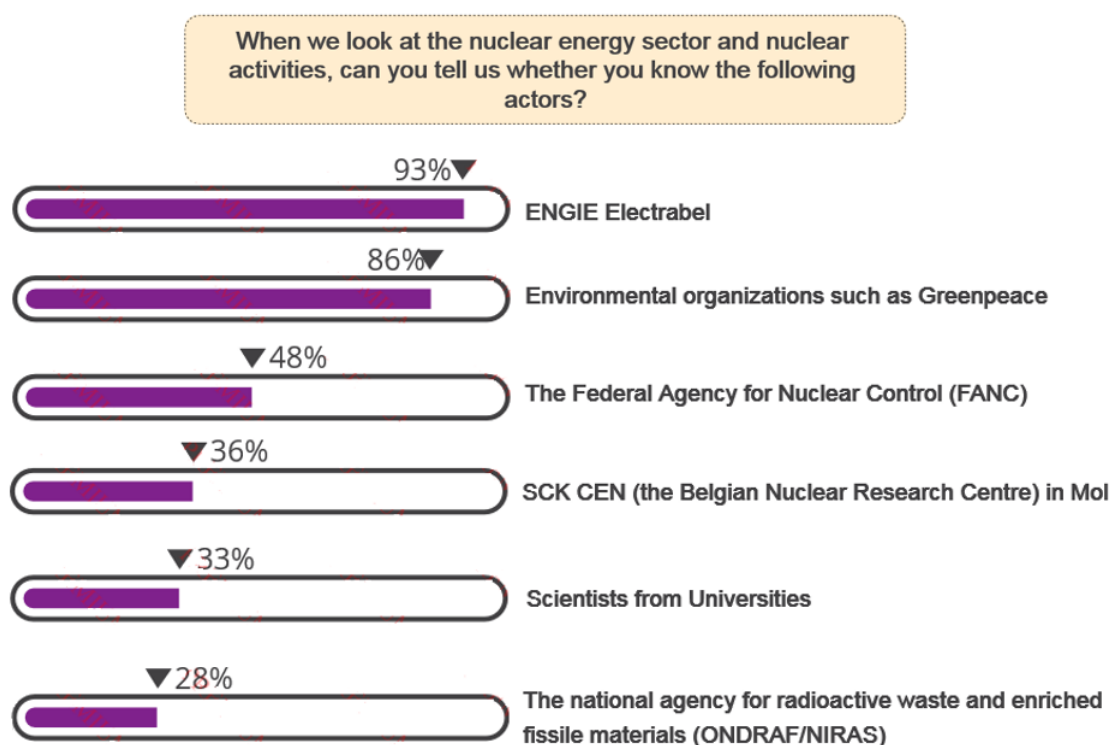


Figure 17. Public familiarity with different actors involved in the nuclear energy sector and nuclear activities. N=1060, weighted sample.

Similar to previous years, **scientists from universities are the most trusted actors in terms of telling the truth about risks and benefits of nuclear technologies (mean= 3.89, SD= 0.79)**. They are followed by SCK CEN (mean= 3.79, SD= 0.86), FANC (mean= 3.65, SD= 0.87), ONDRAF/NIRAS (mean= 3.63, SD= 0.88), and environmental organizations (mean= 3.34, SD= 0.97). **The actor with the lowest score in terms of telling the truth is perceived to be ENGIE with a mean of 2.9 (SD= 0.97).**

When it comes to being technically competent to point out the risks and benefits of nuclear technologies, scientists from universities (mean= 4.04, SD= 0.84) and SCK CEN (mean= 4.03, SD= 0.76) again score the highest. FANC (mean= 3.68, SD= 0.78) and ONDRAF/NIRAS (3.83, SD= 0.81) score similarly well. The least technically competent are perceived to be environmental organizations (mean= 3.19, SD= 0.97) and ENGIE (mean= 3.39, SD= 0.90).

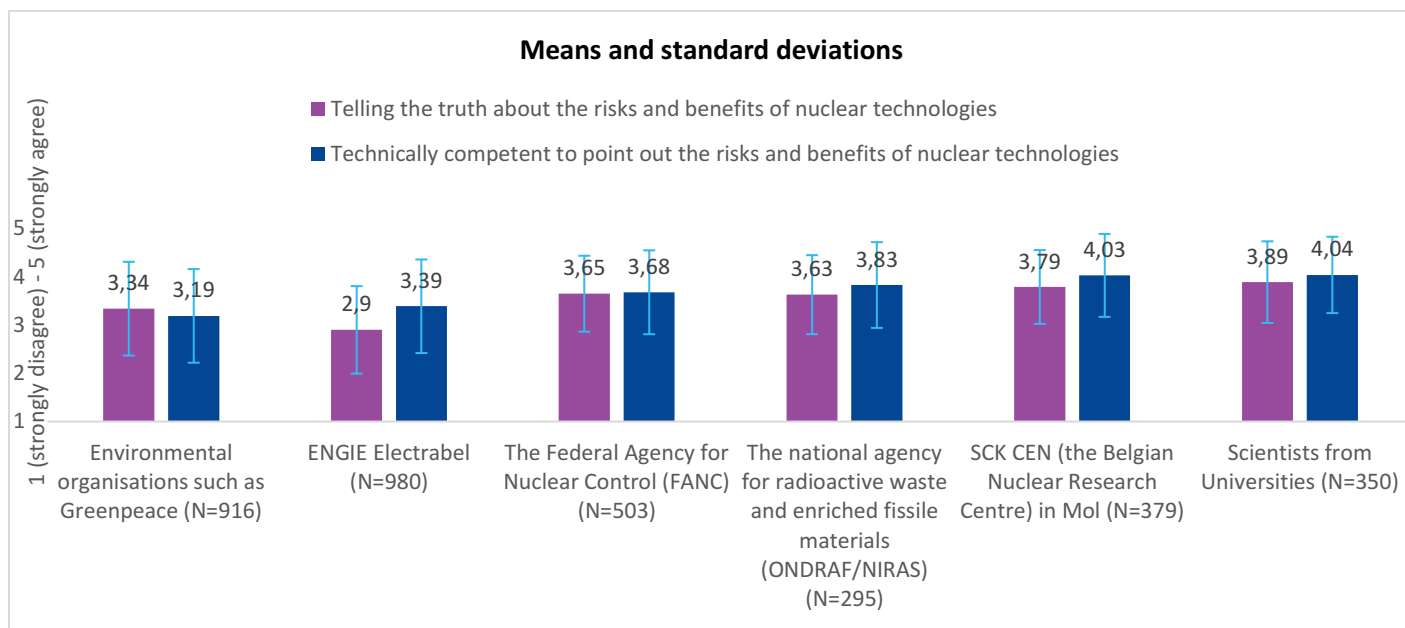


Figure 18a. Public opinion about trustworthiness and technical competence of various actors involved in the nuclear energy sector and nuclear activities. Means and standard deviations. N=1060, weighted sample.

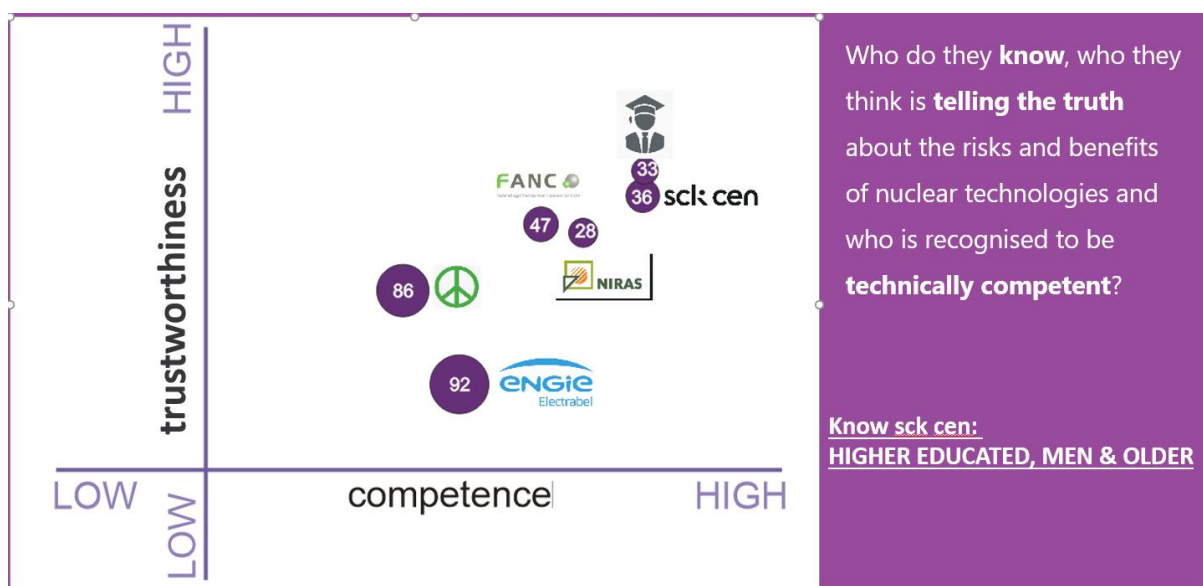


Figure 18b. Trustworthiness and competence of various actors

8. DECOMMISSIONING OF NUCLEAR INSTALLATIONS



Although most of people are not attentive to what happens with nuclear power plant after they have permanently stopped producing nuclear energy and they feel as rather poorly informed, a big majority of the population is open for any media information related to nuclear power plants after their operational lifetime. Most of people perceive the risk of an nuclear power plant after its operational life time as a low or moderate risk for their health. When asking respondents how they perceive the potential risk to their health from the extension of the operational lifetime of nuclear reactors Doel 1 and Doel 2, we can notice that Belgians are distributed in three similar groups: those perceiving extension of the operational lifetime as risky, those who perceive it as safe and those who perceive it as a moderate risk. An interesting finding relates to public expectations related to decommissioning. In comparison to 2015, there is a significant decrease in the number of people thinking that removing all traces of the nuclear power plant after its operational lifetime is the best option. Public participation intention among the general population has significantly increased in comparison to 2015. However, when we tell participants that “currently there is an initiative” involving members of the public, the percentage of people who do not want to participate at all is 50% higher than in a hypothetical situation. Trust in various actors to make good decisions about decommissioning is rather high, with experts and FANC-AFCN perceived as the most trustworthy actors. When it comes to feelings concerning decommissioning, 38% of the respondents said they are worried and 38% express feelings of tranquility. 66% say they are interested in the topic of decommissioning and 40% indicate they are rather optimistic about it. Finally, 62% of the respondents would like to receive information about decommissioning even if some aspects about it are still uncertain.

A section addressing the decommissioning of nuclear installations was included for the first time in the 2015 edition of the Barometer (N= 1028) in order to investigate public opinion about decommissioning, the knowledge related to it, the expectations about the decommissioning outcome and the risk perception of decommissioned nuclear power plant in Belgium.

In 2018, a small number of decommissioning questions were asked to a boost sample for the population living in the vicinity of Nuclear power plants in Doel and Tihange in Belgium (N=315) with the main focus on investigating public opinion regarding what should be done after nuclear installations are shut down and also the extent to which people are willing to participate in decision-making procedures related to decommissioning.

In the 2021 edition we have added several other items concerning decommissioning in order to measure public perceived knowledge, public opinion, expectations about the outcomes, risk perception, participation intention in decision-making procedures, attitudes towards one's participation in decision-making procedures, trust in different actors when it comes to decommissioning, different feelings that decommissioning might raise among the public, and public willingness to receive information about decommissioning even if that information is still uncertain. Given that laypeople may not know what decommissioning means, in the beginning of the decommissioning section we provided them with a brief introduction stating that “The following questions are related to Belgian nuclear power plants after they've permanently stopped producing nuclear energy”.

8.1. Public attentiveness to nuclear power plants after they've permanently stopped producing nuclear energy

In order to investigate public attentiveness to nuclear power plants after they've permanently stopped producing nuclear energy, respondents were first asked three questions.

When asking people whether they “*have ever thought about what happens with a nuclear power plant after it has permanently stopped producing nuclear energy*”, we found that more than half of the Belgian population (**55%**) **has never thought about it** and 45% has reflected about it. This indicates an increase in the attention to this topic in comparing to the same question

asked in 2015 when **35%** of the population said that they have at least once reflected about it. A slight increase was also found when comparing with the Belgian local population (N= 315) who received this question in 2018. Among this sample, 4 out of 10 people (41%) said that they have once reflected about what happens with an NPP after it permanently stops producing nuclear energy.

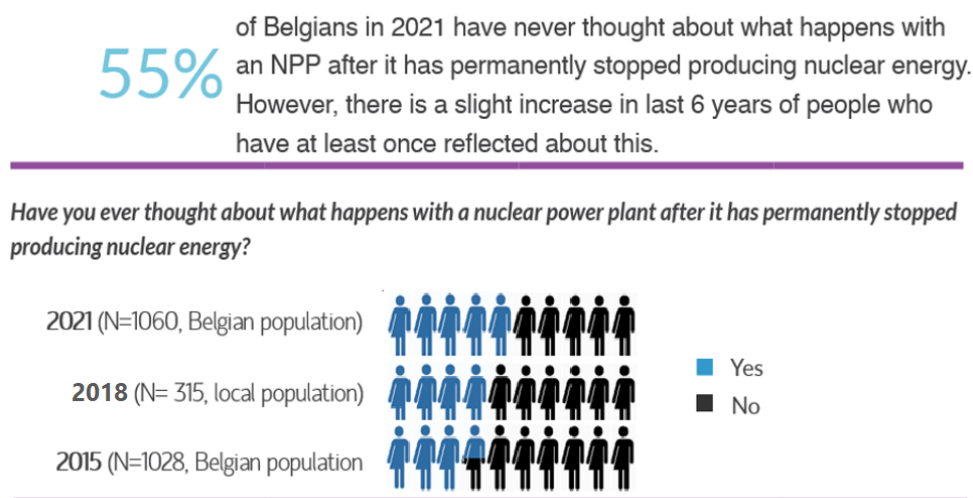


Figure 19. Public reflection about what happens with a nuclear power plant after it permanently stops producing nuclear energy. (2021, N=1060; 2018, N=315; 2015, N=1028) samples are weighted.

Further, the respondents were asked "To what extent do you consider yourself to be informed about what happens with a nuclear power plant after it has permanently stopped producing nuclear energy?" Descriptive analysis shows **that two-third of the population (68%) perceive themselves to be uninformed or little informed** about it, whereas **only 9% perceive themselves as rather well or very well informed**. 18% of the population perceive themselves as moderately informed.

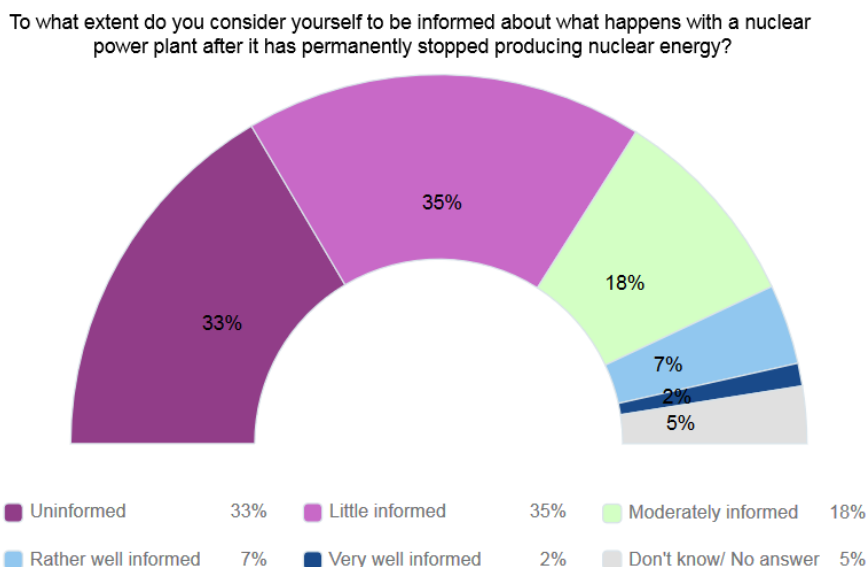


Figure 20. Public perceived level of information concerning what happens with a nuclear power plant after it permanently stops producing nuclear energy. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

The last question about public attentiveness asked the respondents "If you saw a news article related to what happens with a nuclear power plant after it permanently stops producing nuclear energy, would you take the time to read it?". Results show that the majority of the population (**82%**) **said that they will probably or definitely read it**, whereas only 5% said that they would definitely not or probably not read it. 9% of the population were unsure about it and 4% did not know or did not answer to the question.

If you saw a news article related to what happens with a nuclear power plant after it has permanently stopped producing nuclear energy, would you take the time to read it?

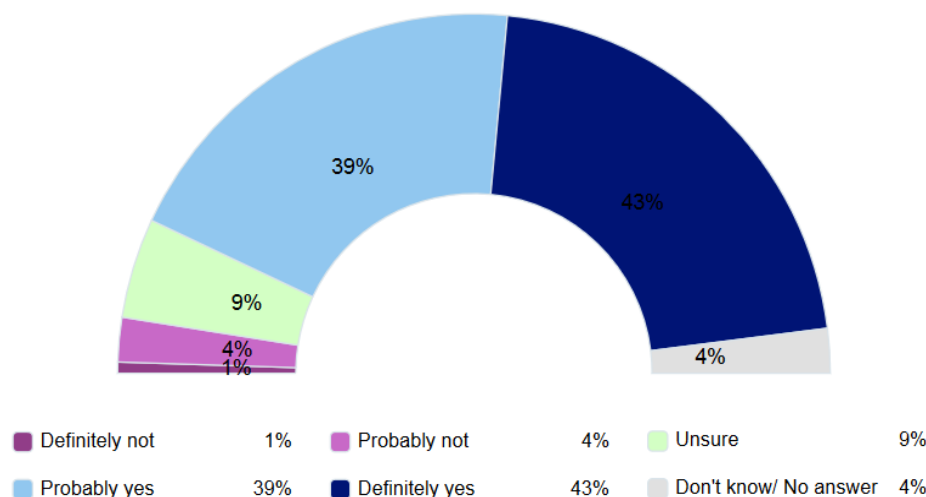


Figure 21. Public willingness to read news articles about what happens with a nuclear power plant after it permanently stops producing nuclear energy. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

8.2. Risk perception concerning nuclear power plants after they permanently stop producing nuclear energy

In order to investigate risk perceptions of NPPs after their operational lifetime, respondents were asked: "How do you perceive the potential risk to your health from nuclear power plants in Belgium after they have stopped producing nuclear energy?". In general respondents perceive a risk of NPPs after their operational lifetime for their health as rather low. **3% of them said that they perceive no risk at all, 36% of them perceive decommissioning of low or very low risk**, 30% perceive it as of moderate risk, and 14% of them perceive it as high or very high risk. 17% of the participants did not have an answer to this question.

How do you perceive the potential risk to your health from nuclear power plants in Belgium after they have stopped producing nuclear energy?

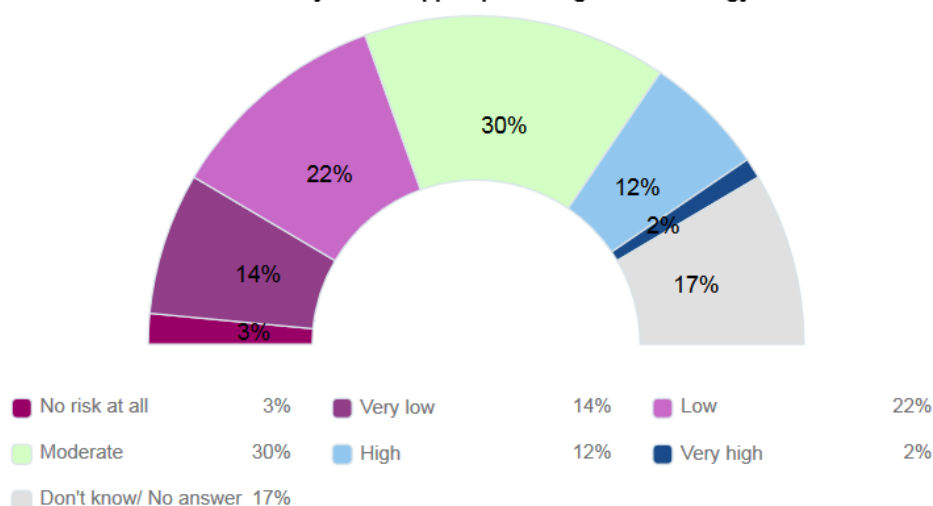


Figure 22. Risk perception concerning NPPs after they permanently stop producing nuclear energy. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

Apart from asking them about NPPs after their operational lifetime, we also asked respondents to indicate on a Likert's scale how they perceive the potential risk to their health from the extension of the operational lifetime of nuclear reactors Doel 1 and Doel 2. Results are almost evenly scattered as **32% of Belgians perceive no risk, very low or low risk from the extension of the operational lifetime of the nuclear reactors**, while **31% of Belgians perceive the risk as high or very high**. 27% of Belgians perceive the risk as moderate and 10% of Belgians could not respond on this question.

How do you perceive the potential risk to your health from the extension of the operational lifetime of nuclear reactors Doel 1 and 2

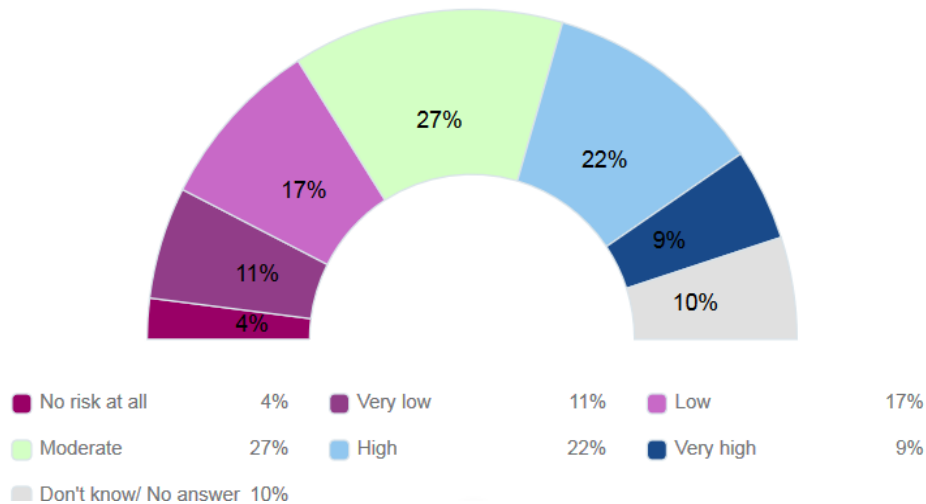


Figure 23. Risk perception concerning the extension of the operational lifetime of nuclear reactors Doel 1 and 2. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

8.3. Expectations about the outcome of decommissioning

In order to investigate public expectations related to Belgian NPPs after they have permanently stopped producing nuclear energy, respondents were asked to indicate *"What should happen with Belgian nuclear power plants after they have permanently stopped producing nuclear energy?"*. Only one answer from the following options was possible: 1. Removal of all traces of the NPP and its activities; 2. Reuse of parts of the installation (for instance its foundation) for other, non-nuclear, industrial purposes; 3. Site reuse for activities involving radioactive materials, for instance storage of nuclear waste; 4. Carry out the necessary works so that the site is preserved in a safe way for many decades, until the remaining radioactivity has decayed.; 5. Other and 9. I don't know / no answer.

18% of the population thinks that all traces of the NPP and its activities should be removed, 14% think that parts of the installations should be reused for industrial purposes, 17% think that the site should be reused for activities involving radioactive materials, and **more than one-third of the population (37%) thinks that all the necessary works have to be carried out so that the site is preserved in a safe way until the remaining radioactivity decays**. Five people (1%) proposed other option and 13% could not answer to the question.

In comparison to 2015, there is a decrease in the option of removing all traces of the NPP **from 34% in 2015, to 18% in 2021**, whereas the other options remain more or less the same across the years.

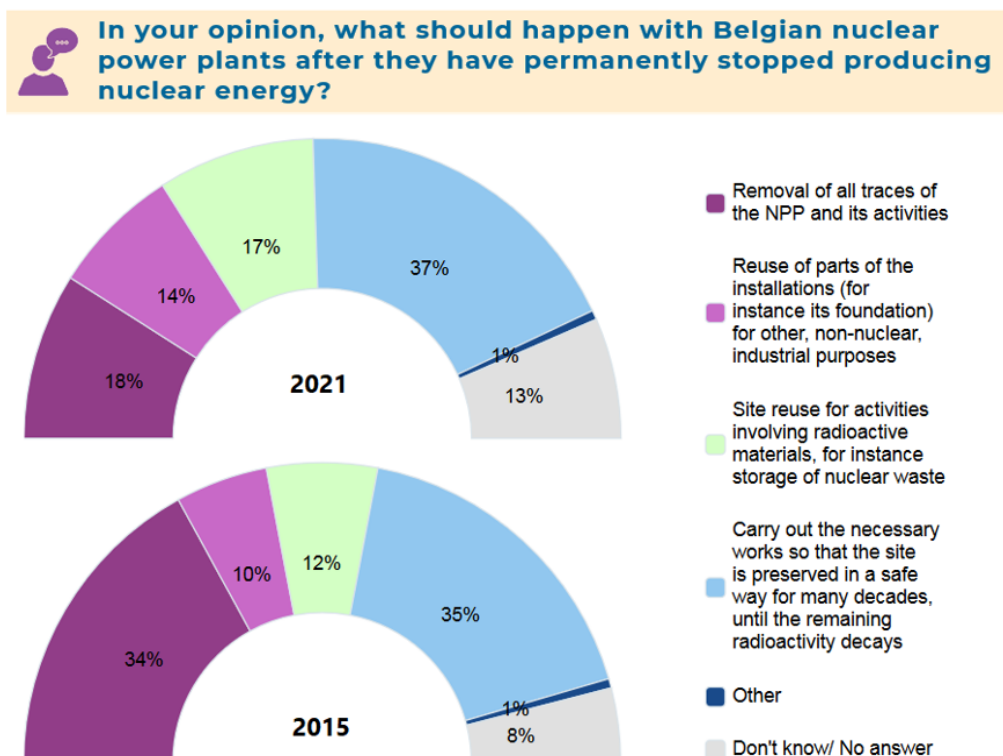


Figure 24. Expectations about the outcome after they permanently stopped producing nuclear energy. (2021 N= 1060; 2015 N=1028), weighted samples

8.4. Public participation intention concerning decisions about decommissioning

Before asking people about their views on decommissioning, first, a small introduction was used to explain what decommissioning is. Decommissioning was explained as follows: *"After they have permanently stopped producing nuclear energy, nuclear power plants must be decommissioned. This entails four steps: dismantling of the installation; dismantling of the infrastructure; the remediation and clearance of the buildings; and the demolition of these buildings. After these steps, the radioactivity is only present in the form of traces."*

Further, public participation intention was explored. Asking participants about the extent to which they would like to participate in decision-making procedures has become a tradition in the Barometer surveys since the 2015 edition. This year we asked them the following question: *"If there is an initiative to involve citizens in the decision-making process concerning decommissioning of nuclear power plants in Belgium (offered at flexible dates and hours), and anybody could participate, to what extent would you like to do so?"*. The following answering categories, presented on a graphical card, were offered and participants could only choose one option.

