Third NEA Stakeholder Involvement Workshop on Optimisation in Decision Making:

Summary of the Outcomes from the Preparatory Webinars

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Table of contents

Background and objectives

Optimisation has always been a fundamental concept in decision making in all parts of society, including nuclear and radiation-related policy, regulation and practice. However, the way decisions are taken has changed in recent years. Societal views of nuclear-related activities have evolved to promote more holistic, inclusive and sustainable decision-making perspectives, addressing the need to integrate many diverse aspects and stakeholder[1] views, notably those of civil society.

There is in fact no common understanding across all disciplines in the nuclear sector[2] of what an "optimised" decision implies. The NEA believes that the involvement of stakeholders, and especially civil society, in the decision-making process is a key aspect in this context (e.g. NEA, 2017). While an optimised decision depends largely on the prevailing circumstances in which the decision is taken, findings from past NEA activities have shown that there is a need for generic guidance in the implementation of more holistic and inclusive processes to reach sustainable decisions. The Third NEA Stakeholder Involvement Workshop will be an important step towards reaching a common approach to decision-making processes across the nuclear sector and across NEA member countries. This will support the objectives outlined in the new *NEA Strategic Plan 2023-2028* (NEA, 2022a).

Based on the above, the following three objectives were defined for the Third Stakeholder Involvement Workshop:

1. Improve the common, practical understanding of what optimisation in decision making means for policymakers, regulators and other stakeholders, notably civil society, across the nuclear sector and compare with non-nuclear sectors.

2. Identify the foundation of a generic, multidimensional framework supporting the optimisation process for decision makers across the nuclear sector to achieve more sustainable decisions.

3. During objectives 1 and 2, support the inclusive involvement of stakeholders, notably civil society, and identify the relevant tools/approaches to optimise decision making using qualitative and quantitative elements across the nuclear sector – thereby achieving more sustainable decisions.

Optimisation through stakeholder involvement: What are we talking about?

Three preparatory webinars were held to examine the optimisation of decision making in the context of an end goal: making more holistic, inclusive and sustainable decisions through a process acknowledged as transparent, balanced and fair by all parties involved. During the webinars, 103 registered participants representing different stakeholder categories (Figure 1) discussed the decision-making process in breakout groups. Approximately 70-80 participants attended each of the three webinars.

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1. In addition to policymakers and regulators (e.g. government bodies, safety authorities), stakeholders include but are not limited to (representatives of): elected governmental officials; civil society; Indigenous peoples; non-governmental organisations (including environmental groups); academic community; media; public opinion builders; businesses and industry (workers, unions, suppliers, professional associations, etc.); and the international community (including neighbouring countries) (adapted from IAEA [2021], *Stakeholder Engagement in Nuclear Programmes* and NEA [2021a], *Towards a Shared Understanding of Radiological Risks*). More broadly speaking, a stakeholder is "any group or individual who feels affected by an activity, whether physically or emotionally". This can be "organisations and groups that are statutory stakeholders — those required by law to be involved in any planning, development or operation of a nuclear project — as well as non-statutory stakeholders — those who have an interest in or will be directly or indirectly impacted" (IAEA, n.d.).

2. These "disciplines in the nuclear sector" are specifically the areas covered by *The Strategic Plan of the Nuclear Energy Agency 2023-2028*: nuclear safety technology and regulation; human aspects of nuclear safety; nuclear science and economics; nuclear law; radiological protection of people and the environment; radioactive waste and spent fuel management; nuclear decommissioning and legacy management (NEA, 2022a).

Figure 1: **Distribution of stakeholder categories among the registered attendees in all webinars**
(based on self-declaration at registration)

47%	23%	13%	10%	7%
Government institutions	Academic/research institutions	International organisations	Industry/professional associations	Civil society/NGOs

For the purposes of the preparatory webinars, the decision-making process was broken down into three phases (more details in the webinar programme, NEA, 2022b):

1. Identifying and framing the purpose of the decision.

2. Finding and evaluating options for making the decision.

3. Selecting, executing and post-assessing the decision (process).

During each webinar, attendees discussed three questions to better understand what is meant by optimisation at each phase of the decision-making process, and what the optimisation of decisions through stakeholder involvement should entail in practice. The results of the discussions are outlined below.

Optimisation: making sustainable, holistic and inclusive decisions

To structure the agendas of the preparatory webinars, the Workshop Programme Committee, consisting of high-level representatives from the different NEA Standing Technical Committees, had looked at the decision-making process from an end-point perspective and concluded that there are three main objectives for optimisation, namely to arrive at sustainable, holistic and inclusive decisions (NEA, 2017). These three objectives were used to steer the debate. While the webinars emphasised that each stakeholder group is likely to have its own set of key considerations that need to be consolidated with those of other stakeholders in a deliberative and sustainable way in order to reach an optimised decision, they also highlighted the importance of a shared understanding of the above objectives. Based on the discussions at the webinars, the three concepts are further elaborated below (Box 1).

> **Box 1: The three objectives of optimisation in decision making, based on the discussions during the webinars**
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> **Holistic decisions**: A holistic decision implies that the different facets of a problem are taken into account by looking at the problem from different angles. The benefit of a holistic decision lies in the creation of synergies between the different aspects of a problem (e.g. economic, environmental, physical and social and mental well-being) that would be impossible, or at least unlikely, if the aspects were analysed in isolation.
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> **Inclusive decisions**: An inclusive decision implies that all stakeholders who have an interest in addressing the problem and who could be affected by the outcome are involved in the process and feel that they have been considered. Equal opportunities for all stakeholders to express their views and concerns and a consensus-driven process are key to making decisions inclusive.
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> **Sustainable decisions**: The sustainability of a decision can be considered from two main perspectives. The first concerns its durability, e.g. in terms of social acceptability and technical feasibility. While a decision may be technically feasible, it may prove to be unsustainable due to societal rejection or other factors, e.g. socio-economic impacts. In addition, to be sustainable, a decision needs also to support the Sustainable Development Goals defined by the United Nations.

Optimisation in decision making and the role of stakeholder involvement

The three preparatory webinars, the work of the Workshop Programme Committee and the analysis of past work on optimisation and stakeholder involvement have provided a better understanding of what is meant by optimisation in nuclear decision making and how stakeholder involvement can contribute to it. The general findings of the discussions during the preparatory webinars summarised below are intended to help set the scene for discussions during the Third NEA Stakeholder Involvement Workshop on Optimisation in Decision Making, to be held in Paris on 5-7 September 2023. The main purpose of this workshop will be to continue the intensive discussions on the topic, to further analyse the issue and ultimately identify the basis for a generic, multidimensional framework to support the optimisation process for decision makers across the nuclear sector.

Overall, for the purposes of this workshop, optimisation should be understood as the process of addressing a problem in a way that is holistic, i.e. considers and balances all aspects of each of the potential solutions; inclusive, i.e. involves stakeholders in a way that maximises the degree of acceptability of the outcome, while ensuring transparency and fairness of the process; and sustainable, i.e. results in option(s) that are durable, feasible and support the United Nations Sustainable Development Goals. The optimisation outcome is unique to each situation. It takes into account the specific context in which the problem is located, reflecting national specificities as