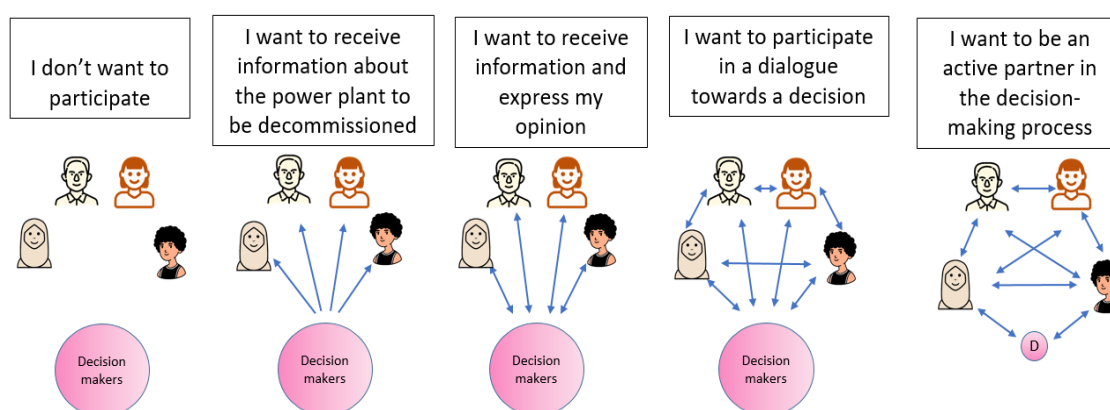


Figure 25. Answering categories indicating level of participation intention used in Barometer 2021 (graphical card).

The figure below displays answers to participation intention among the general population in 2015 and 2021, and among the local population in 2018. In 2015 the sample was 1028 and represented the Belgian population. In 2018, this question was only asked to a boost sample (N=315) of the local population living close to the Doel and Tihange reactors. In 2021, as can be seen in the figure below, the sample consists of 519 participants as the whole sample (N=1060) was split in half, receiving two different questions concerning participation intention (described in later in this section).

Descriptive analysis shows that **the percentage of people who do not want to participate at all in such procedures has significantly decreased from 44% in 2015 to 22% in 2021**. Opposite to this, the percentage of people who wish to receive information and express an opinion has increased among the general public from 19% in 2015 to 32% in 2021. The percentage of people who prefer more active forms of participation (dialogue or partner) has increased from 8% in 2015 to 13% in 2021, a level similar to that observed among local population in 2018.

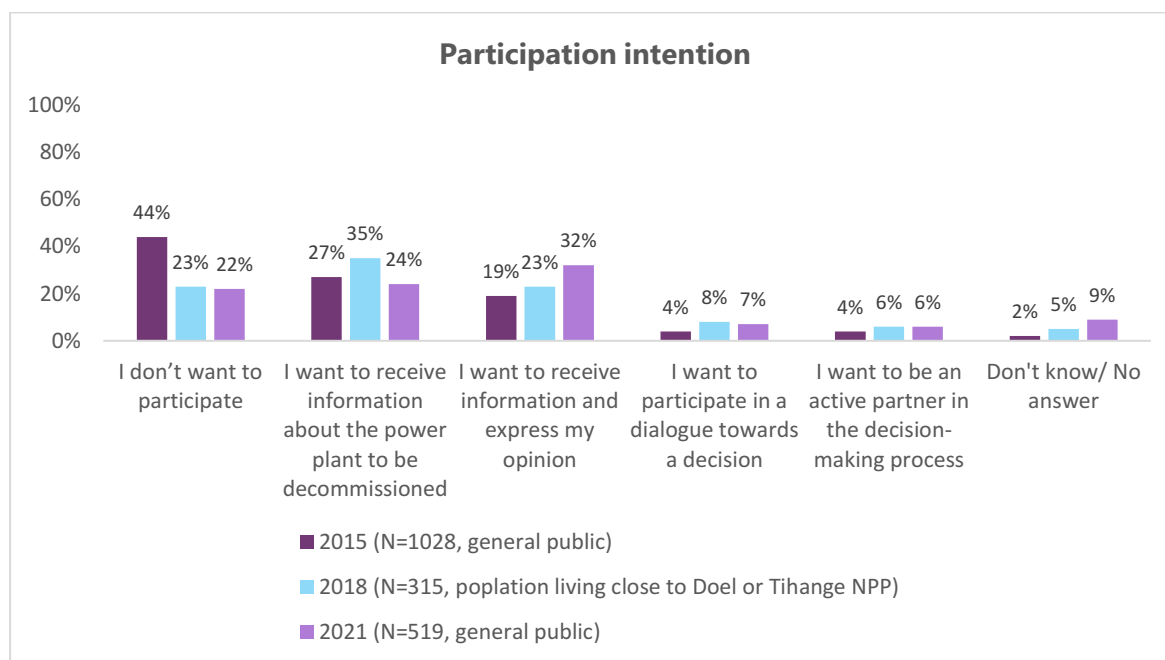


Figure 26. Public participation intention in decision-making procedures related to decommissioning through years. (2021, N=1060; 2018, N=315; 2015, N=1028).

The above-mentioned results show that, in general, there is a higher preference among the public to participate in more active forms in decision-making procedures about decommissioning, be it by receiving information and expressing their opinion; participating in dialogues; or being active partners in the decision-making procedures.

However, research shows that planned behavior may differ from actual behavior (Ajzen, 1985; Fishbein, 1980; Quintelier & Blais, 2016). For instance, people may say that they are willing to participate in one form or another, but when time comes to participate, few of them actually do so. For this reason, in this edition of the Barometer, we have added a new item in order to measure public's "real" participation intention.

In order to do so, half of the sample (N=519) received the question **"If there is an initiative to involve citizens in the decision-making process concerning decommissioning of nuclear power plants in Belgium (offered at flexible dates and hours), and anybody could participate, to what extent would you like to do so?"**, whereas the other half (N=541) received the question **"Currently, there is an initiative to involve citizens in the decision-making process concerning decommissioning of nuclear power plants in Belgium (offered in flexible dates and hours), and anybody can participate. Would you like to write your name in the list so that you can be involved in the decision-making process?"**.

What we see from the results is that indeed, as expected from extant literature on the topic of public participation (Ajzen, 1985; Fishbein, 1980; Quintelier & Blais, 2016), when we ask respondents to participate in a "real" initiative that is "happening now", they are much less willing to participate. **38% of the respondents said that they do not want to participate at all (in comparison with 22% in the hypothetical scenario)**, 19% said they want to receive information only (24% in the

hypothetical scenario), and only 32% opted for more active forms of participation (in comparison with 45% in the hypothetical scenario).

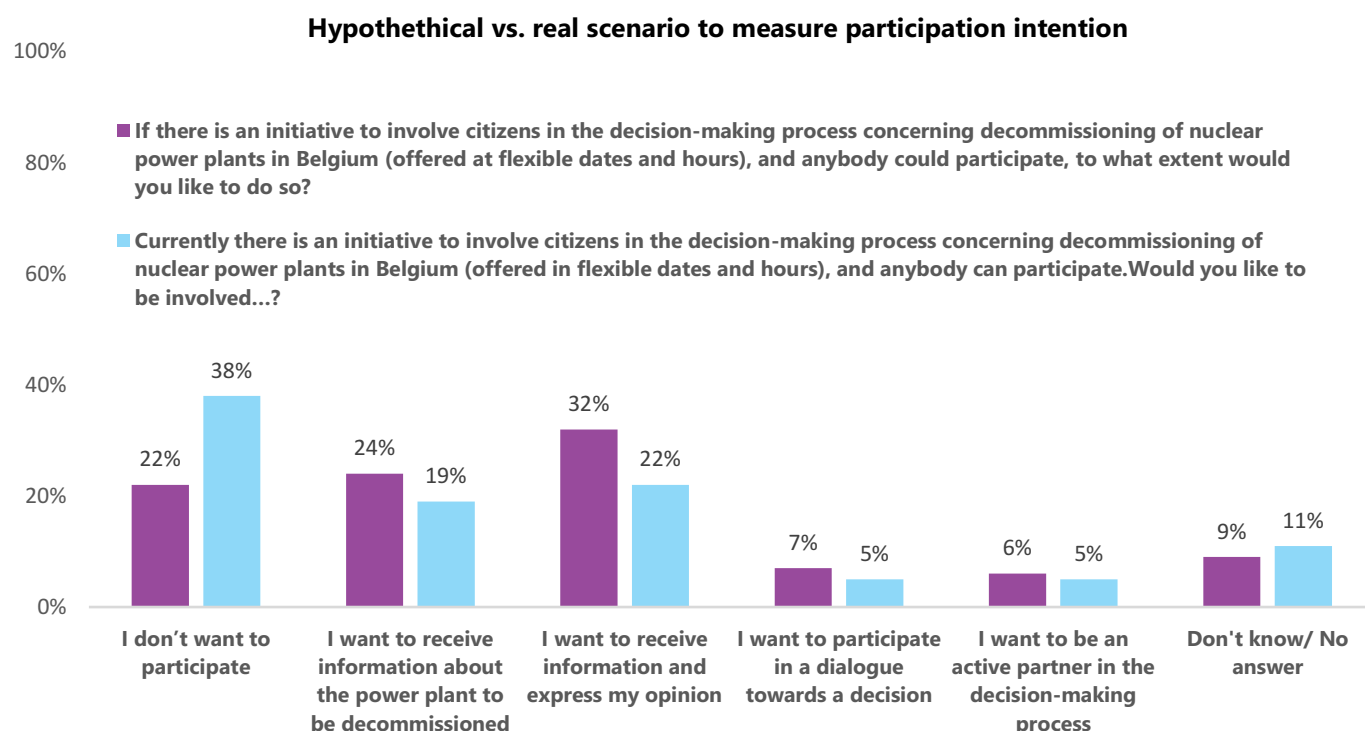


Figure 27. Public participation intention measured with a real vs. hypothetical scenario. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

After asking respondents about the extent to which they would like to participate in decision-making procedures about decommissioning, we asked them about how they perceive the impact of their participation to be.

In the figure below we see that 29% of the respondents see their participation as pointless, 18% perceive it as of neutral impact and **53% think that their participation in the decision-making process will be worthwhile**. 26% see their participation as uninteresting, 19% as neutral and **55% as interesting**. Lastly, 28% of the participants see their participation as disappointing, 23% as neutral and **49% as rewarding**.

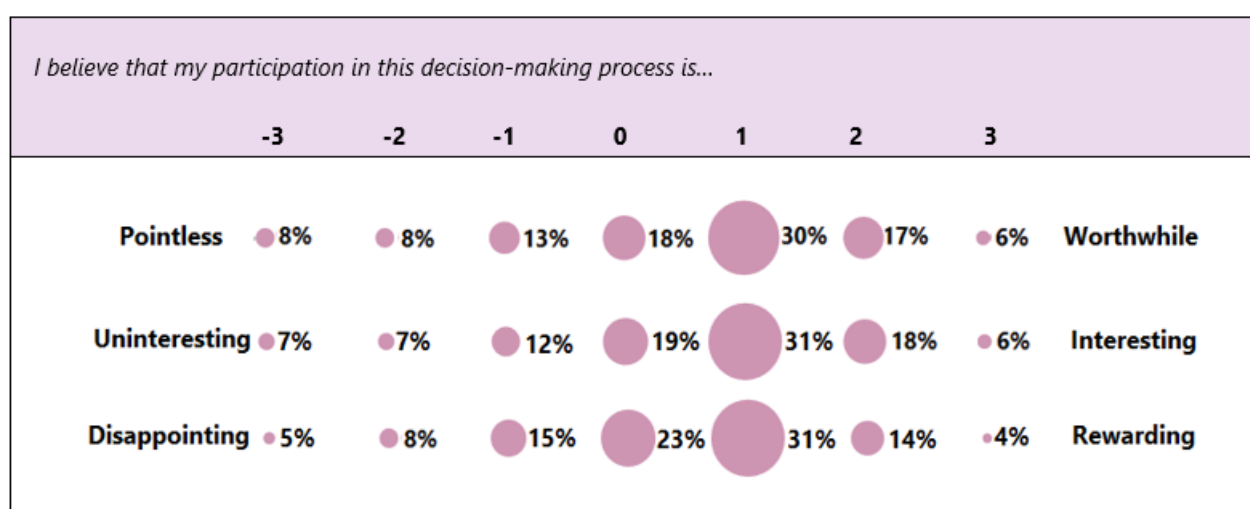


Figure 28. Attitudes towards public participation. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

The last item concerning public participation intention in decision-making procedures about decommissioning included further items measuring the attitude towards this participation. As the results in the figure below show, one out of three

participants (33%) agreed or strongly agreed that they do not have enough spare time to participate in such activities; more than one-fourth (28%) of them felt confident that by participating they can influence the actual decision-making; one-fourth (26%) indicated that of the people they know, nobody would participate in such activities; almost half of the respondents (45%) agreed or strongly agreed that it is their duty as a citizen to participate in such activities; and 43% indicated that most people who are important to them would support their participation.

Please state how much you agree or disagree with the following statements concerning your participation in the decision-making process concerning decommissioning of Nuclear Power Plants in Belgium

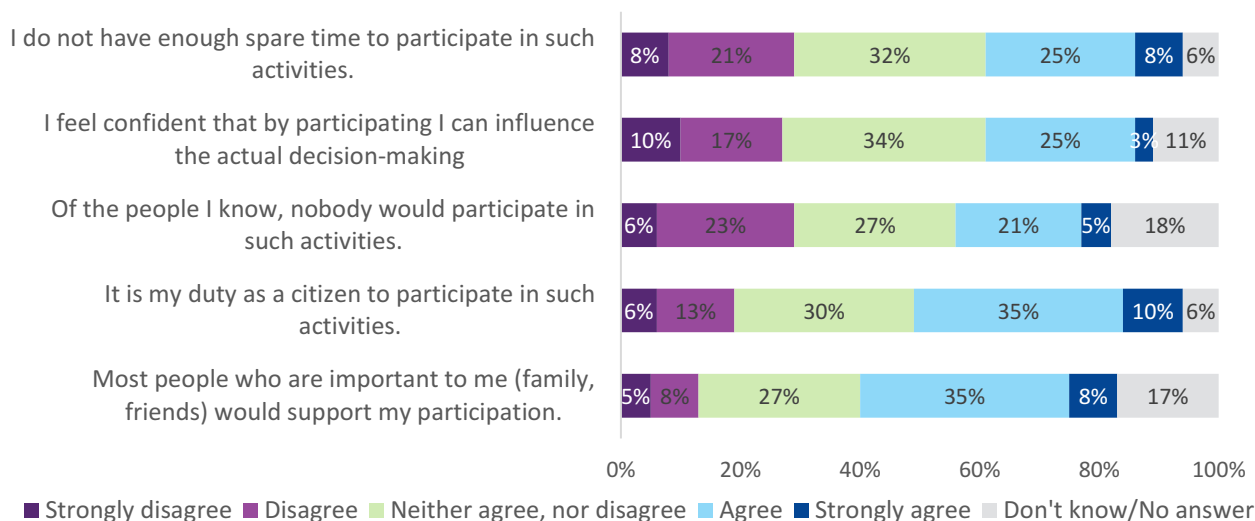


Figure 29. Attitudes towards participation in decision-making procedures about decommissioning. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

8.5. Trust in various actors to make good decisions about decommissioning

A number of subsequent items measured respondents' trust in various actors to make good decisions about decommissioning. **61% of the respondents trust the experts to make good decisions**, while only 9% do not. The percentage slightly decreases when the question comes to the nuclear industry. **44% of the respondents indicate that they trust the nuclear industry in making good decisions**, while 21% say that they do not. **The nuclear safety authority (FANC) is also trusted by more than half of the respondents (54%), whereas the environmental organizations (e.g. Bond Beter Leefmilieu or Inter-Environnement Wallonie) are trusted by 43% of the population.**

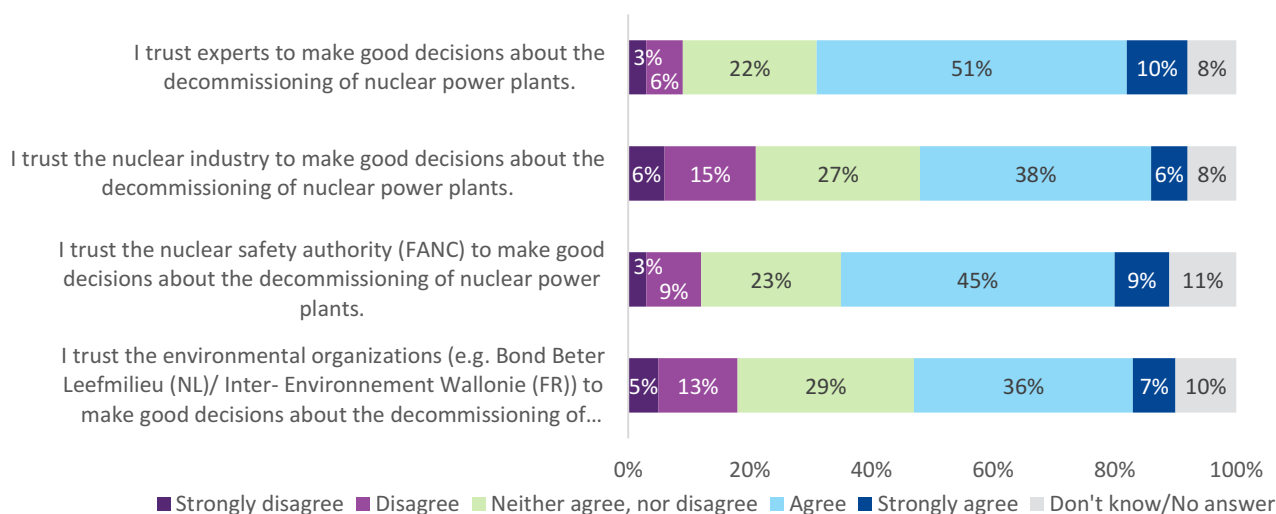


Figure 30. Trust in different actors to make good decisions about decommissioning. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

8.6. Feelings evoked by decommissioning

In the 2021 edition of the Barometer we have included for the first time items measuring feelings that the decommissioning process might evoke among the population. Results of the descriptive analysis show that the population is evenly spread when it comes to feelings of worry and tranquility concerning decommissioning. **38% of the respondents are worried about decommissioning, 24% are neutral about it, and 38% express feelings of tranquility.**

When it comes to interest or disinterest concerning decommissioning, 12% of the participants indicated that they feel disinterest about decommissioning, 22% indicated that they are neutral about it, and **66% expressed that they are interested in the topic of decommissioning.**

The last item about the feeling asked participants whether they felt rather pessimistic or optimistic about decommissioning. 30% of the respondents indicated that they feel rather pessimistic, 30% expressed neutral feelings and **40% indicated that they are rather optimistic about decommissioning.**

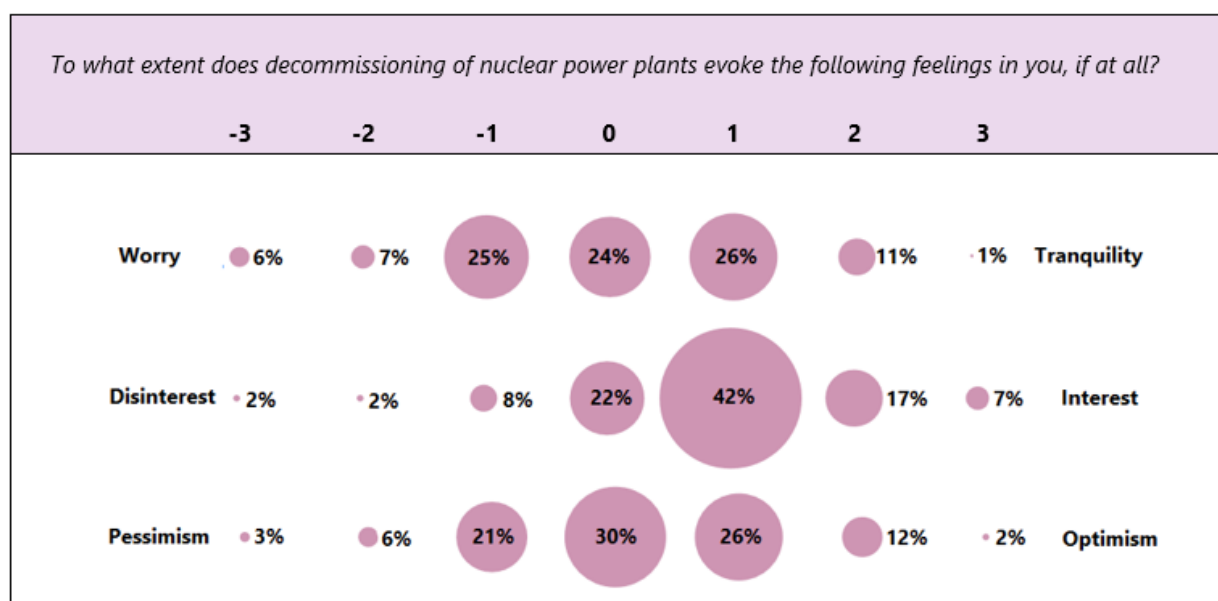
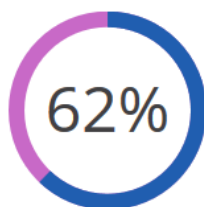


Figure 31. Feelings that decommissioning evokes amongst participants. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

8.7. Preference for receiving uncertain information about decommissioning

Lastly, we also asked respondents about the extent to which they would like to be informed about decommissioning, even if some aspects of the information are still uncertain. Results show that the **majority of the respondents (62%)** would like to receive such information, whereas **only 11% state that they would not like to receive uncertain information.** 20% of the respondents are neutral about this question whereas 7% had no specific answer about this question.



of the participants **agree or strongly agree** that they want to be informed about the decommissioning of nuclear installations **even if some aspects are uncertain**.

I want to be informed about the decommissioning of nuclear installations even if some aspects are uncertain.

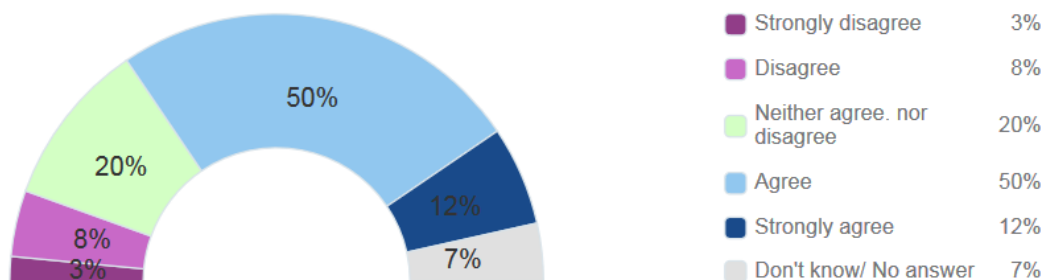


Figure 32. Preference for receiving uncertain information about decommissioning. (N= 1060), sample weighed for gender, education, age, province, region and habitat.

9. RADIOACTIVE WASTE



Awareness about the current management of high-level radioactive waste remains low. Similar to 2018, one in two Belgians mistakenly believes that high-level radioactive waste is currently buried underground and one in five say they do not know what the current management is. Concerning attitude towards geological disposal, there is still low agreement that the *geological disposal solves the issue of high-level radioactive waste* (17%). Decision making concerning geological disposal of high-level, long-lived radioactive waste is recognized as a multi-actor responsibility, indicating that the nuclear safety authority, the radioactive waste manager and scientific experts are preferred as the main decision-makers related to geological disposal. Belgian citizens wish to participate to some extent in decision-making concerning a geological disposal, should a decision about the construction of such a disposal be taken. The percentage who say they would never agree to the construction of a disposal next to their home, and would protest against it, decreased from 45% in 2011 and 37% in 2018, to 27% in 2021. When asked about a public consultation concerning geological disposal in April-June 2020, awareness of this consultation was very low.

The set of questions concerning geological disposal of radioactive waste was preceded by an introduction:

"The following questions are related to radioactive waste. High-level radioactive waste radiates intensely and will remain radioactive for a very long time (thousands of years)."

Public awareness of the current management of radioactive waste was then probed with the following question: *"What do you think happens at this moment with high-level of radioactive waste in Belgium"*, with answering categories "Buried underground"; "Burned"; "Stored on surface"; "Recycled"; "Other" and "Don't know". Compared to 2018, in 2021 we specifically mentioned also in the formulation of the question that this concerned "high-level" radioactive waste.

The results are very similar in 2021 compared to 2018. **One in two Belgians believes that high-level waste is currently stored underground**, while 7% think it is recycled. **Only 16% know that this waste is currently stored on surface** and one in five report they do not know the answer to this question. The percentage of the population who reports that they do not know how to answer this question has slightly increased in 2021 as compared to 2018.

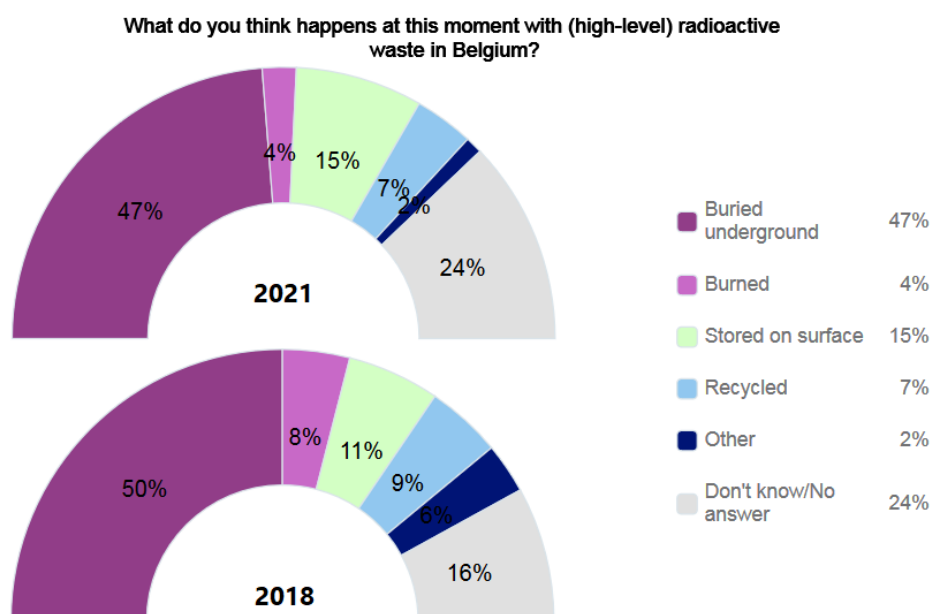


Figure 33. Awareness of current management of radioactive waste (2018: sample weighed for education, gender and age; 2021: sample weighed for with age, gender, education, province, region, habitat)

9.1. Attitudes towards geological disposal

In order to investigate attitudes towards geological disposal, respondents of the questionnaire received the following explanation:

"Currently, in Belgium, geological disposal is proposed for the long-term management of high-level radioactive waste. This entails that waste will be packed and buried a couple of hundred metres below the surface in a dedicated construction. The geological disposal installation will be permanently sealed after a certain period:"

Respondents were then asked to state to what extent they agreed or disagreed with four statements concerning the geological disposal of high-level radioactive waste (see Fig. 4). These statements were *"In Belgium we should implement geological disposal for high-level waste as soon as possible"*, *"Future generations should be able to monitor or measure the safety of the geological disposal"*, *"Future generations should be able to retrieve the waste from the geological disposal"*, and *"Geological disposal solved the issue of high-level waste"*. A 5-point Likert scale was used for the answering categories, ranging from *"strongly disagree"* to *"strongly agree"*, together with the *"I don't know"* option.

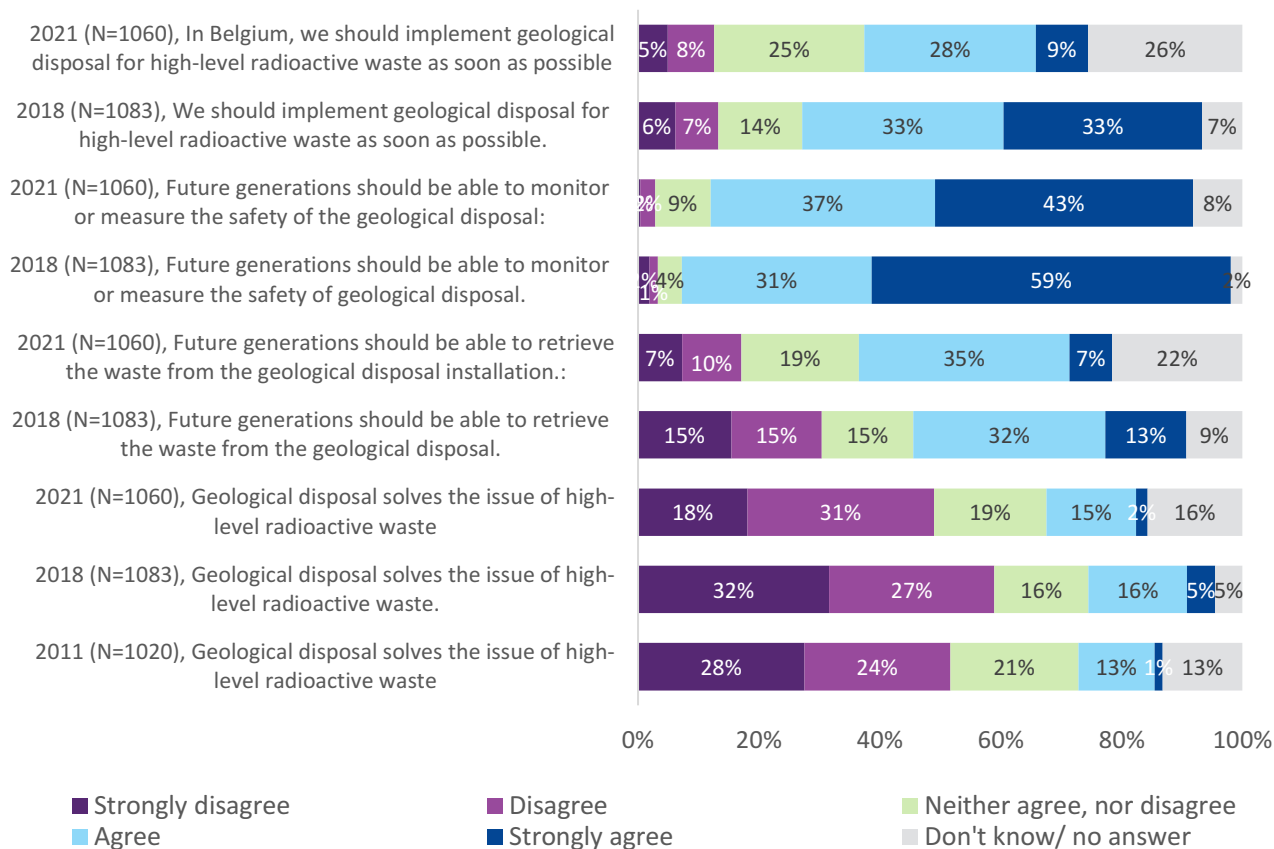


Figure 34. Attitudes towards geological disposal in 2011, 2018 and 2021 (2011: quota sample; 2018 samples weighed for education, gender and age; 2021: sample weighed for education, gender, age, region, habitat and province)

The percentage of the population who disagrees in 2021 with the statement that “*geological disposal should be implemented as soon as possible*” remained the same as in 2018 (13%). However, **there are considerably less people who agree with this statement in 2021 (about one in three in 2021, compared to two out of three in 2018)**. Instead, one in four Belgians cannot state their opinion regarding this statement in 2021, while in 2018 this was 7%.

There is continued widespread support for long term monitoring by future generations: **80% in 2021 and 90% in 2018 agrees or strongly agrees that future generations should be able to monitor or measure the safety of geological disposal**. A large proportion of the population (**45% in 2018, 42% in 2021**) **also agrees or strongly agrees with the statement that future generations should be able to retrieve the waste from the geological disposal**, and the proportion who disagrees with this statement has decreased in 2021 compared to 2018.

The statement that “*geological disposal solves the issue of high-level radioactive waste*” continues to receive rather low agreement (17% in 2021, 21% in 2018 and 14% in 2011). The percentage of people who disagree or strongly disagree with this statement decreased from 59% in 2018 to 49% in 2021. This decrease is particularly noticeable in the percentage who strongly disagree that *geological disposal solves the issue of high-level radioactive waste* (32% in 2018 vs. 18% in 2021). A proportion of the respondents, similar to 2011, but higher than in 2018, cannot state an opinion concerning this issue.

In general, it can be noticed that the percentage who responded “I don’t know” to these questions increased in 2021 compared to 2018 for almost all items, particularly so for the question concerning the swift implementation of the geological disposal in Belgium.

9.2. The role of various national actors in decision-making process related to geological disposal of high-level waste

A next set of items was added to investigate the role of various actors in decision-making processes concerning the geological disposal of radioactive waste. Respondents were asked, “*To what extent should the following actors be involved in*

national decision making concerning the geological disposal of high-level radioactive waste?" for the following actors: "The national government"; "The regional government"; "The local government"; "The nuclear safety authority"; "Non-governmental organisations and associations"; "The radioactive waste manager"; "A scientific expert committee"; and "Citizens". The answering categories were: "Not at all", "To a limited extent", "Moderate amount", "To a large extent", "Completely" and "I don't know".

Similar to 2021, the nuclear safety authority, scientific experts and the radioactive waste manager are recognised as decision-making actors by almost every citizen; **92% of respondents in 2018 and 79% in 2021 is of opinion that nuclear safety authority should be involved completely or to a large extent in decision making process**, and **86% of respondents stated this in 2018 and 79% in 2021 for a scientific experts committee and a similar percentage for the radioactive waste manager**.

The importance of the government (national and regional) in decision-making has been recognised by 74% of respondents in 2018, but the corresponding percentage is **63% in 2021 for the national government, 51% for the regional government and 48% for the local government**. Non-governmental organizations and associations are seen as one of the key actors by almost half of the population (47% in 2018 and 42% in 2021).

More than 30% of respondents agreed or strongly agreed in 2018 that the public should be actively involved in decision-making concerning geological disposal, while 45% thought this involvement should have a limited extent, if at all. It is remarkable that **in 2021, 40% think that citizens should be involved to a large extent or completely, and only 19% are of the opinion that citizens should not be involved at all or only to a limited extent**. There is therefore stronger support and expectations for citizens' involvement in decision-making compared to 2018.

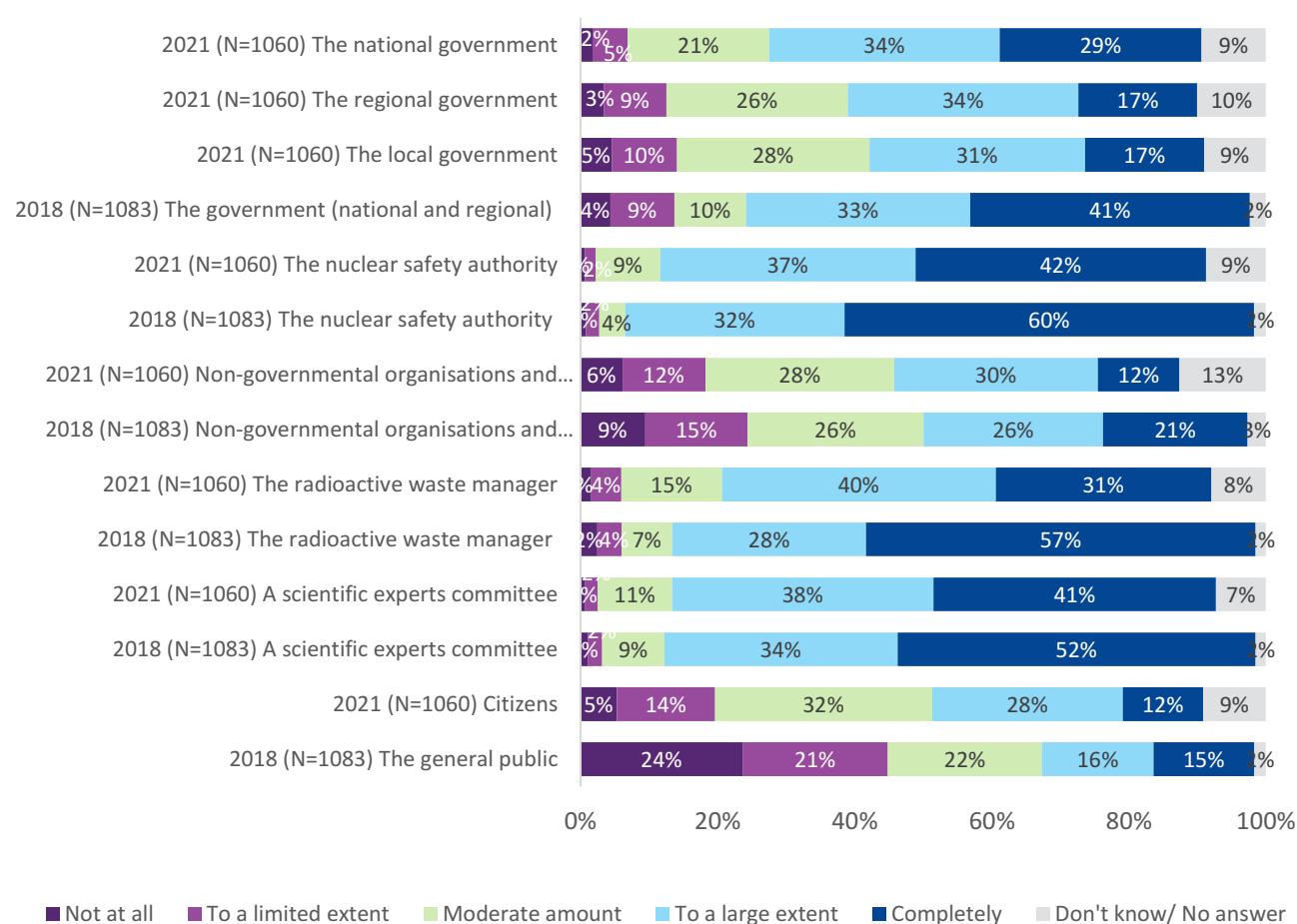


Figure 35. Involvement of different actors in national decision making concerning the geological disposal of high-level radioactive waste. Weighted samples.

9.3. Public participation intention concerning decisions about geological disposal

One question probed respondents' willingness to be involved in decision-making concerning a geological disposal, should a decision be taken to locate such a disposal in their own municipality. They indicated their willingness to be involved with the following answering categories: "I don't want to be involved"; "I want to receive information about the installation"; "I want to participate in a dialogue towards a decision"; "I want to be an active partner in the decision-making process"; and "I would never agree to have a disposal near my home and I would protest against it".

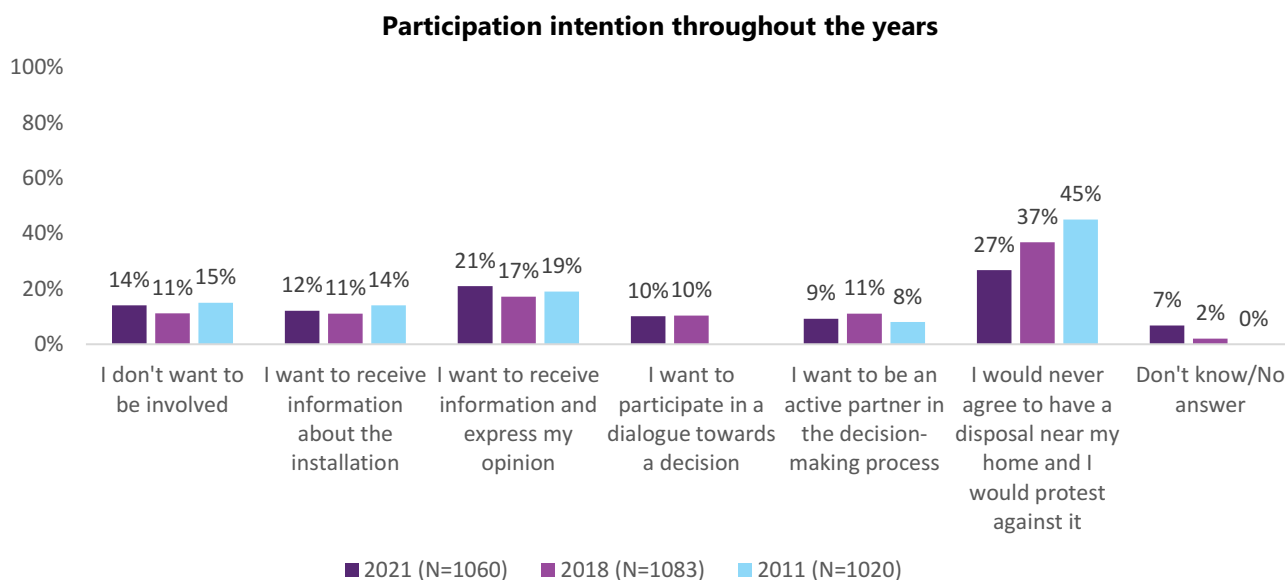


Figure 36. Willingness to engage in decision-making processes related to geological disposal in 2021 (sample weighed for education, gender, age, province, region and habitat), 2018 (sample weighed for education, gender and age) and 2011 (quota sample)

Similar to 2018, **half of the respondents are willing to be constructively involved on some level**: either to receive information about installation (12%), to receive information and express their opinion (21%), to participate in a dialogue towards a decision (10%), or be an active partner in decision-making (9%). **The percentage of people who would never agree to the construction of a disposal next to their home, and would protest against it, has decreased in the last decade 45% in 2011 and 37% in 2018, to 27% in 2021.**

9.4. Participation in the public consultation

A last group of questions concerned the public consultation organised by ONDRAF/NIRAS concerning the environmental impact assessment for a geological disposal in Belgium as the potential final destination of high-level or long-lived radioactive waste in April-June 2020.

Results revealed that **only 45 (4.2%) respondents were aware of this public consultation and out of these, 18 had filled in the online survey**. Most frequent reasons¹ mentioned by the 27 respondents who did not fill in the survey were: "I didn't have time" (N=7), "It has little influence on the final decision" (N=6) and Other (N=8). Less often chosen were the answers "I wasn't interested" (N=2); "The topic is too difficult" (N=1), and "I didn't have any comments" (N=3). Interestingly, none of the 27 respondents chose "It doesn't concern me" as a reason for not filling in the survey.

These results match those from 2011 when similar questions were asked about the public consultation in 2010 on the draft "Waste Plan" and the "Strategic Environmental Assessment". In 2011, 10.59% of the respondents said they were aware of the waste plan consultation, and most these respondents did not send any comments. Among these reasons mentioned for

¹ Predefined answering categories

not sending comments, the opinion that participation would have little influence on the final decision was mentioned most (21%), while 14% said they had no comments, 15% found the topic too difficult and 11% did not have time. As in 2021, lack of concern was the least frequent reason mentioned in 2011 (7%).

10. EMERGENCY SITUATIONS



Similar to 2018, a large majority of the Belgian population (more than 80%) agrees or strongly agrees that the authorities should make more efforts to inform the population about protective actions in case of a nuclear accident. One in three Belgians say they know where to find information about protective actions at the moment of the survey, but half of the population, is confident that in the case of a nuclear accident they would find the information needed to protect themselves.

After the extension of the planning zone for the preventive distribution of iodine tablets in 2018, a significantly larger proportion of the population know or have heard about the last campaign (2018) for preventive distribution of iodine tablets, compared to similar measurements in previous years. However, awareness about the preventive role and the correct timing of intake of iodine tablets has not changed much and should be further improved.

Since the last edition of the Barometer, a 10 months information campaign was conducted in 2018 between March and December by the Belgian authorities, aiming at informing the population about the actions to take in case of an accident, as well as the preventive distribution of iodine tablets. The campaign was triggered by with the implementation of European Basic Safety Standards at national level in Belgium and the revision of the Belgian nuclear emergency plan. Among others, this revision foresees for the actions of sheltering and the intake of iodine tablets an emergency zone of 20 km around the nuclear sites at Doel, Tihange, Mol-Dessel, Borssele en Chooz and 10 km around IRE Fleurus, where the two actions are prepared (including preventive distribution of iodine tablets). Additionally, the revision foresees a zone of 100 km around these sites, covering almost the entire Belgian territory, where iodine tablets were distributed in pharmacies and people were advised to take from the pharmacy and have at home iodine tablets as a preventive measure that would provide in case of an accident protection for vulnerable groups (children, pregnant and breast feeding women and collectivities of children such as schools and kindergartens).

The campaign “Do you know what to do in case of a nuclear accident?” was launched on March 6th 2018 by the Crisis Centre in collaboration with FOD Volksgezondheid, FAGG, FANC-AFCN en het FAVV-AFSCA. Several national and local actions took place during 10 months, ranging from leaflets, videos, information sessions and the preventive distribution of iodine tablets (643.399 doses).

In the 2021 edition of the Barometer, we first investigate public information about protective actions in case of a nuclear accident, after which a series of questions investigated in more detail public awareness of, and knowledge about the use of iodine tablets.

10.1 Public information about protective actions in case of a nuclear accident

Similar to 2018, a large majority of the Belgian population (more than 80%) agrees or strongly agrees that the authorities should make more efforts to inform the population about protective actions in case of a nuclear accident, and only one in three Belgians say they know where to find information about protective actions at the moment of the survey.

However, a larger fraction, accounting to about half of the population, is confident that in the case of a nuclear accident they would find the information needed to protect themselves.

Information about protective actions in case of a nuclear accident

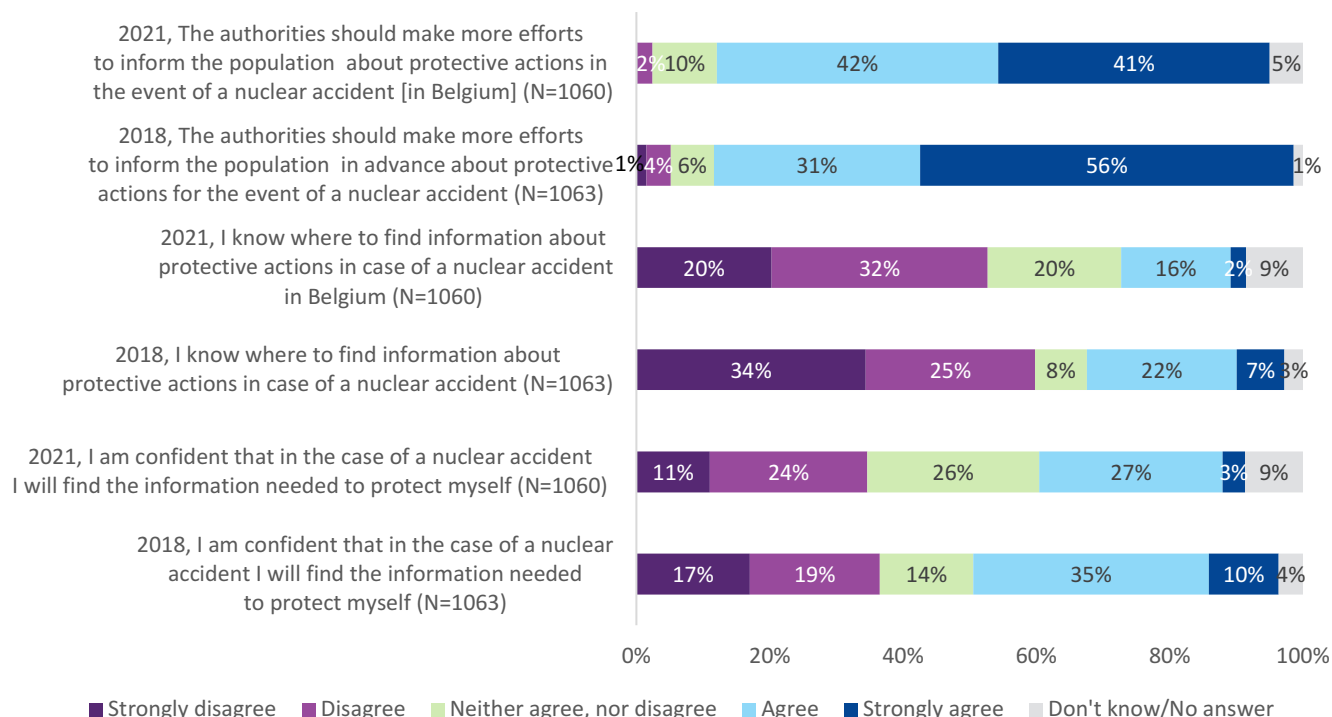


Figure 37. Public information about protective actions in case of a nuclear accident (samples weighed for education age and gender in 2018, and for education, age, gender, province and region in 2021)

10.2 Awareness of the use of iodine tablets

The section dedicated to iodine tablets was introduced as follows:

"What follows is a list of questions concerning iodine tablets. On the initiative of the government, an information campaign was set up in Belgium in 2018 related to what to do in the event of a nuclear accident including the preventive distribution of iodine tablets".

Respondents were first asked if they knew about this campaign. Results show that 80% of the population remembers the campaign: 41% said they knew about it, and 40% said they heard something about it.

Table 2. Awareness about the distribution and use of iodine tablets, 2021 (N= 1060) weighed sample.

	Do you know about the distribution of iodine tablets? (N=1060, weighed sample)	Do you know about the use of iodine tablets in the case of nuclear accidents? (N=1060, weighed sample)
Yes	41%	48%
I have heard something about it	40%	28%
No	15%	21%
Don't know/ No answer	4%	4%

In general, awareness of the campaign of 2018 is much larger compared to the results of 2013 (referring to the campaign of 2011) and those of 2009 (with the most recent campaign in 2002). This may be due in part to the shorter time interval between the campaign and the survey, but is most likely a result of the extension of the area of preventive distribution of iodine tablets.

Awareness of the predistribution campaign for iodine tablets

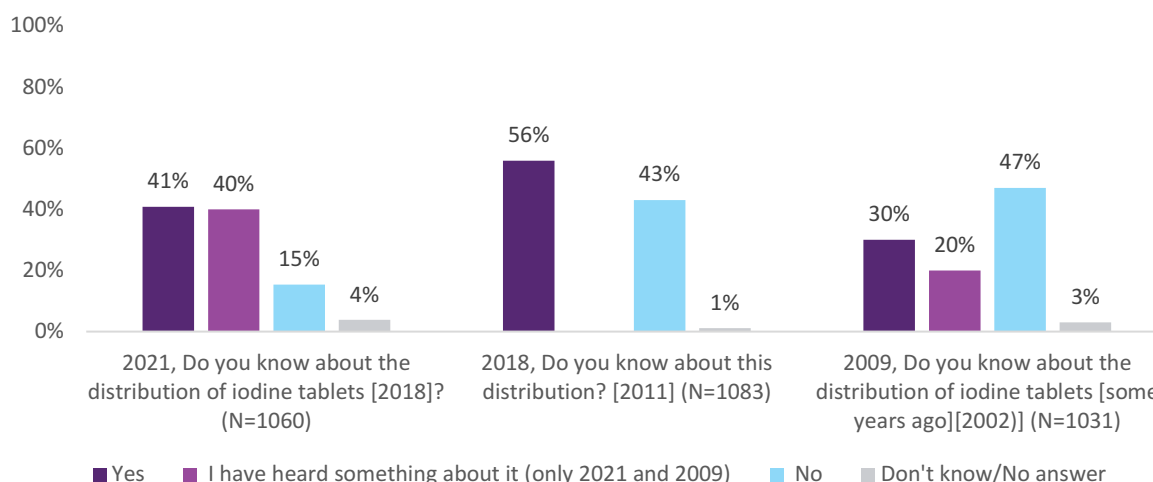


Figure 38. Public awareness about the pre-distribution campaign for iodine tablets. N= 1060, weighted sample

Respondents who said they knew, or have heard something, about the use of iodine tablets in case of a nuclear accident, were further asked a number of detailed questions. Out of these 835 respondents, 24% said they had the tablets at home, while 74% did not have them, and 2% did not know. Furthermore, 86% (of N=835) knew that the tablets can be found at the local pharmacy, 1% thought the tablets can be found at special centres near nuclear installations, 1% thought they can be found at the municipality, and 12% did not know. These results reflect a good knowledge of where can tablets be found in case of an emergency; however, there are more efforts needed to encourage people to get these tables at home as a preventive measure.

The N=835 respondents who said they knew, or have heard something, about the use of iodine tablets where asked whether they protect against a number of health conditions.

In your opinion, in case of a nuclear accident, iodine tablet would protect against...

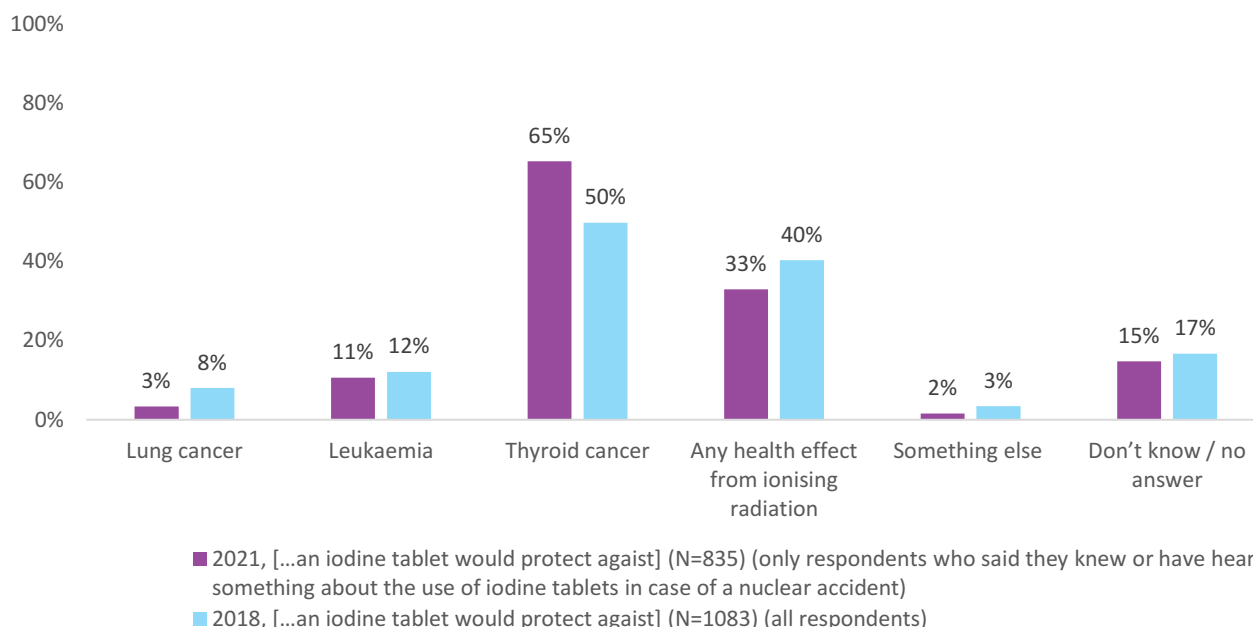


Figure 39. Knowledge of the protective effect of iodine tablets (samples not weighted)

More than half of the respondents (65% of N=835) who were aware that iodine tablets can be used in case of a nuclear accident knew in 2021 that iodine tablets protect against thyroid cancer. However, a rather large percentage (one in three) believes that an iodine tablet protects against any health effect due to ionizing radiation and 15% do not know what is the role of the iodine tablets. Considering that in 2021 only those who were aware that iodine tablets can be used in case of a

nuclear accident were asked this question, and that those selecting this correct answer represent 51% of the overall sample, results are similar to previous years. For comparison, in 2018 and 2009 half of the overall sample (50% in 2018 and 53% in 2009) selected the correct answer indicating that iodine tablets protect against thyroid cancer.

A closer look showed that only 36% of the total sample of N=1060 respondents in 2021, and 31% of the total sample of N=1083 in 2018 knew that iodine tablets can protect against, and only against, thyroid cancer.

Finally, respondents were asked about the correct moment to take an iodine tablet.

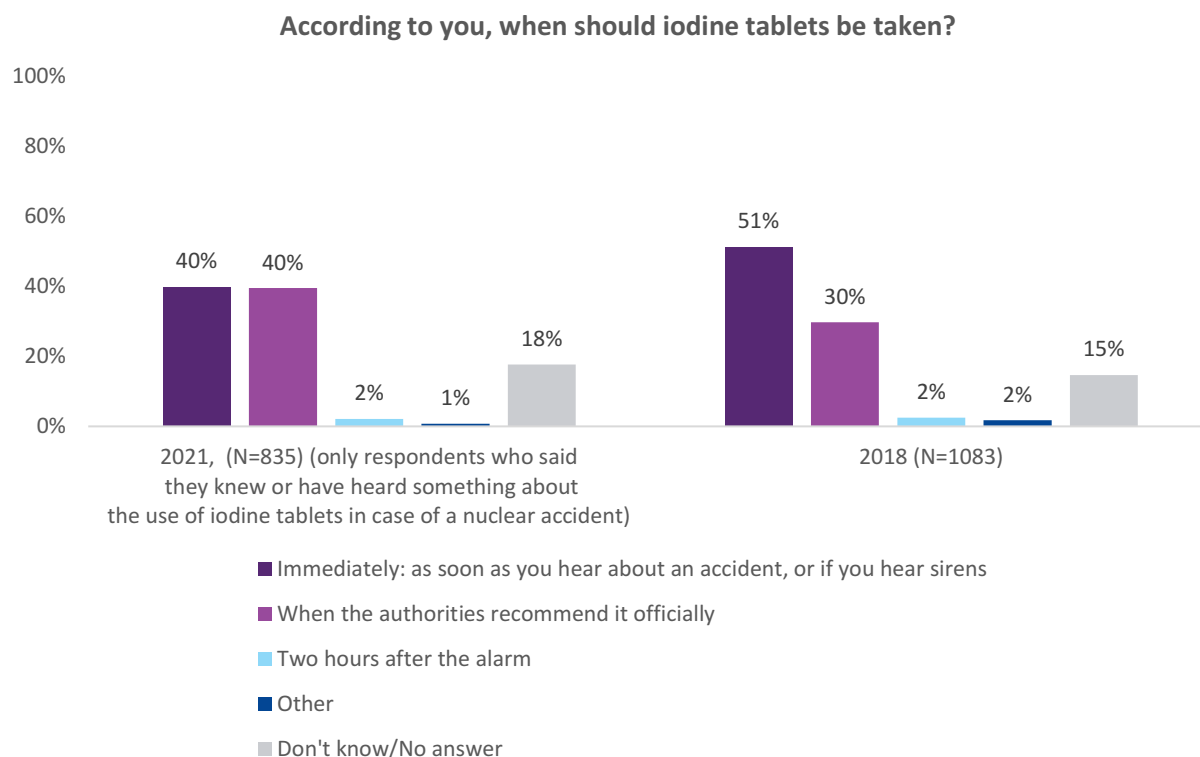


Figure 40. Public awareness about when iodine tablets should be taken.

In 2021, only 40% of the respondents who said they have heard or knew about the fact that iodine tablets can be used in case of a nuclear accident (31% of the total sample) knew that they should be taken when the authorities recommend it officially. Results cannot be directly compared to 2018 since in 2018 the question was asked to all respondents. However, there are strong indications that any reduction in the overall percentage of respondents who believe that iodine tablets should be taken immediately after the news of a nuclear accident is small compared to 2018, especially considering that in 2021 the question was asked only to respondents with higher awareness.

11. KNOWLEDGE ABOUT THE NUCLEAR DOMAIN AND PERCEPTION OF RADIATION RISKS



Knowledge about the nuclear domain remains still rather low among the Belgian population. Only 1 in 3 Belgians knows that exposure to radiation does not always lead to radioactive contamination, and only 22% of the respondents knew that vegetables grown near an NPP are still good for consumption. Similarly, only 1 in 4 respondents (25%) correctly disagreed with the statement that even very low levels of radiation are harmful for human health. Only 1 in 3 Belgians knows that the human body is naturally radioactive. Knowledge related to radon also seems very low among Belgians. 54% of the respondents said that they do not know whether exposure to indoor radon causes headache, and 61% said that they do not know whether it causes lung cancer. 70% of the Belgian population knows that radioactive waste is not only produced by NPPs, though.

Similar to the previous editions of the SCK CEN Barometer, a number of questions probed respondents' knowledge about basic facts related to ionizing radiation. However, we did not want the questions to appear as a "test" for the respondents, so first, the following introduction was given: "The following questions concern nuclear technology in general. What do you think about the following issues?" Results show that knowledge about ionizing radiation still remains rather low among the Belgian population. **Only one-third (33%) of the respondents knew that exposure to radiation does not always lead to radioactive contamination.** 45% said that it does, whereas 22% did not know or did not have an answer to this question. However, **2 in 3 respondents (70%) know that radioactive waste is not only produced by nuclear power plants.**

A majority of the public (67%) also knows that the measurement unit for radioactivity is Becquerel, whereas 29% of the population had no answer about it.

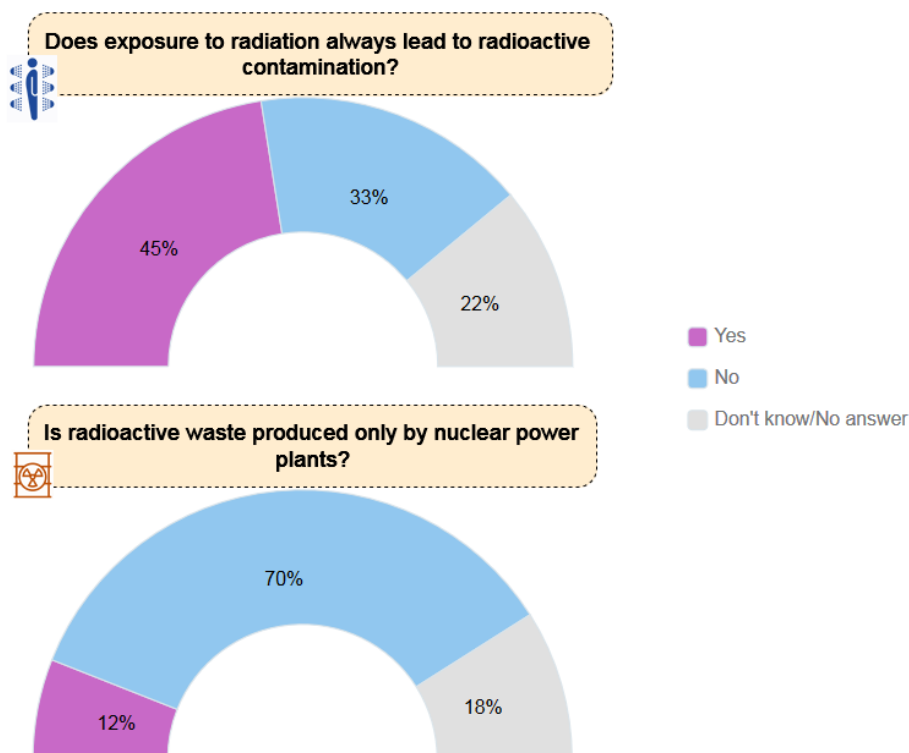


Figure 41. Public awareness about exposure to radiation and production of radioactive waste (N=1060), weighted sample

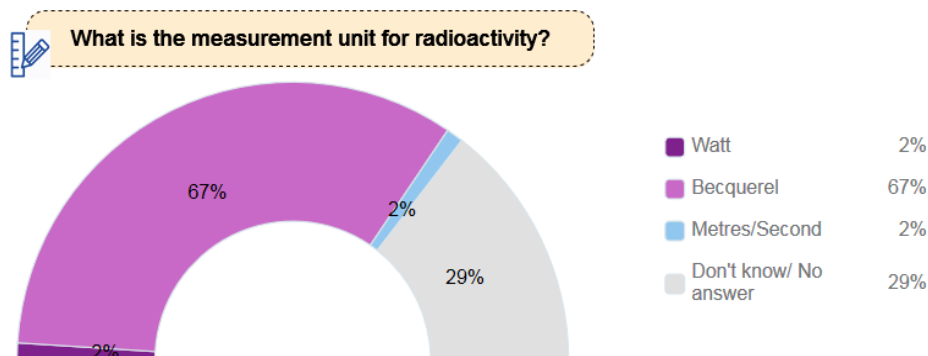


Figure 42. Public awareness concerning the measurement unit for radioactivity. (N= 1060), weighted sample

Next, we asked the respondents "To what extent do you agree or disagree with the following statements?" which were about different aspects of radiation and radioactivity. Results show that **only 22% of the respondents knew that vegetables grown near an NPP are still good for consumption**, whereas almost half of the population (49%) (strongly) agreed that they are not good for consumption due to the presence of radioactivity. 14% neither agreed, nor disagreed, whereas 15% had no answer about it. **1 in 4 respondents (25%) correctly disagreed with the statement that even very low levels of radiation are harmful for human health.** More than half of the population, though, thinks that even very low levels of radiation are harmful. 13% of the respondents were neutral about it, whereas 9% had no answer. **Only 1 in 3 Belgians knows that the human body is naturally radioactive.**

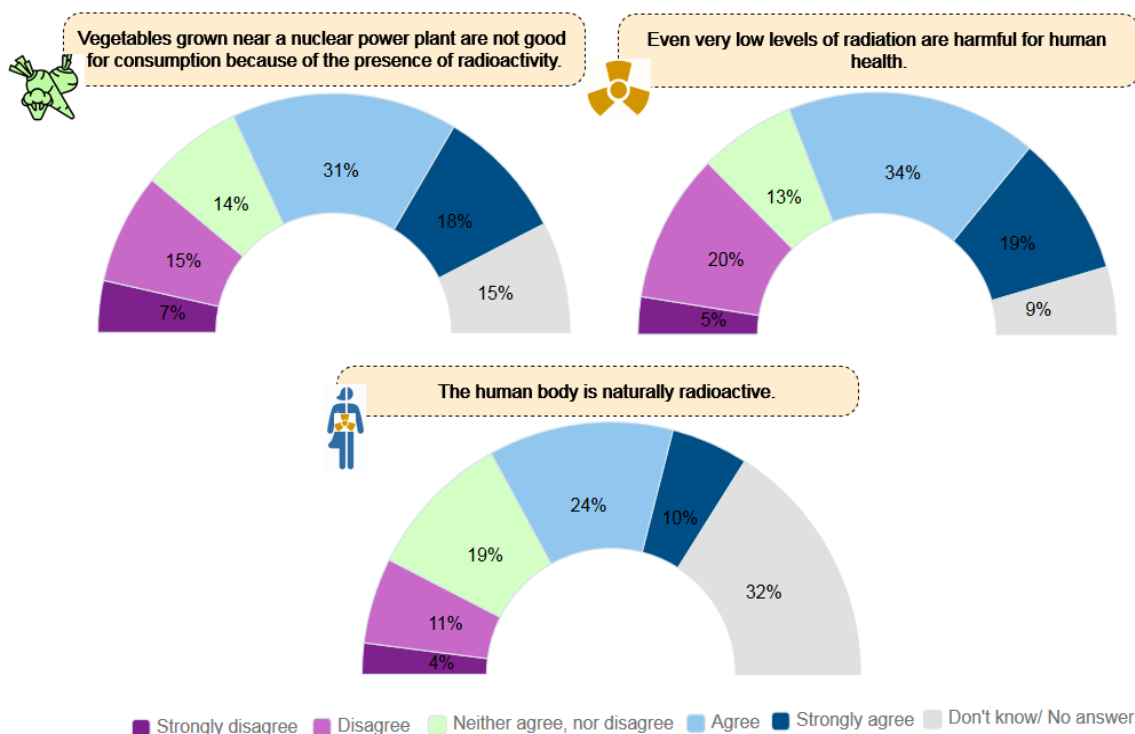


Figure 43. Public opinion about different aspects of radiation and radioactivity.

More than half of the respondents (54%) correctly answered that radioactive substances do not become more and more radioactive with time. 10% thought that radioactivity increases with time, whereas 1 in 3 (36%) had no answer about it. When asking whether they agree or disagree **that food sterilization by irradiation makes food radioactive, 39% correctly said that this is not the case**, whereas 12% said that it is. Almost half of the population (49%), though, did not know the answer to this question.

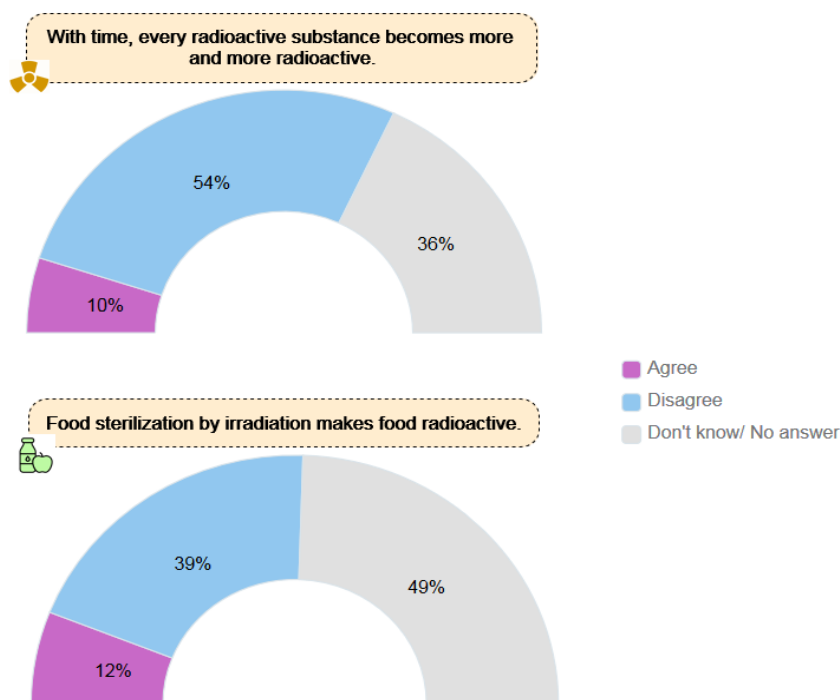


Figure 44. Public opinion about different aspects of radiation and radioactivity.

In this edition of the barometer, we also included questions to measure knowledge related to radon. Results show that the Belgian population does not know much about radon. For instance, **40% of Belgians wrongly believe that exposure to indoor radon may cause headache, whereas 1 in 2 (54%) do not know the answer to this question. Only 6% correctly answered** that exposure to indoor radon does not cause symptoms like headache. **30% of Belgians know that exposure to indoor radon may cause lung cancer, though.** 61% of the population do not know the answer to this.

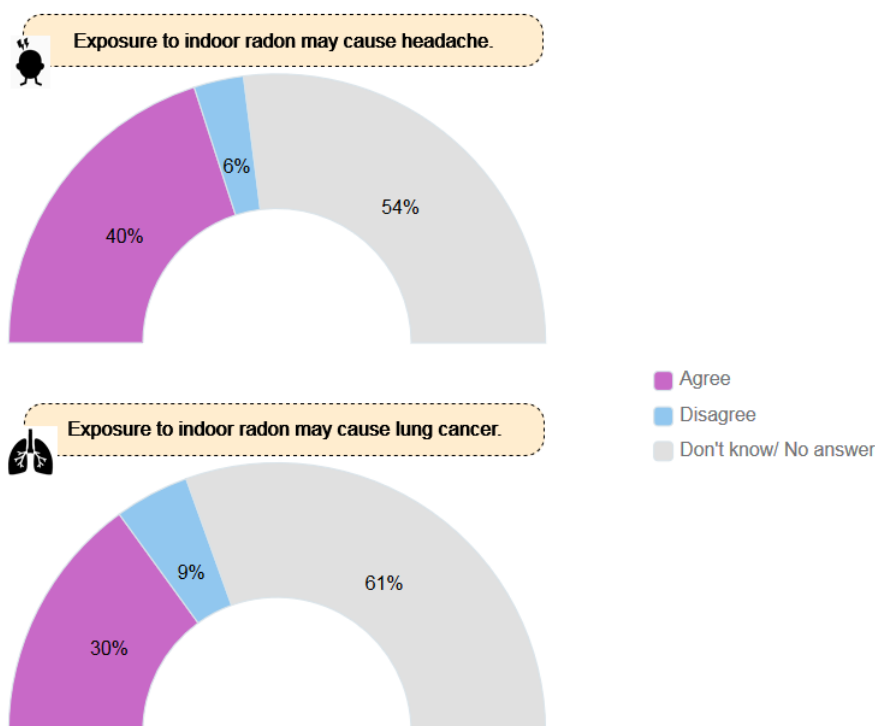


Figure 45. Public opinion about exposure to radon.

Most of the items concerning knowledge about the nuclear and perception of radiation risks were also included in the previous editions of the BAROMETER, which allows for longitudinal analysis. Longitudinal results (see table 3) show that knowledge related to radiation exposure leading to contamination and the production of radioactive waste from various sources remains similar over time. However, knowledge about the measurement unit for radioactivity is higher this year

(67%) in comparison to previous years (56% in 2015 and 52% in 2013). In this edition, 22% of our respondents correctly disagreed that vegetables grown near an NPP are not good for consumption. This percentage was higher in previous years (37% in 2015 and 33% in 2013), however, in these years participants had "yes/no/don't know" as answering categories, which might influence the results. The answers related to the other items remained more or less the same through time as table 3 shows.

Table 3. Longitudinal analysis of knowledge items.

Knowledge questions	Answering categories	2021 (N= 1060) % correct answers	2018 (N= 1083) % correct answers	2015 (N= 1028) % correct answers	2013 (N=1002) % correct answers
<i>Does exposure to radiation always lead to radioactive contamination?</i>	1. Yes 2. No 9. Don't know/ No answer	33% (No)	36%	33%	26%
<i>Is radioactive waste produced only by nuclear power plants?</i>		70% (No)	73%	69%	65%
<i>What is the measurement unit for radioactivity?</i>	1. Becquerel 2. Hertz 3. Metres/second 9. I don't know/ no answer	67% (Becquerel)	NA	56%	52%
Questions	Answering categories	2021 (N= 1060) % public opinion	2018 (N= 1083) % public opinion	2015 (N= 1028) % public opinion	2013 (N=1002) % public opinion
<i>Vegetables grown near a nuclear power plant are not good for consumption because of the presence of radioactivity.</i>	1. Strongly disagree 2. Disagree 3. Neither agree/ nor disagree 4. Agree 5. Strongly agree 9. Don't know/ no answer	22% (disagree or strongly disagree)	NA	37%	33%
<i>The human body is naturally radioactive.</i>		34% (agree or strongly agree)	41%	39%	37%
<i>With time, every radioactive substance becomes more and more radioactive.</i>	1. Agree 2. Disagree 9. Don't know/ no answer	54% (disagree)	49%	50%	47%
<i>Food sterilisation by irradiation makes food radioactive.</i>		39% (disagree)	28%	NA	NA

12. REFERENCES

- Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In *Action Control*. https://doi.org/10.1007/978-3-642-69746-3_2
- Carlé, B. and Hardeman, F. (2003). Veiligheid en risicoperceptie – resultaten van de opiniepeiling in november 2002 in België. SCK-CEN BLG 938 report, SCK•CEN, Mol, Belgium (in Dutch) and SCK•CEN BLG 939 report, Perceptions des risques et de la sécurité – résultats du sondage de novembre 2002 en Belgique (in French).
- Fishbein, M. (1980). A theory of reasoned action: some applications and implications. *Nebraska Symposium on Motivation*. *Nebraska Symposium on Motivation*.
- Perko T., Turcanu C., Schröder J., Carlé B. (2010). Risk perception of the Belgian population. Results of the public opinion survey in 2009. Open Report of the Belgian Nuclear Research Centre SCK•CEN, BLG-1070. Mol: Belgium.
- Quintelier, E., & Blais, A. (2016). Intended and Reported Political Participation. *International Journal of Public Opinion Research*. <https://doi.org/10.1093/ijpor/edv017>
- Turcanu C., Perko T., Schröder, J. (2011). The SCK-CEN Barometer 2011 – Perception and attitudes towards nuclear technology in the Belgian population. Open Report of the Belgian Nuclear Research Centre SCK•CEN BLG-1082. Mol: Belgium.
- Turcanu C., Perko T. (2013). The SCK-CEN Barometer 2013 – Perception and attitudes towards nuclear technologies in the Belgian population. Open Report of the Belgian Nuclear Research Centre SCK•CEN BLG-1097. Mol: Belgium.
- Turcanu C., Perko T., Latré E. (2016). The SCK-CEN Barometer 2015 – Perception and attitudes towards nuclear technologies in the Belgian population. Open Report of the Belgian Nuclear Research Centre SCK•CEN BLG-1108. Mol: Belgium.
- Turcanu C., Perko T., Schröder, J., Abelshausen, B., (2018). The SCK-CEN Barometer 2011 – Perception and attitudes towards nuclear technology in the Belgian population. Open Report of the Belgian Nuclear Research Centre SCK•CEN BLG-1148. Mol: Belgium.
- Turcanu C., Hietala, M., Perko, T., Hoti, F. (2021). Public attitudes towards geological disposal. Results from the 2021 SCK•CEN Barometer. SCK•CEN/48673813. External Report ER-0864. SCK•CEN: Mol, Belgium.
- Van Aeken, K., Turcanu, C., Bombaerts, G., Carlé, B., & Hardeman, F. (2006). Risk perception of the Belgian population. Results of the public opinion survey in 2006. Open Report of the Belgian Nuclear Research Centre SCK•CEN BLG-1038. Mol: Belgium.

Annex Barometer 2020 Questionnaire

PART 1. Socio-demographic variables / Sociaal-demografische variabelen / Variables socio-démographiques

S1	Language of the interview Taal van het interview Langue de l'interview	1. Dutch/Nederlands /Néerlandais 2. French/ Frans/ Français
S2	What is your gender? Wat is uw geslacht? Quel est votre sexe?	1. Male/Man/ Homme 2. Female/Vrouw/Femme 3. Other/Ander /Autre 4. I prefer not to say/Dat zeg ik liever niet/Je préfère ne pas le préciser
S3	Place of residence Woonplaats van de respondent Lieu de résidence de la personne interrogée [zip code] Postcode Code postal
S4	Year of birth Geboortejaar Année de naissance [year] Geboortejaar Année de naissance
S5	What is the highest diploma you have obtained? Wat is uw hoogst behaalde diploma? Quel est le plus haut diplôme obtenu?	1. Primary school or no education 2. Lower secondary – general 3. Higher secondary – general 4. Lower secondary – technical or arts 5. Higher secondary – technical or arts 6. Lower secondary – vocational 7. Higher secondary – vocational 8. Higher non-university 9. University 1. Lager onderwijs of geen scholing 2. Secundair - algemeen (ASO) lager 3. Secundair - algemeen (ASO) hoger 4. Secundair - technisch of artistiek (TSO of KSO) lager 5. Secundair - technisch of artistiek (TSO of KSO) hoger 6. Secundair - beroeps (BSO) lager 7. Secundair - beroeps (BSO) hoger 8. Hoger - niet universitair 9. Hoger – universitair 1. Primaire ou sans éducation 2. Secondaire inférieur - général 3. Secondaire supérieur - général 4. Secondaire inférieur - technique ou artistique 5. Secondaire supérieur - technique ou artistique 6. Secondaire inférieur - professionnel 7. Secondaire supérieur - professionnel 8. Supérieur - non universitaire 9. Supérieur – universitaire
S7	How many family members are currently living in your household (including yourself)? Children living in student accommodation who come home during the weekend also count as a household member. Met hoeveel van uw gezinsleden woont u momenteel samen (inclusief uzelf)? Kinderen op 'kot' die in het weekend naar huis komen tellen	

	<p>ook mee als gezinslid.</p> <p>Combien de membres compte votre ménage, vous inclus(e) ? Les enfants en 'kot' qui reviennent le week-end à la maison comptent également comme membres du ménage.</p>	
S8	<p>And how many of those are children younger than 18?</p> <p>Hoeveel daarvan zijn kinderen jonger dan 18 jaar?</p> <p>Combien d'enfants de 18 ans ou moins compte votre ménage ?</p>	

S10	<p>Is the dwelling that you spend most of your time a property of yours or your family, or does it belong to someone else?</p> <p>Is de woning waarin u het merendeel van uw tijd doorbrengt eigendom van u of uw gezin, of is het van iemand anders?</p> <p>L'habitation dans laquelle vous passez la majorité de votre temps vous appartient-elle, appartient-elle à votre famille ou appartient-elle à quelqu'un d'autre ?</p>	<p>1. I am owner or co-owner</p> <p>2. It is the property of another family member</p> <p>3. It is the property of someone else</p> <p>99. Don't know/ NA</p> <p>1. Ik ben eigenaar of mede-eigenaar</p> <p>2. De woning is eigendom van een ander gezinslid</p> <p>3. De woning is eigendom van iemand anders</p> <p>99. Ik weet het niet / n.v.t.</p> <p>1. Je suis propriétaire ou copropriétaire</p> <p>2. L'habitation appartient à un autre membre de ma famille</p> <p>3. L'habitation appartient à une autre personne</p> <p>99. Je ne sais pas / pas applicable</p>
S11	<p>For how long have you been living in this dwelling?</p> <p>Hoe lang woont u al in deze woning?</p> <p>Depuis combien de temps occupez-vous cette habitation ?</p>	<p>1. Less than 1 year</p> <p>2. More than one year : (Indicate in years)</p> <p>1. Minder dan een jaar</p> <p>2. Meer dan een jaar (Duid aantal jaren aan)</p> <p>1. Moins d'un an</p> <p>2. Plus d'un an (Indiquer le nombre d'années)</p>
S11BIS	<p>S11=2</p> <p>For how long have you been living in this dwelling?</p> <p>Hoe lang woont u al in deze woning?</p> <p>Depuis combien de temps occupez-vous cette habitation ?</p>	<p>Number of years</p> <p>Aantal jaren</p> <p>Nombre d'années</p>

PART 2. Risk perception and confidence in authorities / Risicoperceptie en vertrouwen in de overheid / Perception des risques et confiance dans les autorités

Q2.1 Some of the domains shown below *may pose higher health risks than others*. How do you perceive the potential risk **to your health within the next 20 years** from each of the following sources?

Ik zal u nu een lijst voorlezen met domeinen, waarvan het ene een groter gezondheidsrisico kan vormen dan het andere. Kunt u hieronder aangeven hoe u het potentiële risico voor **uw eigen gezondheid** in de komende 20 jaar inschat met betrekking tot de volgende domeinen?

Je vais vous lire une série d'éléments dont certains peuvent présenter plus de risques pour la santé que d'autres. Dans quelle mesure chacun de ces éléments présente, selon vous, un risque potentiel pour **votre propre santé** dans les vingt prochaines années ?

RP1	Environmental pollution Milieuvuiling La pollution environnementale	<p>1. No risk at all 2. Very low 3. Low 4. Moderate 5. High 6. Very high 9. Don't know / no answer</p> <p>1. Geen enkel risico 2. Zeer laag 3. Laag 4. Gemiddeld 5. Hoog 6. Zeer hoog 9. Ik weet het niet/geen antwoord</p> <p>1. Aucun risque 2. Très faible 3. Faible 4. Moyen 5. Elevé 6. Très élevé 9. Je ne sais pas, pas de réponse</p>
RP2	Radioactive waste Radioactief afval Les déchets radioactifs	
RP3	Chemical waste Chemisch afval Les déchets chimiques	
RP4	An accident in a chemical installation Een ongeval in een chemische installatie Un accident dans une installation chimique	
RP5	An accident in a nuclear installation Een ongeval in een nucleaire installatie Un accident dans une installation nucléaire	
RP6	Natural radiation (from the soil or from space) Natuurlijke straling (uit de grond of uit de ruimte) Les rayonnements naturels (provenant du sol ou le rayonnement atmosphérique)	
RP7	The use of ionising radiation for medical tests or treatments Het gebruik van ioniserende straling voor medische testen of behandelingen. L'utilisation du rayonnement ionisant pour les tests et traitements médicaux.	
RP8	The use of ionising radiation for food sterilization Het gebruik van ioniserende straling voor sterilisatie van voedsel L'utilisation du rayonnement ionisant pour la stérilisation de produits alimentaires.	<p>1. No risk at all 2. Very low 3. Low 4. Moderate 5. High 6. Very high 9. Don't know / no answer</p> <p>1. Geen enkel risico 2. Zeer laag 3. Laag 4. Gemiddeld 5. Hoog 6. Zeer hoog 9. Ik weet het niet/geen antwoord</p> <p>1. Aucun risque</p>
RP20	The use of recycled material with low levels of radioactivity for buildings. Het gebruik van gerecycleerd materiaal met lage hoeveelheden radioactiviteit voor gebouwen L'utilisation de matériaux recyclés faiblement radioactifs pour les bâtiments.	
RP21	Extension of the operational lifetime of nuclear reactors Doel 1 and 2. Levensduurverlenging van de kernreactoren Doel 1 en 2.	

	La prolongation de la durée de vie des réacteurs nucléaires Doel 1 et 2.	2. Très faible 3. Faible 4. Moyen 5. Elevé 6. Très élevé 9. Je ne sais pas, pas de réponse
RP9	Malicious use of nuclear technologies by terrorists Het misbruik van nucleaire technologieën door terroristen L'usage malintentionné des technologies nucléaires par des terroristes.	
RP10	Large-scale epidemic Een grootschalige epidemie Une épidémie à grande échelle	
RP11	Climate Crisis Klimaatcrisis La crise climatique	
RP12a	SPLIT BALLOT 1: Indoor air pollution due to radon Vervuiling van binnenlucht door radon La pollution de l'air intérieur par le radon	
RP12b	SPLIT BALLOT 2: The presence of the naturally radioactive gas-Radon indoors. De aanwezigheid binnenhuis van het natuurlijk radioactief gas radon Présence de radon, gaz radioactif naturel, à l'intérieur	

Q2.2 How much confidence do you have in the authorities for the actions they undertake to protect the population against risks from each of the following sources?

Hoe groot is uw vertrouwen in de autoriteiten voor de maatregelen die ze nemen om de bevolking te beschermen tegen risico's in elk van de volgende domeinen?

Quel niveau de confiance accordez-vous aux mesures que les autorités prennent pour protéger la population contre les risques liés à chacun des éléments suivants ?

RC1	Environmental pollution Milieuvervuiling La pollution environnementale	1. None 2. Very little 3. Little 4. Moderate 5. Quite a lot 6. Very much 9. Don't know / no answer 1. Geen 2. Zeer laag 3. Laag 4. Gemiddeld 5. Hoog 6. Zeer hoog 9. Ik weet het niet/geen antwoord
RC2	Radioactive waste Radioactief afval Les déchets radioactifs	
RC3	Chemical waste Chemisch afval Les déchets chimiques	
RC4	An accident in a chemical installation Een ongeval in een chemische installatie Un accident dans une installation chimique	
RC5	An accident in a nuclear installation Een ongeval in een nucleaire installatie Un accident dans une installation nucléaire	
RC6	Natural radiation (from the soil or from space) Natuurlijke straling (uit de grond of uit de ruimte) Les rayonnements naturels (provenant du sol ou le rayonnement atmosphérique)	
RC7	The use of ionising radiation for medical tests or treatments	

	Het gebruik van ioniserende straling voor medische testen of behandelingen. L'utilisation du rayonnement ionisant pour les tests et traitements médicaux.	9. Je ne sais pas / pas de réponse
RC8	The use of ionising radiation for food sterilization. Het gebruik van ioniserende straling voor sterilisatie van voedsel L'utilisation du rayonnement ionisant pour la stérilisation de produits alimentaires.	

RC20	The use of recycled material with low levels of radioactivity for buildings. Het gebruik van gerecycleerd materiaal met lage hoeveelheden radioactiviteit voor gebouwen L'utilisation de matériaux recyclés faiblement radioactifs dans ces bâtiments.	<p>1. None 2. Very little 3. Little 4. Moderate 5. Quite a lot 6. Very much 9. Don't know / no answer</p> <p>1. Geen 2. Zeer laag 3. Laag 4. Gemiddeld 5. Hoog 6. Zeer hoog 9. Ik weet het niet/geen antwoord</p> <p>1. Pas du tout 2. Très faible 3. Faible 4. Moyen 5. Elevé 6. Très élevé 9. Je ne sais pas / pas de réponse</p>
RC21	Extension of the operational lifetime of nuclear reactors Doel 1 and 2. Levensduurverlenging van de kernreactoren Doel 1 en 2. La prolongation de la durée de vie des réacteurs nucléaires Doel 1 et 2.	
RC9	Malicious use of nuclear technologies by terrorists Het misbruik van nucleaire technologieën door terroristen L'usage malintentionné des technologies nucléaires par des terroristes.	
RC10	Large-scale epidemic Een grootschalige epidemie Une épidémie à grande échelle	
RC11	Climate Crisis Klimaatcrisis La crise climatique	
RC12a	SPLIT BALLOT 1: Indoor air pollution due to radon Vervuiling van binnenlucht door radon La pollution de l'air intérieur par le radon	
RC12b	SPLIT BALLOT 2: The presence of the naturally radioactive gas- Radon indoors. Natuurlijk, radioactief gas binnenhuis – radon Présence de radon, gaz radioactif naturel, à l'intérieur	

PART 3. Uncertainty Preference Scale/ Omgaan met onzekerheid / Gérer l'incertitude

Q3.1 To what extent do you agree or disagree with the following statements?

In welke mate gaat u akkoord of niet akkoord met de volgende uitspraken?

Dans quelle mesure êtes-vous d'accord ou pas d'accord avec les déclarations suivantes ?

UP1	I tend to avoid information about health effects of radiation Ik heb de neiging om informatie over de gezondheidseffecten van straling TE VERMIJDEN J'ai tendance à EVITER les informations concernant les effets du rayonnement sur la santé	
UP1a	IF UP1 = AGREE OR STRONGLY AGREE: I tend to avoid information about health effects of radiation because I get anxious when I think about health effects of radiation Indien UP1= EERDER AKKOORD OF HELEMAAL AKKOORD: Ik heb de neiging om informatie over de gezondheidseffecten van straling te vermijden omdat ik angstig word wanneer ik over de impact van straling op de gezondheid nadenk SI UP1= PLUTOT D'ACCORD OU TOUT A FAIT D'ACCORD : J'ai tendance à éviter les informations concernant les effets du rayonnement sur la santé parce que je deviens anxieux lorsque je réfléchis aux effets du rayonnement sur la santé	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord
UP1b	IF UP1 = AGREE OR STRONGLY AGREE: I tend to avoid information about health effects of radiation because the recommendations are always changing. Indien UP1= EERDER AKKOORD OF HELEMAAL AKKOORD: Ik heb de neiging om informatie over de gezondheidseffecten van straling te vermijden omdat de aanbevelingen voortdurend veranderen SI UP1= PLUTOT D'ACCORD OU TOUT A FAIT D'ACCORD : J'essaie d'éviter les informations concernant les effets du rayonnement sur la santé parce que les recommandations changent constamment	1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse
UP1c	IF UP1 = AGREE OR STRONGLY AGREE: I tend to avoid information about health effects of radiation because the amount of information out there can be overwhelming. Indien UP1 = EERDER AKKOORD OF HELEMAAL AKKOORD: Ik heb de neiging om informatie over de gezondheidseffecten van straling te vermijden omdat de hoeveelheid informatie overweldigend kan zijn SI UP1= PLUTOT D'ACCORD OU TOUT A FAIT D'ACCORD J'essaie d'éviter les informations concernant les effets du rayonnement sur la santé parce que la quantité d'informations est colossale	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord
UP2	I tend to ACTIVELY SEEK OUT information about health effects of radiation Ik ben geneigd om ACTIEF OP ZOEK TE GAAN naar informatie over de impact van straling op de gezondheid. Je suis plutôt enclin à RECHERCHER ACTIVEMENT des informations concernant les effets du rayonnement sur la santé	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord
UP2a	IF UP2 = AGREE OR STRONGLY AGREE: I tend to ACTIVELY SEEK OUT information about health effects of radiation because I want to get this information from different sources. Indien UP2 = EERDER AKKOORD OF HELEMAAL AKKOORD Ik ben geneigd om ACTIEF OP ZOEK TE GAAN naar informatie over de impact van straling op de gezondheid omdat ik vanuit verschillende bronnen deze informatie wil krijgen.	1. Pas du tout d'accord 2. Plutôt pas d'accord

	<p>SI UP2 = PLUTOT D'ACCORD OU TOUT A FAIT D'ACCORD Je suis plutôt enclin à RECHERCHER ACTIVEMENT des informations concernant les effets du rayonnement sur la santé parce que je souhaite avoir ces informations de différentes sources.</p>	<p>3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse</p>
UP2b	<p>IF UP2 = AGREE OR STRONGLY AGREE: I tend to ACTIVELY SEEK OUT information about health effects of radiation because new information can give me hope that I can protect myself from radiation Indien UP2 = EERDER AKKOORD OF HELEMAAL AKKOORD Ik ben geneigd om ACTIEF OP ZOEK TE GAAN naar informatie over de impact van straling op de gezondheid omdat nieuwe informatie me hoop kan geven dat ik mezelf tegen straling kan beschermen</p> <p>SI UP2 = PLUTOT D'ACCORD OU TOUT A FAIT D'ACCORD Je suis plutôt enclin à RECHERCHER ACTIVEMENT des informations concernant les effets du rayonnement sur la santé parce que de nouvelles informations peuvent me donner l'espoir que je peux me protéger des rayonnements</p>	
UP2c	<p>IF UP2 = AGREE OR STRONGLY AGREE: I tend to ACTIVELY SEEK OUT information about health effects of radiation because new information can help me assess my own risks. Indien UP2 = EERDER AKKOORD OF HELEMAAL AKKOORD Ik ben geneigd om ACTIEF OP ZOEK TE GAAN naar informatie over de impact van straling op de gezondheid omdat nieuwe informatie me kan helpen om de risico's voor mezelf beter in te schatten</p> <p>SI UP2 = PLUTOT D'ACCORD OU TOUT A FAIT D'ACCORD Je suis plutôt enclin à RECHERCHER ACTIVEMENT des informations concernant les effets du rayonnement sur la santé parce que de nouvelles informations peuvent m'aider à mieux évaluer les risques pour ma santé</p>	

PART 4. Attitude towards science and technology/Houding tegenover wetenschap en technologie/ Attitude vis-à-vis des science et technologie

Q3.1 I will now read out a number of statements related to science and technology. Please indicate to what extent you agree or disagree with the following statements related to science and technology:

Nu zal ik u een aantal uitspraken voorlezen in verband met wetenschap en technologie. Kunt u voor elk van deze uitspraken aangeven in welke mate u hiermee akkoord gaat of niet?

Je vais vous lire un certain nombre d'affirmations relatives à la science et la technologie. Pouvez-vous me dire dans quelle mesure vous êtes d'accord ou non avec chacune de celles-ci ?

AX2	<p>Future generations will have a better quality of life as a result of science and technology.</p> <p>Wetenschap en technologie zullen zorgen voor een betere levenskwaliteit voor toekomstige generaties.</p> <p>Grâce à la science et à la technologie, les générations futures auront une meilleure qualité de vie.</p>	<p>1. Strongly Disagree</p> <p>2. Disagree</p> <p>3. Neither agree, nor disagree</p> <p>4. Agree</p> <p>5. Strongly Agree</p> <p>9. Don't know / no answer</p>
AX3	<p>Science and technology make our lives easier</p> <p>Wetenschap en technologie maken ons leven gemakkelijker.</p> <p>La science et la technologie rendent nos vies plus faciles.</p>	<p>1. Helemaal niet akkoord</p> <p>2. Eerder niet akkoord</p> <p>3. Noch akkoord, noch niet akkoord</p> <p>4. Eerder akkoord</p> <p>5. Helemaal akkoord</p> <p>9. Ik weet het niet / Geen antwoord</p>
AX9	<p>The benefits of science and technology are greater than its harmful effects.</p> <p>De voordelen van wetenschap en technologie zijn groter dan de schadelijke effecten</p> <p>Les bénéfices apportés par la science et la technologie dépassent les effets nocifs</p>	<p>1. Pas du tout d'accord</p> <p>2. Plutôt pas d'accord</p> <p>3. Ni d'accord, ni pas d'accord</p> <p>4. Plutôt d'accord</p> <p>5. Tout à fait d'accord</p> <p>9. je ne sais pas / pas de réponse</p>
AX11	<p>We do NOT need further development of science & technology</p> <p>We hebben GEEN verdere ontwikkeling van wetenschap & technologie nodig</p> <p>Nous n'avons PAS besoin du développement des sciences & technologies</p>	<p>1. Totally against</p> <p>2. Somewhat against</p> <p>3. Neither in favour nor against</p> <p>4. Somewhat in favour</p> <p>5. Totally in favour</p> <p>9. Don't know/no answer</p>
AX10	<p>Overall, to what extent are you favourable or unfavourable towards the development of science and technology? Are you...</p> <p>In het algemeen, in welke mate bent u voor of tegen de ontwikkeling van wetenschap en technologie? Bent u...</p> <p>En général, dans quelle mesure êtes-vous pour ou contre le développement de la science et de la technologie ? Vous y êtes ...</p>	<p>1. Helemaal tegen</p> <p>2. Eerder tegen</p> <p>3. Noch voor, noch tegen</p> <p>4. Eerder voor</p> <p>5. Helemaal voor</p> <p>9. Weet niet/geen antwoord</p>

PART 5. Attitude towards nuclear energy/Mening over nucleaire energie/Opinion vis-à-vis de l'énergie nucléaire

Q5.1 Now we will ask you some questions related to nuclear energy

Nu gaan we u een aantal vragen stellen over kernenergie

Nous allons maintenant vous poser une série de questions concernant l'énergie nucléaire.

RT2	<p>What is your opinion about the use of nuclear energy for electricity production? Are you..</p> <p>Wat is uw mening over het gebruik van kernenergie voor de productie van elektriciteit? Bent u...</p> <p>Quelle est votre opinion concernant l'utilisation de l'énergie nucléaire pour la production d'électricité ? Vous y êtes ...</p>	<p>1. Totally in favour 2. Rather in favour 3. Neither in favour, nor against 4. Rather against 5. Totally against 9. Don't know/no answer</p> <p>1. Helemaal voor 2. Eerder voor 3. Noch voor, noch tegen 4. Eerder tegen 5. Helemaal tegen 9. Ik weet het niet/geen antwoord</p> <p>1: Tout à fait favorable 2: Favorable 3: Ni favorable ni opposé(e) 4: Opposé(e) 5: Tout à fait opposé(e) 9: Je ne sais pas / pas de réponse</p>
-----	--	---

Q5.2 To what extent do you agree or disagree with the following statements?

In welke mate gaat u akkoord of niet akkoord met de volgende uitspraken?

Dans quelle mesure êtes-vous d'accord ou pas d'accord avec les déclarations suivantes ?

RT3	<p>Overall, the benefits of nuclear energy outweigh the disadvantages.</p> <p>Globaal genomen zijn de voordelen van kernenergie groter dan de nadelen.</p> <p>Globalement, les bénéfices de l'énergie nucléaire sont plus importants que ses inconvénients.</p>	<p>1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer</p> <p>1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord</p> <p>1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse</p>
RT4	<p>The reduction of the number of nuclear power plants in Belgium is a good thing.</p> <p>De vermindering van het aantal kerncentrales in België is een goede zaak.</p> <p>La réduction du nombre de centrales nucléaires en Belgique est une bonne chose.</p>	
RT5	<p>Nuclear power plants endanger the future of our children.</p> <p>Kerncentrales vormen een gevaar voor de toekomst van onze kinderen.</p> <p>Les centrales nucléaires mettent en péril l'avenir de nos enfants.</p>	
NC1	<p>Nuclear energy is a climate-friendly technology.</p> <p>Nucleaire energie is een klimaatvriendelijke technologie.</p> <p>L'énergie nucléaire est une technologie respectueuse du climat.</p>	
NC2	<p>I am willing to pay more for electricity to support the use of renewable energy.</p> <p>Ik ben bereid meer te betalen voor elektriciteit om het gebruik van hernieuwbare energiebronnen te ondersteunen.</p> <p>Je suis prêt(e) à payer plus cher pour mon électricité pour soutenir l'utilisation des énergies renouvelables.</p>	
NC3	<p>Renewable energy sources are currently not able to cover our current energy needs.</p> <p>Hernieuwbare energiebronnen zijn momenteel niet in staat om</p>	

	<p>onze huidige energiebehoeften te dekken.</p> <p>Les sources d'énergies renouvelables ne sont actuellement pas capables de couvrir nos besoins actuels en énergie.</p>	
--	--	--

G1	<p>Which of the following statements about nuclear power plants in Belgium is closest to your opinion?</p> <p>Welk van de volgende standpunten over Belgische kerncentrales sluit het dichtst aan bij uw mening?</p> <p>Laquelle des affirmations suivantes se rapproche le plus de votre propre opinion concernant les centrales nucléaires en Belgique ?</p>	<p>Only one answer possible</p> <p>1. Belgium should close all its nuclear power plants as soon as possible.</p> <p>2. Belgium should use the nuclear power plants it already has, but not build new ones.</p> <p>3. Belgium should use the nuclear power plants it already has and build new nuclear power plants to replace the old ones.</p> <p>4. Belgium should close the existing power plants and build new ones.</p> <p>5. Other (OPEN OPTION)</p> <p>9. Don't know / no answer</p> <p>Slechts één antwoord mogelijk</p> <p>1. België moet zo snel mogelijk al haar kerncentrales sluiten.</p> <p>2. België dient de bestaande kerncentrales te gebruiken, maar mag geen nieuwe bouwen.</p> <p>3. België dient de bestaande kerncentrales te gebruiken en dient nieuwe kerncentrales te bouwen om de oude te vervangen.</p> <p>4. België dient de bestaande kerncentrales te sluiten en dient nieuwe kerncentrales te bouwen</p> <p>5. Andere: (OPEN OPTION)</p> <p>9. Ik weet het niet/geen antwoord</p> <p>Une seule réponse possible :</p> <p>1. La Belgique devrait fermer toutes ses centrales nucléaires aussi rapidement que possible.</p> <p>2. La Belgique devrait utiliser les centrales nucléaires existantes mais ne devrait pas en construire de nouvelles.</p> <p>3. La Belgique devrait utiliser les centrales nucléaires existantes et en construire de nouvelles pour remplacer les anciennes.</p> <p>4. La Belgique devrait fermer les centrales nucléaires existantes et en construire de nouvelles.</p> <p>5. Autre : (OPEN OPTION)</p> <p>9. Je ne sais pas / pas de réponse</p>
----	--	---

PART 6. Confidence in the management of nuclear technologies / Vertrouwen in het beheer van nucleaire technologie / Confiance dans la gestion des technologies nucléaires

Q5.1 Now we will discuss the management of nuclear technologies. To what extent do you agree or disagree with the following statements?

Laten we het nu hebben over het beheer van nucleaire technologieën. In welke mate gaat u akkoord of niet akkoord met de volgende uitspraken?

Abordons maintenant le sujet de la gestion des technologies nucléaires. Dans quelle mesure êtes-vous d'accord ou pas d'accord avec les affirmations suivantes ?

MN1	Nuclear reactors in Belgium are operated in a safe manner. Kernreactoren in België worden op een veilige manier uitgebraat. Les réacteurs nucléaires en Belgique sont exploités de manière sûre.	<p>1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer</p> <p>1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord</p> <p>1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse</p>
MN2	There is insufficient control by authorities on the safety of nuclear installations in Belgium. Er is onvoldoende overheidscontrole op de veiligheid van nucleaire installaties in België. Il n'y a pas suffisamment de contrôles de sécurité effectués par les autorités dans les installations nucléaires en Belgique.	
MN3	In Belgium, radioactive waste is handled in a safe manner. Het radioactief afval wordt in België op een veilige manier beheerd. En Belgique, les déchets radioactifs sont gérés de façon sûre.	
MN6	I feel well protected against risks from nuclear installations. Ik voel me goed beschermd tegen de risico's van nucleaire installaties. Je me sens bien protégé(e) contre les risques générés par les installations nucléaires.	
MN7	Nuclear installations in Belgium are vulnerable to terrorism. Nucleaire installaties in België zijn kwetsbaar voor terrorisme. Les installations nucléaires en Belgique sont vulnérables au terrorisme.	

PART 7: Actors in the nuclear field / Actoren op nucleair gebied / Acteurs du secteur nucléaire

When we look at the nuclear energy sector and nuclear activities, can you tell us:

- Whether you know the following actors
- If so, can you tell us if you think they are:
 - telling the truth** about the risks and benefits of nuclear technologies
 - technically competent** to point out the risks and benefits of nuclear technologies
 - Not knowing an actor is a filter for "telling the truth" and "being technically competent"**

Q7.1. Do you know....?

RANDOMISE

	Q7.2 NST	Q7.3 NSC	
	<i>Know them</i>	<i>Telling the truth</i>	<i>Technically competent</i>
1. Environmental organisations such as Greenpeace			<u>Knowledge:</u> 1. Yes 2. No
2. ENGIE Electrabel			
3. The Federal Agency for Nuclear Control (FANC)			<u>Truth & competence:</u> 1. Strongly disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly agree 9. Don't know / no answer
4. The national agency for radioactive waste and enriched fissile materials (ONDRAF/NIRAS)			
5. SCK CEN (the Belgian Nuclear Research Centre) in Mol			
6. Scientists from Universities			

Wanneer we kijken naar het domein van kernenergie en andere nucleaire activiteiten, kunt u mij zeggen:

- of u de volgende actoren kent?
- en indien u ze kent:
 - kunt u ons vertellen of u denkt dat zij de **waarheid vertellen** over de risico's en voordelen van nucleaire technologieën? (NST)
 - of u hen als **technisch bekwaam** beschouwt om de risico's en voordelen van nucleaire technologieën te duiden? (NSC)

- ...Vertelt/vertellen de waarheid over de risico's en voordelen van nucleaire technologieën?
- ...Is/Zijn technisch bekwaam-wat betreft de risico's en voordelen van nucleaire technologieën?

Q7.1. Kent u...

RANDOMIZE

	Q7.2 NST	Q7.3 NSC	
	<i>Bekend</i>	<i>Vertelt de waarheid</i>	<i>Technisch bekwaam</i>
1. Milieubewegingen, zoals Greenpeace of Bond Beter Leefmilieu			<u>Kennen:</u> 1. Ja 2. Nee
2. ENGIE Electrabel			

3. Het Federaal Agentschap voor Nucleaire Controle (FANC)				<u>Waarheid & technisch bekwaam:</u> 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / geen antwoord
4. De Nationale Instelling voor Radioactief Afval en verrijkte Splijtstoffen (NIRAS)				
5. Het Studiecentrum voor Kernenergie (SCK CEN) in Mol				
6. Wetenschappers uit universiteiten				

Si nous considérons maintenant le secteur de l'énergie nucléaire et ses activités, pouvez-vous nous dire :

a) si vous connaissez les acteurs suivants ?

b) si oui :

- Dans quelle mesure êtes-vous d'accord ou non que chacun des acteurs suivants **dit la vérité** à propos des risques et des bénéfices des technologies nucléaires ? (NST)
- Et dans quelle mesure êtes-vous d'accord ou non que chacun des acteurs suivants est **techniquement compétent** en ce qui concerne les risques et bénéfices des technologies nucléaires ? (NSC)
- Ne posez pas la question « dit la vérité » et « est compétent » que si la personne connaît l'acteur

1 dit/disent la vérité à propos des risques et des bénéfices des technologies nucléaires ? (NST)

2 est/sont techniquement compétent(s) en matière des risques et bénéfices des technologies nucléaires ? (NSC)

« x » dans la première colonne = ne pas demander si la personne connaît l'acteur

RANDOMIZE

Q7.1. Connaissez-vous ... ?

Q7.2 NST **Q7.3** NSC

Connu Dit la vérité Compétent

1. Les associations environnementales, par exemple Greenpeace ou Inter-Environnement Wallonie				<u>Connu :</u> 1. Oui 2. Non
2. ENGIE Electrabel				
3. L'agence fédérale de contrôle nucléaire (AFCN)				<u>Dit la vérité & compétent :</u> 1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse
4. L'organisme national des déchets radioactifs et des matières fissiles enrichies (ONDRAF)				
5. Le Centre d'étude de l'énergie nucléaire (SCK CEN)				
6. Les scientifiques des universités travaillant dans le domaine de la science et de la technologie nucléaires				

PART 8 : Decommissioning/ Declassering / Déclassement

INTRO_DE1 The following questions are related to Belgian nuclear power plants after they've permanently stopped producing nuclear energy.

INTRO_DE1 Ik zal nu een aantal vragen stellen in verband met Belgische kerncentrales nadat ze definitief gestopt zijn met het produceren van kernenergie.

INTRO_DE1 Maintenant nous allons vous poser une série de questions à propos des centrales nucléaires belges après avoir arrêté définitivement leurs activités de production d'énergie nucléaire.

DE1	<p>Have you ever thought about what happens with a nuclear power plant after it has permanently stopped producing nuclear energy?</p> <p>Hebt u er al eens aan gedacht wat er gebeurt met een kerncentrale nadat deze definitief gestopt is met het produceren van kernenergie?</p> <p>Avez-vous déjà songé à ce qu'advierait d'une centrale nucléaire après avoir arrêté définitivement ses activités de production d'énergie nucléaire ?</p>	<p>1. Yes 2. No</p> <p>1. Ja 2. Nee</p> <p>1. Oui 2. Non</p>
DI	<p>To what extent do you consider yourself to be informed about what happens with a nuclear power plant after it has permanently stopped producing nuclear energy?</p> <p>In welke mate denkt u geïnformeerd te zijn over wat er gebeurt met een kerncentrale nadat deze definitief gestopt is met het produceren van kernenergie?</p> <p>Dans quelle mesure pensez-vous être informé(e) à ce qu'advierait d'une centrale nucléaire après avoir arrêté définitivement ses activités de production d'énergie nucléaire ?</p>	<p>I am:</p> <p>1. Uninformed 2. Little informed 3. Moderately informed 4. Rather well informed 5. Very well informed 9. Don't know/no answer</p> <p>1. Niet geïnformeerd 2. Weinig geïnformeerd 3. Matig geïnformeerd 4. Redelijk geïnformeerd 5. Zeer (goed) geïnformeerd 9. Ik weet niet / Geen antwoord</p> <p>1. Pas informé(e) 2. Peu informé(e) 3. Moyennement informé(e) 4. Assez informé(e) 5. Très informé(e) 9. Ne sais pas/ Pas de réponse</p>
DIN1	<p>If you saw a news article related to what happens with a nuclear power plant after it has permanently stopped producing nuclear energy, would you take the time to read it?</p> <p>Mocht u een nieuwsartikel zien over wat er gebeurt met een kerncentrale nadat deze definitief gestopt is met het produceren van kernenergie, zou u dan de tijd nemen om het te lezen?</p> <p>Si vous aperceviez un article sur ce qu'il advient des centrales nucléaires en Belgique après avoir arrêté définitivement leurs activités de production d'énergie nucléaire, prendriez-vous le temps de le lire ?</p>	<p>1. Definitely not 2. Probably not 3. Unsure 4. Probably yes 5. Definitely yes 9. Don't know / no answer</p> <p>1. Zeker niet 2. Waarschijnlijk niet 3. Onbeslist 4. Waarschijnlijk wel 5. Zeker 9. Ik weet het niet/ geen antwoord</p> <p>1. Certainement pas 2. Probablement pas 3. Indécis(e) 4. Probablement 5. Certainement 9. Je ne sais pas / pas de réponse</p>

DRP1	<p>How do you perceive the potential risk to your health from nuclear power plants in Belgium after they have stopped producing nuclear energy?</p> <p>Hoe beoordeelt u het mogelijke risico voor uw gezondheid vanuit kerncentrales in België nadat deze gestopt zijn met het produceren van kernenergie?</p> <p>Comment évaluez-vous le risque pour votre santé que représentent les centrales nucléaires en Belgique après avoir arrêté leurs activités de production d'énergie nucléaire ?</p>	<p>1. No risk at all 2. Very low 3. Low 4. Moderate 5. High 6. Very high 9. Don't know / no answer</p> <p>1. Geen enkel risico 2. Zeer laag 3. Laag 4. Gemiddeld 5. Hoog 6. Zeer hoog 9. Ik weet het niet/geen antwoord</p> <p>1. Aucun risque 2. Très faible 3. Faible 4. Moyen 5. Elevé 6. Très élevé 9. Je ne sais pas / pas de réponse</p>
------	--	--

Q8.2. The end-state of a nuclear power plant after it has permanently stopped producing nuclear energy can be different.

Q8.2. De eindtoestand van een kerncentrale nadat deze definitief gestopt is met het produceren van energie kan verschillend zijn.

Q8.2. L'état d'une centrale nucléaire en fin de vie après avoir cessé définitivement ses activités de production d'énergie nucléaire peut être différent.

DE4	<p>In your opinion, what should happen with Belgian nuclear power plants after they have permanently stopped producing nuclear energy?</p> <p>Wat zou er volgens u moeten gebeuren met Belgische kerncentrales nadat deze definitief gestopt zijn met het produceren van kernenergie?</p> <p>Selon vous, que faut-il faire des centrales nucléaires après avoir arrêté définitivement leurs activités de production d'énergie nucléaire ?</p>	<p>Only one answer possible</p> <p>1. Removal of all traces of the NPP and its activities. 2. Reuse of parts of the installation (for instance its foundation) for other, non-nuclear, industrial purposes 3. Site reuse for activities involving radioactive materials, for instance storage of nuclear waste 4. Carry out the necessary works so that the site is preserved in a safe way for many decades, until the remaining radioactivity has decayed. 5. Other 9. I don't know / no answer</p> <p>1. De volledige verwijdering van alle sporen van de kerncentrale en bijhorende activiteiten. 2. Hergebruiken van bepaalde delen van de installatie (bijvoorbeeld de fundamente) voor andere, niet-nucleaire, industriële doeleinden. 3. Site hergebruiken voor activiteiten die te maken hebben met radioactief materiaal, bijvoorbeeld opslag van nucleair afval. 4. Het uitvoeren van de noodzakelijke werkzaamheden zodat de site veilig behouden blijft voor meerdere decennia, totdat de achtergebleven radioactiviteit volledig uitgewerkt is. 5. Andere 9. Ik weet het niet/geen antwoord</p> <p>1. La suppression totale de toutes les traces de la centrale et de ses activités. 2. La réutilisation de certains éléments de l'installation (comme ses fondations) pour d'autres activités industrielles non-nucléaires. 3. La réaffectation du site pour des activités impliquant l'utilisation de matières radioactives, comme le stockage de déchets radioactifs. 4. La réalisation des travaux nécessaires pour préserver la sécurité du site pendant plusieurs décennies, jusqu'à disparition totale de la radioactivité.</p>
-----	---	--

		5. Autre 9. Je ne sais pas/pas de réponse
--	--	--

Experiment: / Experiment:/ Expérience

FILTER: Choose one of the introductions related to decommissioning of nuclear power plants.

FILTER: Kies een van de introducties in verband met de declassering van kerncentrales.

FILTRE : Choisissez une des introductions relatives au déclassement des centrales nucléaires.

UNC1a (experimental group 1):

After they have permanently stopped producing nuclear energy, nuclear power plants must be decommissioned. This entails four steps: dismantling of the (1) installation and the (2) infrastructure, the (3) remediation and clearance of the buildings, and (4) the demolition of these buildings. After these steps, the radioactivity is only present in the form of traces.

However, experts are uncertain if the remaining radioactivity will be accepted by the public.



UNC1a (experimentele groep 1)

Nadat ze definitief gestopt zijn met het produceren van kernenergie, moeten kerncentrales gedeclasserd worden. Dit proces omvat vier stappen: de ontmanteling van de (1) installatie en de (2) infrastructuur, (3) de sanering en de ontruiming van de gebouwen (4) en de sloping van deze gebouwen. Na deze stappen, is de radioactiviteit enkel nog in de vorm van sporen aanwezig.

Experts zijn echter onzeker of de resterende radioactiviteit door het publiek aanvaard zal worden.

UNC1a (groupe expérimental 1)

Après avoir définitivement arrêté de produire de l'énergie nucléaire, les centrales nucléaires doivent être déclassées. Ce processus comporte quatre étapes : le démantèlement (1) de l'installation et (2) des infrastructures, (3) l'assainissement et l'évacuation des bâtiments et enfin (4) la démolition de ces derniers. Une fois ces étapes terminées, la radioactivité n'est plus présente que sous forme de traces.

Les experts ne sont toutefois pas certains que le public acceptera la radioactivité résiduelle.

UNC1b (experimental group 2)

After they have permanently stopped producing nuclear energy, nuclear power plants must be decommissioned. This entails four steps: dismantling of the (1) installation and the (2) infrastructure, the (3) remediation and clearance of the buildings, and (4) the demolition of these buildings. After these steps, the radioactivity is only present in the form of traces.

Experts are also uncertain about the amount of radioactive waste that will be generated by decommissioning.



UNC1b (experimentele groep 2)

Nadat ze definitief gestopt zijn met het produceren van kernenergie, moeten kerncentrales gedeclineerd worden. Dit proces omvat vier stappen: de ontmanteling van de (1) installatie en de (2) infrastructuur, (3) de sanering en de ontruiming van de gebouwen (4) en de sloping van deze gebouwen. Na deze stappen, is de radioactiviteit enkel nog in de vorm van sporen aanwezig.

Experts zijn echter onzeker over de hoeveelheid radioactief afval die door de declassering gegenereerd zal worden.

UNC1b (groupe expérimental 2)

Après avoir définitivement arrêté de produire de l'énergie nucléaire, les centrales nucléaires doivent être déclassées. Ce processus comporte quatre étapes : le démantèlement (1) de l'installation et (2) des infrastructures, (3) l'assainissement et l'évacuation des bâtiments et enfin (4) la démolition de ces derniers. Une fois ces étapes terminées, la radioactivité n'est plus présente que sous forme de traces.

Les experts ne sont toutefois pas certains de pouvoir déterminer la quantité exacte de déchets radioactifs qui seront générés par le déclassement.

UNC1c (experimental group 3)

After they have permanently stopped producing nuclear energy, nuclear power plants must be decommissioned. This entails four steps: dismantling of the (1) installation and the (2) infrastructure, the (3) remediation and clearance of the buildings, and (4) the demolition of these buildings. After these steps, the radioactivity is only present in the form of traces.

However, experts are uncertain about the financial costs of decommissioning a nuclear installation.



UNC1c (experimentele groep 3)

Nadat ze definitief gestopt zijn met het produceren van kernenergie, moeten kerncentrales gedeclineerd worden. Dit proces omvat vier stappen: de ontmanteling van de (1) installatie en de (2) infrastructuur, (3) de sanering en de ontruiming van de gebouwen (4) en de sloping van deze gebouwen. Na deze stappen, is de radioactiviteit enkel nog in de vorm van sporen aanwezig.

Experts zijn echter onzeker over de hoeveelheid radioactief afval die door de declassering gegenereerd zal worden.

UNC1c (groupe expérimental 3)

Après avoir définitivement arrêté de produire de l'énergie nucléaire, les centrales nucléaires doivent être déclassées. Ce processus comporte quatre étapes : le démantèlement (1) de l'installation et (2) des infrastructures, (3) l'assainissement et l'évacuation des bâtiments et enfin (4) la démolition de ces derniers. Une fois ces étapes terminées, la radioactivité n'est plus présente que sous forme de traces.

Les experts ne sont toutefois pas certains de pouvoir déterminer les coûts financiers engendrés par le déclassement d'une centrale nucléaire.

UNC1d (control group)

After they have permanently stopped producing nuclear energy, nuclear power plants must be decommissioned. This entails four steps: dismantling of the (1) installation and the (2) infrastructure, the (3) remediation and clearance of the buildings, and (4) the demolition of these buildings. After these steps, the radioactivity is only present in the form of traces.

UNC1d (controlegroep)

Nadat ze definitief gestopt zijn met het produceren van kernenergie, moeten kerncentrales gedeclineerd worden. Dit proces omvat vier stappen: de ontmanteling van de (1) installatie en de (2) infrastructuur, (3) de sanering en de ontruiming van de gebouwen (4) en de sloping van deze gebouwen. Na deze stappen, is de radioactiviteit enkel nog in de vorm van sporen aanwezig.

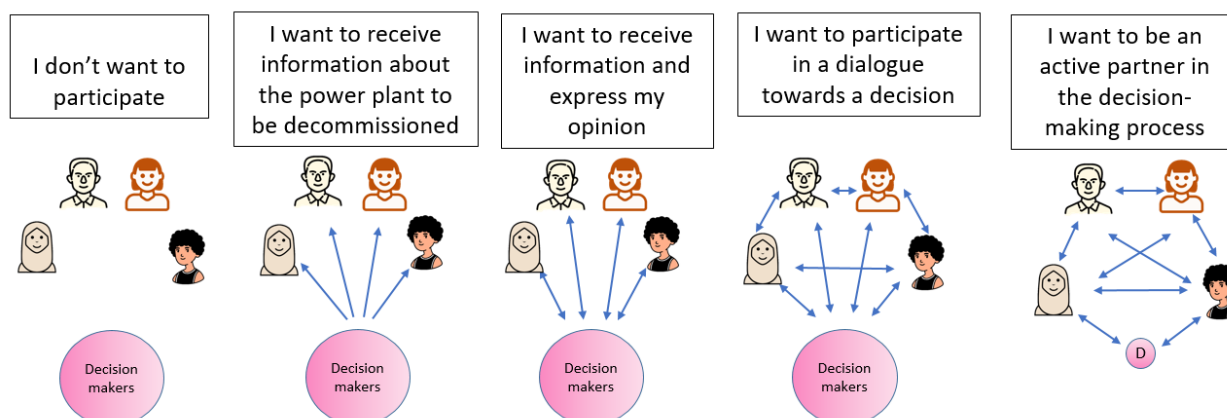
UNC1d (groupe de contrôle)

Après avoir définitivement arrêté de produire de l'énergie nucléaire, les centrales nucléaires doivent être déclassées. Ce processus comporte quatre étapes : le démantèlement (1) de l'installation et (2) des infrastructures, (3) l'assainissement et l'évacuation des bâtiments et enfin (4) la démolition de ces derniers. Une fois ces étapes terminées, la radioactivité n'est plus présente que sous forme de traces.

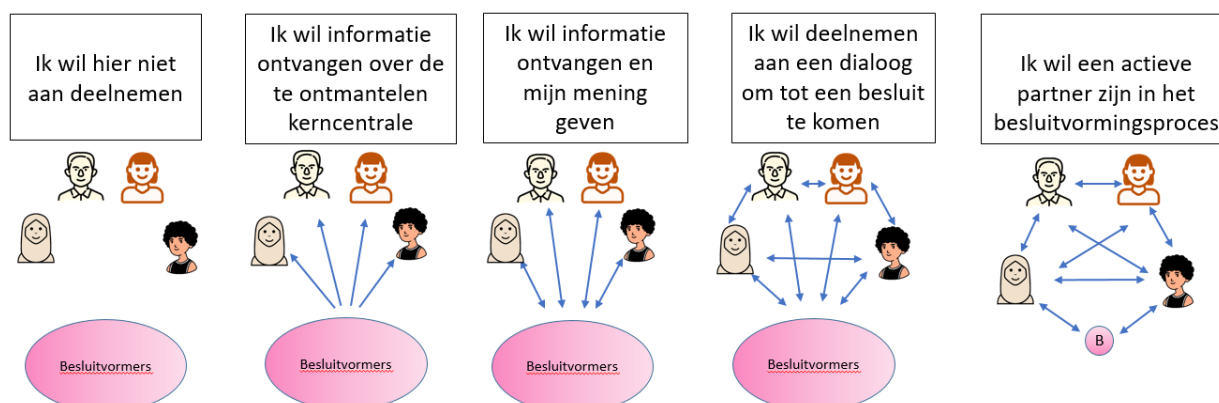
These four groups are relevant for the next questions (DE10a and DE10b)

SPLIT RESPONDENTS IN 2 GROUPS: Split each of the 4 previous groups in 2 (50% of each of the 4 groups for DE10a)

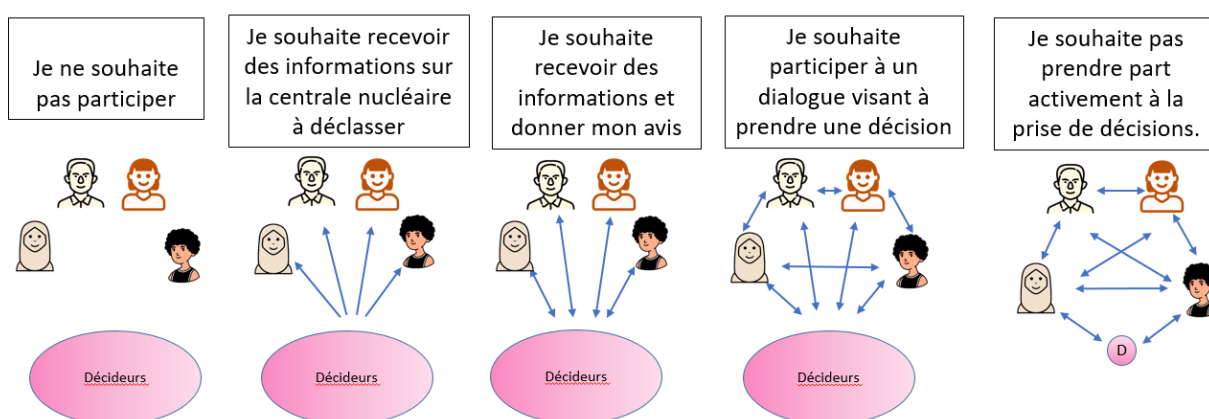
DE10a	If there is an initiative to involve citizens in the decision-making process concerning decommissioning of nuclear power plants in Belgium (offered at flexible dates and hours), and anybody could participate, to what extent would you like to do so?	<p>SINGLE RESPONSE</p> <p>Show Graphical Card (indicating that higher values imply a more active participation):</p> <p>1 = I don't want to participate</p> <p>2 = I want to receive information about the power plant to be decommissioned</p> <p>3 = I want to receive information and express my opinion</p> <p>4 = I want to participate in a dialogue towards a decision</p> <p>5 = I want to be an active partner in the decision-making process</p> <p>Don't know/ no answer</p>
--------------	--	---



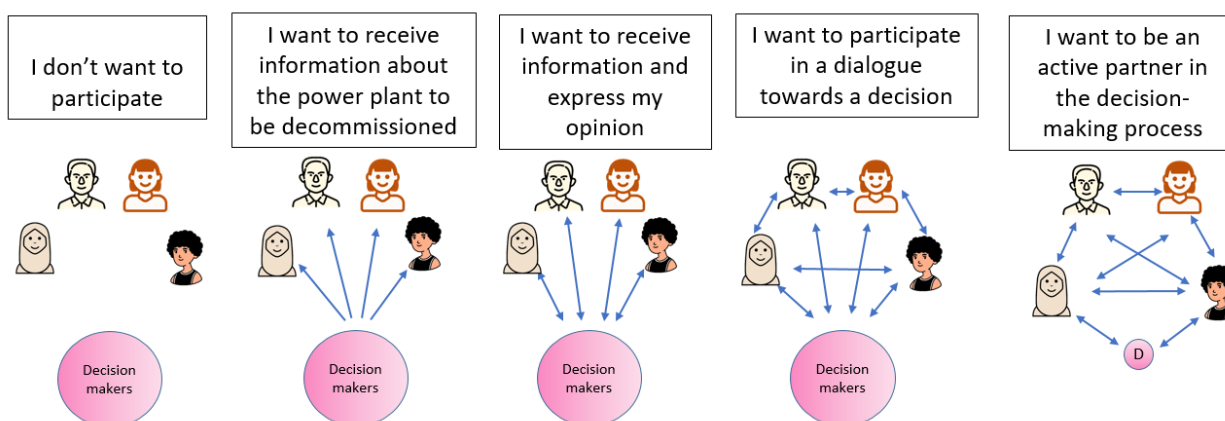
DE10a	Indien er een initiatief wordt opgestart om burgers bij het besluitvormingsproces over de declassering van kerncentrales in België te betrekken (met flexibele data en uren) en iedereen zou kunnen deelnemen, in welke mate zou u dit dan willen doen?	<p>Toon een grafische kaart (aangevend dat hogere waarden een actievere participatie aanduiden):</p> <p>1 MOGELIJK ANTWOORD</p> <p>1 = Ik wil hier niet aan deelnemen</p> <p>2 = Ik wil informatie ontvangen over de te declasserende kerncentrale</p> <p>3 = Ik wil informatie ontvangen en mijn mening geven</p> <p>4 = Ik wil deelnemen aan een dialoog om tot een besluit te komen</p> <p>5 = Ik wil een actieve partner zijn in het besluitvormingsproces</p> <p>9. Ik weet het niet/ geen antwoord</p>
--------------	---	---



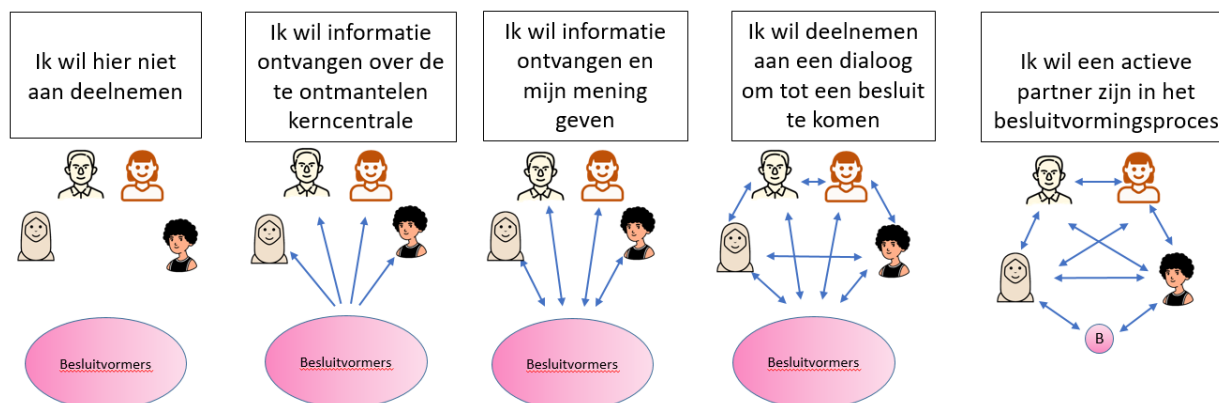
DE10a	<p>S'il existait une initiative visant à impliquer les citoyens dans le processus de prise de décision concernant le déclassement des centrales nucléaires en Belgique (proposé à des dates et heures flexibles), et n'importe qui pourrait participer, dans quelle mesure souhaiteriez-vous y prendre part ?</p> <p>S'il existait une initiative visant à impliquer les citoyens dans le processus de prise de décision concernant le déclassement des centrales nucléaires en Belgique (proposé à des dates et heures flexibles), et n'importe qui pourrait participer, dans quelle mesure souhaiteriez-vous y prendre part ?</p>	<p>Présentez une carte graphique (indiquant que les valeurs supérieures indiquent une participation plus active) :</p> <p>1 SEULE RÉPONSE POSSIBLE</p> <p>1 = Je ne souhaite pas participer</p> <p>2 = Je souhaite recevoir des informations sur la centrale nucléaire à déclasser</p> <p>3 = Je souhaite recevoir des informations et donner mon avis.</p> <p>4 = Je souhaite participer à un dialogue visant à prendre une décision</p> <p>5 = Je souhaite prendre part activement à la prise de décisions.</p> <p>9. Je ne sais pas/ pas de réponse</p>
--------------	---	---



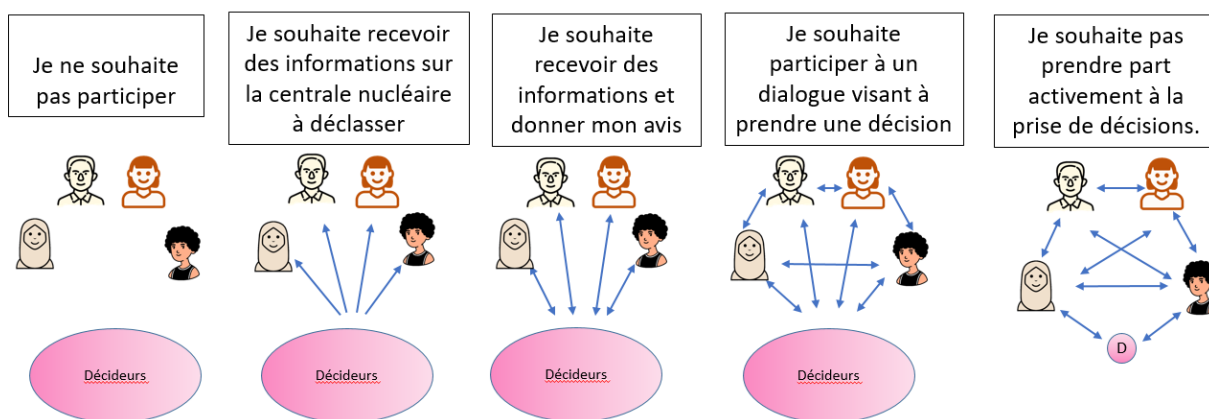
DE10b	Currently, there is an initiative to involve citizens in the decision-making process concerning decommissioning of nuclear power plants in Belgium (offered in flexible dates and hours), and anybody can participate. Would you like to write your name in the list so that you can be involved in the decision-making process? (Indicate your preference here and we will provide you more information after the survey).	<p>SINGLE RESPONSE</p> <p>Show Graphical Card (indicating that higher values imply a more active participation):</p> <p>1 = I don't want to participate</p> <p>2 = I want to receive information about the power plant to be decommissioned</p> <p>3 = I want to receive information and express my opinion</p> <p>4 = I want to participate in a dialogue towards a decision</p> <p>5 = I want to be an active partner in the decision-making process</p> <p>9. Don't know/ no answer</p>
--------------	---	--



DE10b	Er loopt momenteel een initiatief om burgers bij het besluitvormingsproces over de declassering van kerncentrales in België te betrekken (met flexibele data en uren) en iedereen kan deelnemen. Zou u zich hiervoor willen inschrijven zodat u betrokken kan worden bij het besluitvormingsproces? (Gelieve hier uw voorkeur aan te geven en wij zullen u na de enquête meer informatie geven.)	<p>Toon een grafische kaart (aangevend dat hogere waarden een actievere participatie aanduiden):</p> <p>1 MOGELIJK ANTWOORD</p> <p>1 = Ik wil hier niet aan deelnemen</p> <p>2 = Ik wil informatie ontvangen over de te declasserende kerncentrale</p> <p>3 = Ik wil informatie ontvangen en mijn mening geven</p> <p>4 = Ik wil deelnemen aan een dialoog om tot een besluit te komen</p> <p>5 = Ik wil een actieve partner zijn in het besluitvormingsproces</p> <p>9. Ik weet het niet/ geen antwoord</p>
--------------	--	--



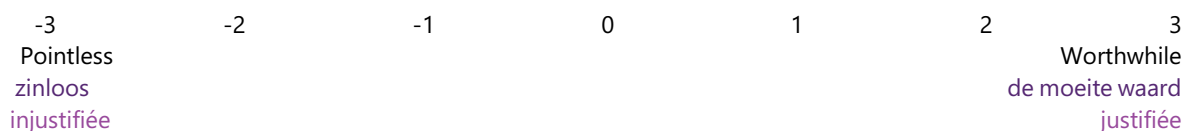
DE10b	Actuellement, il y a une initiative pour permettre aux citoyens de participer à la prise de décision sur le déclassement des centrales nucléaires en Belgique (à dates et heures flexibles) et tout le monde peut y participer. Allez-vous vous y inscrire afin d'être impliqué dans la prise de décision ? (Veuillez indiquer ici votre préférence, et nous vous fournirons plus d'informations après l'enquête).	<p>Présentez une carte graphique (indiquant que les valeurs supérieures indiquent une participation plus active) :</p> <p>1 SEULE RÉPONSE POSSIBLE</p> <p>1 = Je ne souhaite pas participer</p> <p>2 = Je souhaite recevoir des informations sur la centrale nucléaire à déclasser</p> <p>3 = Je souhaite recevoir des informations et donner mon avis.</p> <p>4 = Je souhaite participer à un dialogue visant à prendre une décision</p> <p>5 = Je souhaite prendre part activement à la prise de décisions.</p> <p>9. Je ne sais pas/ pas de réponse</p>
--------------	--	--



DE11 Please use the following scale to indicate your opinion about your participation in the decision-making process concerning decommissioning of nuclear power plants in Belgium. I believe that my participation in this decision-making process is... (graphical card→ scale)

Gebruik de volgende schaal om uw mening te geven over uw deelname aan het besluitvormingsproces over de declassering van kerncentrales in België. Ik geloof dat mijn deelname aan dit besluitvormingsproces ... is (graphical card→ scale)

Veuillez utiliser l'échelle suivante pour indiquer votre opinion sur votre participation dans la prise de décision sur le déclassement des centrales nucléaires en Belgique. Je crois que ma participation à ce processus décisionnel est... (graphical card→ scale)



DE12 Please use the following scale to indicate your opinion about your participation in the decision-making process concerning decommissioning of nuclear power plants in Belgium. I believe that my participation in this decision-making process is... (graphical card→ scale)

Gebruik de volgende schaal om uw mening te geven over uw deelname aan het besluitvormingsproces over de declassering van kerncentrales in België. Ik geloof dat mijn deelname aan dit besluitvormingsproces ... is (graphical card→ scale)

Veuillez utiliser l'échelle suivante pour indiquer votre opinion sur votre participation dans la prise de décision sur le déclassement des centrales nucléaires en Belgique. Je crois que ma participation à ce processus décisionnel est... (graphical card→ scale)

Uninteresting
Oninteressant
Sans intérêt

Interesting
Interessant
Intéressante

DE13 Please use the following scale to indicate your opinion about your participation in the decision-making process concerning decommissioning of nuclear power plants in Belgium. I believe that my participation in this decision-making process is... (graphical card→ scale)

Gebruik de volgende schaal om uw mening te geven over uw deelname aan het besluitvormingsproces over de declassering van kerncentrales in België. Ik geloof dat mijn deelname aan dit besluitvormingsproces ... is (graphical card→ scale)

Veuillez utiliser l'échelle suivante pour indiquer votre opinion sur votre participation dans la prise de décision sur le déclassement des centrales nucléaires en Belgique. Je crois que ma participation à ce processus décisionnel est... (graphical card→ scale)

Disappointing
Ontgoochelend
Décevante

Rewarding
Belonend
Gratifiante

Q9.4 Please state how much you agree or disagree with the following statements concerning your participation in the decision-making process concerning decommissioning of Nuclear Power Plants in Belgium

Q9.4 Geef aan in welke mate u akkoord of niet akkoord bent met de volgende stellingen met betrekking tot uw deelname aan het besluitvormingsproces over de declassering van kerncentrales in België

Q9.4 Indiquez dans quelle mesure vous êtes d'accord ou pas avec les propositions suivantes concernant votre participation à la prise de décision sur le déclassement des centrales nucléaires en Belgique

ST4	Most people who are important to me (family, friends) would support my participation. De meeste mensen die belangrijk zijn voor mij (familie, vrienden) zouden mijn participatie steunen. La plupart des personnes qui sont importantes pour moi (famille, amis) m'encourageraient à participer à ces initiatives.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord 1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse
ST5	It is my duty as a citizen to participate in such activities. Ik heb de plicht als burger om deel te nemen aan zulke activiteiten En tant que citoyen(ne), j'ai le devoir de participer à de telles activités.	
ST6	Of the people I know, nobody would participate in such activities. Van de mensen die ik ken, zou niemand deelnemen aan zulke activiteiten. Aucune de mes connaissances ne participerait à ce type d'activité.	
ST7	I feel confident that by participating I can influence the actual decision-making Ik vertrouw er op dat ik door deel te nemen de besluitvorming kan beïnvloeden. Je suis convaincu(e) qu'en participant à ces initiatives, je pourrais influencer les décisions.	
ST8	I do not have enough spare time to participate in such activities. Ik heb onvoldoende vrije tijd om deel te nemen aan zulke activiteiten. Je n'ai pas assez de temps libre pour participer à ces activités.	

UNC1a:

Given that experts are uncertain if the remaining radioactivity will be accepted by the public,

Aangezien experts echter onzeker zijn of de resterende radioactiviteit door het publiek aanvaard zal worden,

Étant donné que les experts ne sont pas certains que le public acceptera la radioactivité résiduelle,

UNC1b:

Given that experts are uncertain about the amount of radioactive waste that will be generated by decommissioning.

Aangezien experts echter onzeker zijn over de hoeveelheid radioactief afval die door de declassering gegenereerd zal worden,

Étant donné que les experts ne sont pas certains de pouvoir déterminer la quantité exacte de déchets radioactifs qui seront générés par le déclassement,

UNC1c:

Given that experts are uncertain about the financial costs of decommissioning a nuclear installation.

Aangezien experts echter onzeker zijn over de financiële kosten die met de declassering van een kerncentrale gepaard gaan,

Étant donné que les experts ne sont pas certains de pouvoir déterminer les coûts financiers engendrés par le déclassement d'une centrale nucléaire,

UNC1d (control):

Now that you have more information about what happens with nuclear power plants after they permanently stop producing nuclear energy

Nu dat u meer informatie heeft over de declassering van kerncentrales

Maintenant que vous avez plus d'informations sur le déclassement des centrales nucléaires,

RP2bis	<p>How do you perceive the potential risk to your health from nuclear power plants after they stop producing nuclear energy?</p> <p>Hoe beoordeelt u het mogelijke risico vanuit kerncentrales voor uw gezondheid eenmaal deze gestopt zijn met het produceren van kernenergie?</p> <p>Comment évaluez-vous le risque potentiel que représentent les centrales nucléaires pour votre santé lorsqu'elles arrêtent définitivement leurs activités de production d'énergie nucléaire ?</p>	<p>1. No risk at all 2. Very low 3. Low 4. Moderate 5. High 6. Very high 9. Don't know / no answer</p> <p>1. Geen enkel risico 2. Zeer laag 3. Laag 4. Gemiddeld 5. Hoog 6. Zeer hoog 9. Ik weet het niet/geen antwoord</p> <p>1. Aucun risque 2. Très faible 3. Faible 4. Moyen 5. Elevé 6. Très élevé 9. Je ne sais pas / pas de réponse</p>
DIN2	<p>If you saw a news article related to what happens with a nuclear power plant after it permanently stops producing nuclear energy, would you take the time to read it?</p> <p>Mocht u een nieuwsartikel zien over wat er gebeurt met een kerncentrale nadat deze definitief gestopt is met het produceren van kernenergie, zou u dan de tijd nemen om het te lezen?</p> <p>Si vous aperceviez un article sur le sort réservé aux centrales nucléaires en Belgique après avoir arrêté définitivement leurs activités de production d'énergie nucléaire, prendriez-vous le temps de le lire ?</p>	<p>1. Definitely not 2. Probably not 3. Unsure 4. Probably yes 5. Definitely yes 9. Don't know / no answer</p> <p>1. Zeker niet 2. Waarschijnlijk niet 3. Onbeslist 4. Waarschijnlijk wel 5. Zeker 9. Ik weet het niet/ geen antwoord</p> <p>1. Certainement pas 2. Probablement pas 3. Indécis(e) 4. Probablement 5. Certainement 9. Je ne sais pas/ pas de réponse</p>

DI2	<p>To what extent do you consider yourself to be informed about what happens with a nuclear power plant after it has permanently stopped producing nuclear energy?</p> <p>In welke mate denkt u geïnformeerd te zijn over wat er gebeurt met een kerncentrale nadat deze definitief gestopt is met het produceren van kernenergie?</p> <p>Dans quelle mesure pensez-vous être informé(e) à ce qu'advierait d'une centrale nucléaire après avoir arrêté définitivement ses activités de production d'énergie nucléaire ?</p>	<p>I am:</p> <ol style="list-style-type: none"> 1. Uninformed 2. Little informed 3. Moderately informed 4. Rather well informed 5. Very well informed 9. Don't know/no answer <ol style="list-style-type: none"> 1. Niet geïnformeerd 2. Weinig geïnformeerd 3. Matig geïnformeerd 4. Redelijk geïnformeerd 5. Zeer (goed) geïnformeerd 9. Ik weet niet / Geen antwoord <ol style="list-style-type: none"> 1. Pas informé(e) 2. Peu informé(e) 3. Moyennement informé(e) 4. Assez informé(e) 5. Très informé(e) 9. Ne sais pas/ Pas de réponse
-----	---	--

Q9.5 To what extent do you agree or disagree with the following statements related to Belgian nuclear power plants?/ In welke mate gaat u akkoord of niet akkoord met de volgende uitspraken over de Belgische kerncentrales?/ Dans quelle mesure êtes-vous d'accord ou non avec les affirmations suivantes sur les centrales nucléaires en Belgique ?

DE6	<p>I trust experts to make good decisions about the decommissioning of nuclear power plants.</p> <p>Ik heb er vertrouwen in dat experts goede beslissingen over de declassering van kerncentrales zullen nemen.</p> <p>J'ai confiance dans la capacité des experts à prendre de bonnes décisions sur le déclassement de centrales nucléaires.</p>	<ol style="list-style-type: none"> 1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer <ol style="list-style-type: none"> 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord <ol style="list-style-type: none"> 1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Ne sais pas / non pas de réponse
DE7	<p>I trust the nuclear industry to make good decisions about the decommissioning of nuclear power plants.</p> <p>Ik heb er vertrouwen in dat de nucleaire sector goede beslissingen over de declassering van kerncentrales zal nemen.</p> <p>J'ai confiance dans la capacité de l'industrie nucléaire à prendre de bonnes décisions sur le déclassement de centrales nucléaires.</p>	
DE8	<p>I trust the nuclear safety authority (FANC) to make good decisions about the decommissioning of nuclear power plants.</p> <p>Ik heb er vertrouwen in dat de nucleaire veiligheidsinstantie (FANC) goede beslissingen over de declassering van kerncentrales zal nemen.</p> <p>J'ai confiance dans la capacité des autorités de sûreté du secteur nucléaire (AFCN) à prendre de bonnes décisions sur le déclassement de centrales nucléaires.</p>	
DE9	<p>I trust the environmental organizations (e.g. Bond Beter Leefmilieu (NL)/ Inter- Environnement Wallonie (FR)) to make good decisions about the decommissioning of nuclear power plants.</p> <p>Ik heb er vertrouwen in dat de milieuorganisaties (bijv. Bond Beter Leefmilieu) goede beslissingen over de declassering van kerncentrales zullen nemen.</p> <p>J'ai confiance dans la capacité des organisations environnementales (p. ex. Inter-Environnement Wallonie) à prendre de bonnes décisions sur le déclassement de centrales nucléaires.</p>	

Q9.6. To what extent does decommissioning of nuclear power plants evoke the following feelings in you, if at all?

Q9.6 In welke mate roept de declassering van kerncentrales bij u de volgende gevoelens op, voor zover ze al gevoelens opwekken?
 Q9.6 Dans quelle mesure, le déclassement de centrales nucléaires suscite chez vous les sentiments suivants, pour autant qu'il puisse susciter des sentiments ?

Q9.6.1.

-3	-2	-1	0	1	2	3
Worry Bezorgdheid Préoccupation						Tranquility Gemoedsrust Confiance

Q9.6.2.

-3	-2	-1	0	1	2	3
Disinterest Desinteresse Désintérêt						Interest Interesse Intérêt

Q9.6.3.

-3	-2	-1	0	1	2	3
Pessimism Pessimisme Pessimisme						Optimism Optimisme Optimisme

To what extent do you agree or disagree with the following statement?

In welke mate gaat u akkoord of niet akkoord met de volgende uitspraak?

Dans quelle mesure êtes-vous d'accord ou non avec les déclarations suivantes ?

PUD1	<p>I want to be informed about the decommissioning of nuclear installations even if some aspects are uncertain.</p> <p>Ik wil geïnformeerd worden over de declassering van kerncentrales, zelfs wanneer bepaalde aspecten nog onzeker zijn.</p> <p>Je souhaite être informé du déclassement de centrales nucléaires, même lorsque certains aspects demeurent encore incertains.</p>	<p>1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer</p> <p>1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord</p> <p>1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Ne sais pas / non pas de réponse</p>
------	---	--

PART 9. Radioactive waste / Radioactief afval / Déchets radioactifs

The following questions are related to radioactive waste. High-level radioactive waste radiates intensely and will remain radioactive for a very long time (thousands of years).

De volgende vragen hebben betrekking op radioactief afval. Hoogactief radioactief afval straalt sterk en blijft over een zeer lange periode radioactief (duizenden jaren).

Les questions suivantes concernent les déchets radioactifs. Les déchets de haute activité rayonnent intensément et restent radioactifs très longtemps (des milliers d'années).

RW1	<p>Question: What do you think happens at this moment with high-level radioactive waste in Belgium?</p> <p>Wat denkt u dat er vandaag met hoogactief radioactief afval in België gebeurt? Het wordt:</p> <p>Selon vous, que se passe-t-il actuellement avec les déchets radioactifs de haute activité en Belgique ? Ils sont :</p>	<p>One answer possible:</p> <ol style="list-style-type: none"> 1. Buried underground 2. Burned 3. Stored on surface 4. Recycled 5. Other 9. Don't know / no answer <p>1. Ondergronds geborgen</p> <p>2. Verbrand</p> <p>3. Bovengronds opgeslagen</p> <p>4. Gerecycleerd</p> <p>5. Andere</p> <p>9. Ik weet het niet / geen antwoord</p> <p>1. Enterrés sous terre</p> <p>2. Incinérés</p> <p>3. Stockés en surface</p> <p>4. Recyclés</p> <p>5. Autre</p> <p>9. Je ne sais pas / pas de réponse</p>
-----	---	--

Q9.2 Currently, in Belgium, geological disposal is proposed for the long-term management of high-level radioactive waste. This entails that waste will be packed and buried a couple of hundred metres below the surface in a dedicated construction. The geological disposal installation will be permanently sealed after a certain period.

Please state to which extent you agree or disagree with the following statements concerning the geological disposal of high-level radioactive waste:

Momenteel wordt in België voor het lange termijnbeheer van dit hoogactief afval diepe geologische berging naar voren geschoven. Deze optie houdt in dat het afval verpakt en begraven wordt in een daartoe bestemde constructie een paar honderd meter onder de grond. De berging wordt na een bepaalde periode definitief afgesloten. Geef aan in hoeverre u wel of niet akkoord gaat met de volgende beweringen met betrekking tot de geologische berging van hoogradioactief afval:

En Belgique, à l'heure actuelle, le stockage géologique en profondeur est proposé pour la gestion à long terme des déchets radioactifs de haute activité. Cette option consiste à conditionner puis à enfouir les déchets à quelques centaines de mètres de profondeur dans une construction prévue à cet effet. Le stockage sera définitivement scellé après une certaine période. Indiquez dans quelle mesure êtes-vous d'accord ou non avec les affirmations suivantes concernant le stockage géologique des déchets radioactifs de haute activité ?

RW6	<p>Geological disposal solves the issue of high-level radioactive waste.</p> <p>Geologische berging lost het probleem van hoogradioactief afval op.</p> <p>Le stockage géologique résout le problème des déchets radioactifs de haute activité.</p>	<ol style="list-style-type: none"> 1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer
RW8	<p>Future generations should be able to retrieve the waste from the geological disposal installation.</p> <p>Toekomstige generaties moeten het afval kunnen terughalen uit de geologische bergingsinstallatie.</p>	<ol style="list-style-type: none"> 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord

	Les générations futures devraient pouvoir récupérer les déchets de l'installation de stockage géologique.	5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord
RW8bis	Future generations should be able to monitor or measure the safety of the geological disposal. Toekomstige generaties moeten de veiligheid van de geologische berging kunnen monitoren of meten. Les générations futures doivent pouvoir surveiller ou mesurer la sûreté du stockage géologique.	1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse
RW12	In Belgium, we should implement geological disposal for high-level radioactive waste as soon as possible. We moeten in België de geologische berging van hoogradioactief afval zo snel mogelijk uitvoeren. En Belgique, nous devrions mettre en œuvre l'enfouissement géologique des déchets de haute activité aussi vite que possible.	
RW13	What is the main reason for your response (to RW12: put the response e.g. agree...): In Belgium, we should implement geological disposal for high-level radioactive waste as soon as possible. Wat is de belangrijkste reden voor uw antwoord (op RW12); We moeten in België de geologische berging van hoogradioactief afval zo snel mogelijk uitvoeren. Quelle est la raison principale pour laquelle vous avez répondu [à la question RW12]: Nous devrions mettre en œuvre l'enfouissement géologique des déchets de haute activité aussi vite que possible.	Open Openvraag Question ouverte

In your opinion, to what extent should the following actors be involved in the national decision-making process concerning geological disposal as the final destination of high-level radioactive waste in Belgium?

In welke mate moeten, volgens u, de volgende actoren betrokken worden bij de nationale besluitvorming rond geologische berging als eindbestemming van hoogradioactief afval in België?

Selon vous, dans quelle mesure les acteurs suivants devraient être impliqués dans la prise de décision au niveau national concernant l'enfouissement géologique des déchets radioactifs de haute activité en Belgique ?

D12a	The national government De federale overheid Le gouvernement fédéral	1. Not at all 2. To a limited extent 3. Moderate amount 4. To a large extent 5. Completely 9. Don't know / No answer
D12b	The regional government De regionale overheid Le gouvernement régional	
D12c	The local government De lokale overheid Le gouvernement local	
D13	The nuclear safety authority De nucleaire veiligheidsautoriteit L'Autorité de sûreté nucléaire	1. Helemaal niet 2. In beperkte mate 3. Middelmatig 4. In hoge mate 5. Volledig 9. Ik weet het niet/geen antwoord
D14	Non-governmental organisations and associations Niet-gouvernementele organisaties en verenigingen Les organisations et associations non gouvernementales	
D16	The radioactive waste manager De beheerder van het radioactieve afval Le gestionnaire des déchets radioactifs	
D17	A scientific experts committee Een comité van wetenschappelijke experts Un comité d'experts scientifiques	1. Pas du tout 2. Un peu 3. Moyennement 4. Beaucoup 5. Entièrement 9. Je ne sais pas/ pas de réponse
D19	Citizens Burgers Les citoyens	

RW10	<p>If plans existed to construct an underground disposal facility for high-level radioactive waste near your home, to what extent would you like to be involved in the decision-making process?</p> <p>Indien er plannen zouden bestaan om een ondergrondse bergingsinstallatie voor hoogradioactief afval nabij uw woning te bouwen, in welke mate zou u dan betrokken willen zijn bij de besluitvorming?</p> <p>S'il existait des plans de construction d'un site de stockage souterrain pour déchets radioactifs de haute activité envisagé près de chez vous, dans quelle mesure aimeriez-vous être impliqué(e) dans le processus de décision ?</p>	<p>(one response possible)</p> <p>1 = I don't want to participate</p> <p>2 = I want to receive information about the facility</p> <p>3 = I want to receive information and express my opinion</p> <p>4 = I want to participate in a dialogue towards a decision</p> <p>5 = I want to be an active partner in the decision-making process</p> <p>6=I would never agree to have a disposal site near my home and would protest against it</p> <p>99= Don't know/ no answer</p> <p>1 MOGELIJK ANTWOORD</p> <p>1 = Ik wil hier niet aan deelnemen</p> <p>2 = Ik wil informatie ontvangen over de installatie</p> <p>3 = Ik wil informatie ontvangen en mijn mening geven</p> <p>4 = Ik wil deelnemen aan een dialoog om tot een besluit te komen</p> <p>5 = Ik wil een actieve partner zijn in het besluitvormingsproces</p> <p>6=Ik zou nooit akkoord gaan met een berging nabij mijn woning en zou er tegen protesteren.</p> <p>99= Ik weet het niet/ geen antwoord</p> <p>:</p> <p>1 REPONSE POSSIBLE</p> <p>1 =Je ne souhaite pas y participer.</p> <p>2=Je souhaite recevoir des informations concernant l'installation</p> <p>3=Je souhaite recevoir des informations et donner mon avis.</p> <p>4=Je souhaite participer à un dialogue visant à prendre une décision</p> <p>5= Je souhaite être un partenaire actif dans la prise de décisions.</p> <p>6 = Je n'accepterais jamais la construction d'un site de stockage à proximité de mon domicile et je protesterais contre ce projet.</p> <p>99= Je ne sais pas/ pas de réponse</p>
------	---	--

Between April and June this year, a public consultation was organised by ONDRAF/NIRAS concerning the environmental impact assessment for a geological disposal in Belgium as the potential final destination of high-level or long-lived radioactive waste.

Tussen april en juni van dit jaar werd door NIRAS een openbare raadpleging georganiseerd in verband met de milieueffectrapportage voor een geologische berging in België als mogelijke eindbestemming van hoogradioactief of langlevend afval.

Entre avril et juin de cette année, l'ONDRAF a organisé une consultation publique sur le rapport d'impact environnemental relatif au stockage géologique comme destination finale potentielle de déchets hautement radioactifs ou à longue durée de vie en Belgique.

RW15	Were you aware about this public consultation? Was u op de hoogte van deze openbare raadpleging? Étiez-vous au courant de cette consultation publique ?	1	=	Yes
		2	=	No
		1	=	ja
		2	=	neen
		1	=	oui
		2	=	non
RW16	If RW1 = YES Did you fill in the questionnaire on the NIRAS/ONDRAF website to give your opinion? Indien RW1 = JA Hebt u de vragenlijst op de website van NIRAS/ONDRAF ingevuld om uw mening te geven? Si RW1 = OUI Avez-vous complété le questionnaire sur le site web de l'ONDRAF pour exprimer votre avis ?	1	=	Yes
		2	=	No
		1	=	ja
		2	=	neen
		1	=	oui
		2	=	non
RW17	If RW1 = YES and RW2 = NO What was the main reason for not filling in the questionnaire? Indien RW1 = JA en RW2 = NEEN Wat was de belangrijkste reden om de vragenlijst niet in te vullen? Si RW1 = OUI et RW2 = NON Quelle est la principale raison pour laquelle vous n'avez pas complété le questionnaire ?	1.	I didn't have time	
		2.	I wasn't interested	
		3.	The topic is too difficult	
		4.	It doesn't concern me	
		5.	It has little influence on the final decision	
		6.	I didn't have any comments	
		7.	Other reason	
		1.	Ik had geen tijd	
		2.	Ik was niet geïnteresseerd	
		3.	Het onderwerp is te ingewikkeld	
		4.	Het gaat mij niet aan	
		5.	Het heeft weinig invloed op de uiteindelijke beslissing	
		6.	Ik had geen opmerkingen	
		7.	Andere reden	
		1.	Je n'avais pas le temps	
		2.	Je n'étais pas intéressé(e)	
		3.	Le sujet est trop complexe	
		4.	Je ne suis pas concerné(e)	
		5.	Cela a peu d'influence sur la décision finale	
		6.	Je n'avais aucune remarque	
		7.	Autre raison	

PART 10. Emergency situations / Noodsituaties / Situations d'urgence

The next questions are related to emergency situations. In such situations, authorities may advise the population to take certain actions.

De volgende vragen gaan over noodsituaties. In dergelijke situaties zouden de autoriteiten de bevolking kunnen aanraden om bepaalde acties te ondernemen.

Les prochaines questions concernent les situations d'urgence. Dans de telles situations, les autorités peuvent conseiller à la population de prendre certaines mesures.

Q7.1 To what extent do you agree or disagree with the following statements concerning protective actions in case of a nuclear accident in Belgium or close to Belgium?

In welke mate gaat u akkoord of niet akkoord met de volgende uitspraken over de beschermingsmaatregelen in het geval van een nucleair ongeval in België of dichtbij België?

Dans quelle mesure êtes-vous d'accord ou non avec les affirmations suivantes concernant des mesures de protection à mettre en place en cas d'accident nucléaire en Belgique ou près de la Belgique ?

EI3	The authorities should make more efforts to inform the population about protective actions in the event of a nuclear accident <i>De autoriteiten moeten meer inspanningen doen om de bevolking te informeren over beschermingstegenmaatregelen in geval van een nucleair ongeval</i> <i>Les autorités devraient fournir plus d'efforts pour informer la population des mesures de protection en cas d'accident nucléaire</i>	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer
EI4	I know where to find information about protective actions in case of a nuclear accident <i>Ik weet waar ik informatie over beschermingsmaatregelen bij een nucleair ongeval kan vinden</i> <i>Je sais où trouver des informations sur les mesures de protection à prendre en cas d'accident nucléaire</i>	1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord
EI5	I am confident that in the case of a nuclear accident I will find the information needed to protect myself <i>Ik ben er van overtuigd dat ik bij een nucleair ongeval de nodige informatie zal vinden om mezelf te beschermen.</i> <i>Je suis certain qu'en cas d'accident nucléaire, je trouverais les informations nécessaires pour me protéger.</i>	1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse

Q7.2. What follows is a list of questions concerning iodine tablets. On the initiative of the government, an information campaign was set up in Belgium in 2018 related to what to do in the event of a nuclear accident including the preventive distribution of iodine tablets.

Q7.2. Hierna volgt een lijst met vragen over jodium. Op initiatief van de regering werd in 2018 in België een informatiecampagne gelanceerd over wat mensen moeten doen in geval van een nucleair ongeval, inclusief de preventieve verdeling van jodiumtabletten.

Q7.2. La liste ci-dessous contient des questions sur les comprimés d'iode. A l'initiative du gouvernement, une campagne d'information a été lancée en Belgique en 2018 sur ce que les gens sont censés faire en cas d'accident nucléaire, y compris la distribution de comprimés d'iode à titre préventif.

KI1	Do you know about the distribution of iodine tablets? <i>Bent u op de hoogte van de verdeling van jodiumtabletten?</i> <i>Etes-vous au courant de la distribution des comprimés d'iode ?</i>	1. Yes 2. I have heard something about it 3. No 99. I don't know/ NA 1. Ja 2. Ik heb er iets over gehoord 3. Neen 99. Ik weet het niet/n.v.t.
KI1bis	Do you know about the use of iodine tablets in the case of nuclear accidents? <i>Bent u op de hoogte van het gebruik van jodiumtabletten in geval van een nucleair ongeval?</i> <i>Etes-vous au courant de l'utilisation de comprimés d'iode en cas d'accident nucléaire ?</i>	1. Oui 2. J'en ai entendu parler 3. Non 99. Je ne sais pas/non applicable
KI2	FILTER if KI1bis is 1 or 2. Do you have iodine tablets at home? <i>Hebt u jodiumtabletten bij u thuis?</i> <i>Avez-vous des comprimés d'iode à votre domicile ?</i>	1. Yes 2. No 99. I don't know/ NA 1. Oui 3. Non 99. Je ne sais pas / non applicable
KI3	FILTER if KI1bis is 1 or 2. Do you know where can you get iodine tablets? <i>Weet u waar men deze jodium tabletten kan krijgen?</i> <i>Savez-vous où vous pouvez vous procurer des comprimés d'iode ?</i>	1. At the local pharmacy 2. At the special centres near nuclear installations 3. At the family doctor 4. At the municipality 5. Other 9. Don't know/no answer 1. Bij de lokale apotheek 2. In de specifieke centra bij de nucleaire installaties

		3. Bij de huisdokter 4. Op het gemeentehuis 5. Andere 9. Ik weet het niet/ geen antwoord 1. Dans la pharmacie locale 2. Dans des centres spécialisés près d'une installation nucléaire 3. Au près du médecin de famille 4. Au près de l'administration communale 5. Autre 9. Je ne sais pas/pas de réponse
KI5	FILTER if KI1bis is 1 or 2. In your opinion, in case of a nuclear accident, iodine tablet would protect against: Wartegen beschermt volgens u een jodiumtablet bij een nucleair ongeval: Selon vous, en cas d'accident nucléaire, un comprimé d'iode protège contre :	Multiple answers possible 1. Lung cancer 2. Leukaemia 3. Thyroid cancer 4. Any health effect from ionising radiation 5. Something else 9. Don't know / no answer Meerdere antwoorden mogelijk 1. Longkanker 2. Leukemie 3. Schildklierkanker 4. Alle gezondheidsrisico's van ioniserende straling 5. Andere 9. Ik weet het niet/ geen antwoord Plusieurs réponses possibles 1. Le cancer du poumon 2. La Leucémie 3. Le cancer de la thyroïde 4. Tous les risques pour la santé liés aux rayonnements ionisants 5. Autre 9. Je ne sais pas / pas de réponse

KI7	FILTER if KI1bis is 1 or 2. FILTER indien KI1bis 1 of 2 is. FILTRE si KI1bis 1 ou 2. According to you, when should iodine tablets be taken? Wanneer moeten jodiumtabletten volgens u ingenomen worden? Selon vous, quand faut-il prendre des comprimés d'iode ?	1. Immediately: as soon as you hear about an accident, or if you hear sirens 2. When the authorities recommend it officially 3. Two hours after the alarm 4. Other 9. DN/NA 1. Onmiddellijk: bij nieuws over een ongeval, bij het horen van loeiende sirenes 2. Wanneer de overheid dit officieel aanbeveelt 3. Twee uur na het alarm 4. Andere 9. Ik weet het niet / geen antwoord 1. Directement : dès que vous apprenez qu'un accident s'est produit ou si vous entendez les sirènes 2. Quand les autorités le recommandent officiellement 3. Deux heures après l'alarme 4. Autre 9. Je ne sais pas/pas de réponse
-----	---	---

PART 12. Knowledge about the nuclear domain and perception of radiation risks / Kennis op nucleair gebied en perceptie van stralingsrisico's / Connaissance en nucléaire et perception des risques du rayonnement

Q13.1 The following questions concern nuclear technology in general. What do you think about the following issues:

De volgende vragen hebben betrekking op nucleaire technologieën in het algemeen. Hoe denkt u over de volgende kwesties:

Les questions suivantes font référence aux technologies nucléaires en général. Que pensez-vous des questions suivantes :

AW1	Does exposure to radiation always lead to radioactive contamination? Leidt blootstelling aan radioactieve straling volgens u altijd tot radioactieve besmetting? A votre avis, une exposition aux radiations entraîne-t-elle toujours une contamination radioactive ?	SINGLE RESPONSE 1. Yes 2. No 9. Don't know/ no answer 1 MOGELIJK ANTWOORD
AW2	Is radioactive waste produced only by nuclear power plants? Wordt radioactief afval volgens u enkel geproduceerd door kerncentrales? A votre avis, les déchets radioactifs sont-ils exclusivement produits par les centrales nucléaires ?	1. Ja 2. Nee 9. Ik weet het niet/geen antwoord 1 REPONSE POSSIBLE 1. oui 2. non 9. Je ne sais pas / pas de réponse
AW14	What is the measurement unit for radioactivity? Wat is de meeteenheid voor radioactiviteit? Quelle est l'unité de mesure de la radioactivité ?	4. Watt 5. Becquerel 6. Metres/second 10. Don't know/ NA 1. Watt 2. Becquerel 3. Meter/seconde 9. Ik weet het niet/geen antwoord 1. Le Watt 2. Le Becquerel 3. Le Mètre/seconde 9. Je ne sais pas/pas de réponse

Q13.2 To what extent do you agree or disagree with the following statements?
In welke mate gaat u akkoord of niet akkoord met de volgende uitspraken?
Dans quelle mesure êtes-vous d'accord ou pas d'accord avec les affirmations suivantes ?

AW15	Vegetables grown near a nuclear power plant are not good for consumption because of the presence of radioactivity. Groenten die geteeld worden in de buurt van een kerncentrale mogen niet geconsumeerd worden omwille van de aanwezigheid van radioactiviteit. Les légumes cultivés à proximité d'une centrale nucléaire ne sont pas bons pour la consommation à cause de la présence de radioactivité.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer 1. Helemaal niet akkoord 2. Eerder niet akkoord
AW16	Even very low levels of radiation are harmful for human health. Zelfs heel lage dosissen radioactiviteit zijn gevaarlijk voor de gezondheid van de mens. Même des doses très faibles d'irradiation liée à un accident nucléaire sont nocives pour la santé humaine	3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet / Geen antwoord 1. Pas du tout d'accord 2. Plutôt pas d'accord
AW18	The human body is naturally radioactive. Het menselijk lichaam is van nature radioactief. Le corps humain est naturellement radioactif.	3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse

AW19	With time, every radioactive substance becomes more and more radioactive. Na verloop van tijd wordt elke radioactieve substantie alleen maar meer radioactief. Avec le temps, toute substance radioactive devient de plus en plus radioactive.	1. Agree 2. Disagree 9. Don't know / no answer 1. Akkoord 2. Niet akkoord 9. Ik weet het niet / Geen antwoord 1. d'accord 2. pas d'accord 9. Je ne sais pas / pas de réponse
AW20	Food sterilisation by irradiation makes food radioactive. Het steriliseren van voedsel door middel van bestraling maakt voedsel radioactief. La stérilisation d'aliments par irradiation les rend radioactifs.	
AW35	Exposure to indoor radon may cause headache. Blootstelling aan radon binnenshuis kan hoofdpijn veroorzaken. L'exposition au radon intérieur peut provoquer des maux de tête.	
AW36	Exposure to indoor radon may cause lung cancer. Blootstelling aan radon binnenshuis kan longkanker veroorzaken. L'exposition au radon intérieur peut provoquer un cancer du poulmon.	

PART 13: Intolerance for uncertainty/ Intolerantie voor onzekerheid/ Intolérance à l'incertitude

Q12.1: To what extent do you agree or disagree with the following statements?

In welke mate bent u akkoord of niet akkoord met de volgende verklaringen:

Pour terminer, nous aimerions en savoir plus à propos de vous. Dans quelle mesure êtes-vous d'accord ou pas d'accord avec les affirmations suivantes :

IU1	Unforeseen events upset me greatly. Van onverwachte gebeurtenissen geraak ik overstuur. Les événements imprévus m'indisposent.	1. Strongly Disagree 2. Disagree 3. Neither agree, nor disagree 4. Agree 5. Strongly Agree 9. Don't know / no answer 1. Helemaal niet akkoord 2. Eerder niet akkoord 3. Noch akkoord, noch niet akkoord 4. Eerder akkoord 5. Helemaal akkoord 9. Ik weet het niet/ geen antwoord 1. Pas du tout d'accord 2. Plutôt pas d'accord 3. Ni d'accord, ni pas d'accord 4. Plutôt d'accord 5. Tout à fait d'accord 9. Je ne sais pas / pas de réponse
IU2	It frustrates me not having all the information that I need. Het frustreert me wanneer ik niet over alle informatie beschik die ik nodig heb. Je suis frustré(e) lorsque je ne dispose pas de l'ensemble des informations dont j'ai besoin.	
IU3	I can't stand being taken by surprise. Ik kan niet tegen verrassingen. Je ne supporte pas être pris(e) au dépourvu.	
IU4	When I'm uncertain, I can't function very well. Wanneer ik onzeker ben, functioneer ik niet naar behoren. Lorsque je suis dans l'incertitude, je ne fonctionne pas bien.	
IU5	I always want to know what the future has in store for me. Ik wil altijd weten wat de toekomst voor mij in petto heeft. Je veux toujours savoir ce que l'avenir me réserve.	
IU6	I must get away from all uncertain situations. Ik moet weg gaan van alle onzekere situaties. Je dois m'éloigner de toutes les situations incertaines.	

Annex: Informed consent

Barometer 2020 Participant Informed Consent Form

Dear Participant,

As indicated in the participant information sheet this research seeks to chart the attitudes, beliefs and perception of risks in Belgian society related to the nuclear/radiological sphere.

Your name will not be used at any stage in the data. You may refuse to answer any question or withdraw at any stage. The information you provide will be used only for this survey and will be held anonymously and confidentially. In keeping with the General Data Protection Regulation (GDPR) all participant data will be destroyed as soon as the dataset is finalised.

Please read the following statements before consenting to participate in the survey.

- **I have read and understood the participant information sheet.**
- **I understand what the project is about, and what the results will be used for.**
- **I know that my participation is voluntary and that I can withdraw from the project at any stage without giving any reason.**
- **I am aware that my information and answers will be kept confidential.**

Having read the information above, do you consent to participate in this survey?
(The participant has to provide this answer in the first item of the questionnaire).

Annex: Debriefing Form

Barometer 2020 DEBRIEFING FORM

Dear participant,

Thank you for taking part in this survey. Please read the material on this form carefully to learn important information about your experience in this study, and ask me any questions that you have. After this debriefing, you may choose to have information we collected about you removed from this research study.

For this study, it was important that we provide you with incorrect information about one aspect of the study. Now that your participation is completed, we will describe what information was incorrect and why.

What You Should Know About This Study

While you were answering the questions related to decommissioning of nuclear power plants, you were told that:

“Currently, there is an initiative to involve citizens in the decision-making process concerning the final state of nuclear power plants in Belgium (offered in flexible dates and hours), and anybody can participate. Would you like to write your name in the list so that you can be involved in the decision-making process? (Indicate your preference here and we will provide you more information after the survey)”.

However, there is no such initiative at the moment. The actual purpose of this question was to see the extent to which you would like to participate in such an initiative if there would be one and it was important to make the event seem more realistic so that we have a more accurate answer.

Your Right to Withdraw Data

Now that you know the true purpose of this question, you may decide whether you want to have your data removed from the study or not. If you choose to have your data removed, only your answer related to the item where deception was used will be removed. There will be no penalties or negative consequences for you if you withdraw from the study. Before making your decision, please ask me any questions you have.

Confidentiality

Although the purpose of this one question was different from what was originally explained to you, everything else on the consent form, information sheet and on the survey is correct. We will keep all information I have about you completely confidential, including your decision about whether to withdraw from the study.

If You Have Any Questions or Concerns

Please keep a copy of this Debriefing Form for future reference. If you have any questions or concerns about this study and the research procedures used, you may contact

Dr. Catrinel Turcanu: cturcanu@sckcen.be or

Dr. Tanja Perko: tperko@sckcen.be

Annex: Ethical approval



Universiteit
Antwerpen

Professor Peter Thijssen
Departement Politieke Wetenschappen
Faculteit Sociale Wetenschappen
Universiteit Antwerpen

Professor Steven Gillis
Voorzitter Ethische Adviescommissie
Sociale en Humane Wetenschappen
Stadscampus
Lange Winkelstraat 40 (S.L.306)
2000 Antwerpen

ONS KENMERK
SHW_20_77

Datum
16 december 2020

Betreft: beslissing Ethische Adviescommissie Sociale en Humane Wetenschappen over
dossier SHW_20_77

DEFINITIEF POSITIEF ADVIES (FINAL POSITIVE CLEARANCE)

Geachte professor

De onafhankelijke Ethische Adviescommissie voor het onderzoek in de Sociale en Humane Wetenschappen (EA SHW) opgericht door het Bestuurscollege van de UA (d.d. 03.07.2012), geeft een 'definitief positief advies' aan uw project **"Communication of Uncertainties in Radiological Risk Situations (PhD research as part of a larger survey called SCK CEN Barometer 2020)"** (42-FA040200-FFP180254, PeopleSoft ID Antigoon:).

In zijn besluitvorming laat de EA SHW zich leiden door de Wet van 30 juli 2018 betreffende de bescherming van natuurlijke personen met betrekking tot de verwerking van persoonsgegevens, de Wet van 7 mei 2004 inzake experimenten op de menselijke persoon, de Europese Algemene Verordening Gegevensbescherming, de EU-"Guidance Note for Researchers and Evaluators of Social Sciences and Humanities Research", de deontologische code van de onderzoeker (bijlage bij het ZAP-statuut UA), en door het vademecum dat de Commissie voor de bescherming van de persoonlijke levenssfeer opstelde over wetenschappelijk onderzoek en privacy.

De commissie heeft de volgende documenten geëvalueerd:

- Aanvraagformulier van de Ethische Adviescommissie Sociale en Humane Wetenschappen van de Universiteit Antwerpen (versie 1, indiendatum 10/08/2020)
- Document 1: Methodologie van de studie (versie 1, indiendatum 10/08/2020)
- Document 2: Inlichtingenblad voor de deelnemers (versie 1, indiendatum 10/08/2020)
- Document 3: Toestemmingsformulier voor de deelnemer (versie 3, indiendatum 9/12/2020)
- Document 5: Alle informatie die zal worden gebruikt bij het contacteren van de deelnemers (versie 3, indiendatum 9/12/2020)
- Document 6: Alle reeds beschikbare dagboeken of vragenlijsten die aan de deelnemers worden voorgelegd (versie 1, indiendatum 10/08/2020)

De commissie formuleerde geen verdere opmerkingen en besluit derhalve tot een definitief positief advies.

Hoogachtend,

Professor Steven Gillis
Voorzitter Ethische Adviescommissie
Sociale en Humane Wetenschappen

Annex: Summary of the Radon & NORM related Barometer - boost sample

There were two surveys conducted in Belgium. The first survey – min sample from Belgium is reported in this document and the second survey – boost sample was dedicated to radon and NORM. The second survey measured different concepts potentially influencing radon related behaviours (test and mitigate). This part was conducted in a context of the RadoNorm project. The development of quantitative tools in RadoNorm WP6 aims to design and test surveys which provide implementable and valid means for assessing populations' perceptions, opinions, awareness, motivations, attitudes and behaviours with regard to radon and selected aspects of NORM.

For the boost sample, Mail to Computer-Assisted Web Interviewing (CAWI) from stratified random sample, representative with stratification in terms of the total number of inhabitants in Wallonia's municipalities with a high radon concentration (class 1b, 2a and 2b) was applied. The final sample of the survey consists of N=300 respondents and is representative for the (18+) Belgian population living in Wallonia's municipalities in high radon prone area, with respect to gender and age. Response rate was 7.6%. The interviews had an average duration of 15 minutes and were conducted in the period of December 2020 and January 2021 in French language.

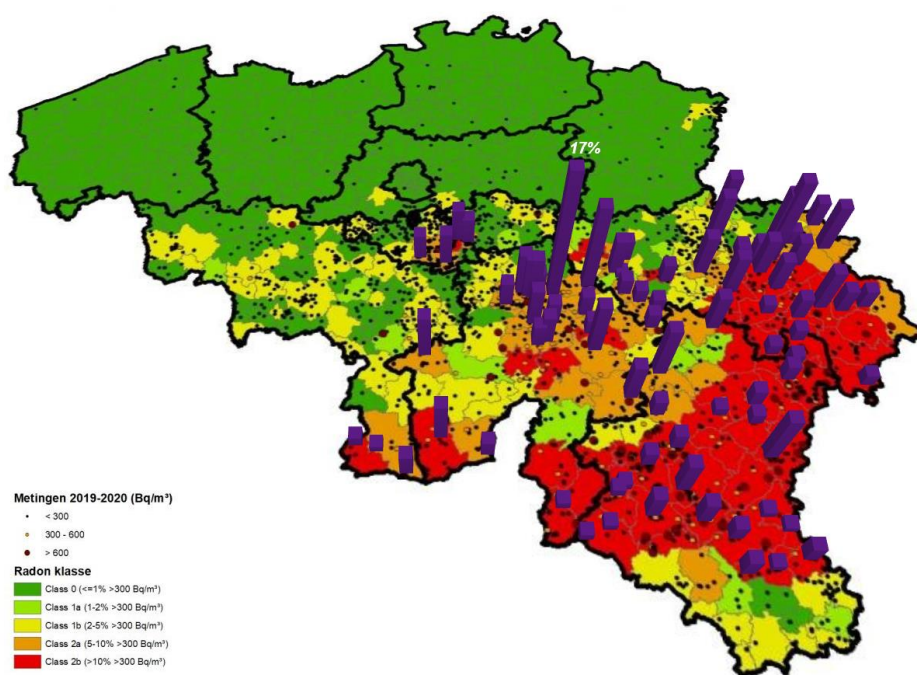


Figure: Sampling of respondents in radon prone areas in Belgium (blue pillars)

The sequence of the topics included in the RadoNorm questionnaire is: 1) Socio-demographic items (9 items); 2) Risk perception and confidence in authorities (12 items); 3) Uncertainty preference (8 items); 4) Items measuring determinants for radon related behaviour (41 items); 5) Actors in the nuclear field (18 items); 6) Knowledge about the nuclear domain and perception of radiation risks (8 items);

The figure below visually presents the sequence of the topics included in the RadoNorm questionnaire.

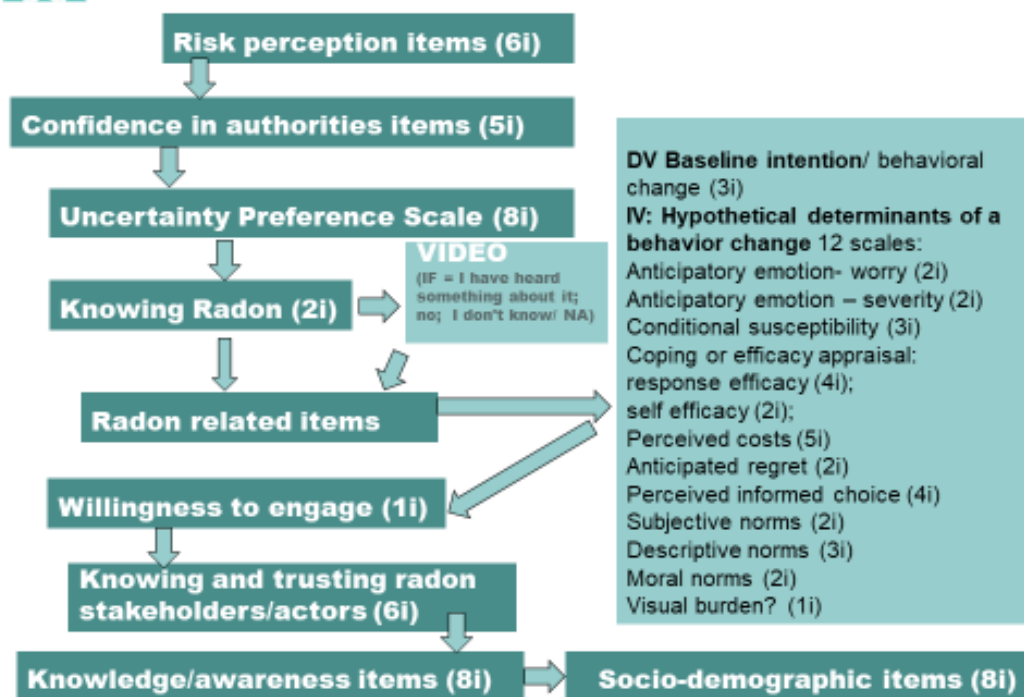


Figure: Sequence of the items

Results of this boost study are presented in a dedicated report Perko T et al (2022): RadoNorm pilot study report from public opinion survey, Belgium 2020-2021 Development of a modular questionnaire for investigating societal aspects of radon and NORM, [DOI:10.20348/STOREDB/1174](https://doi.org/10.20348/STOREDB/1174)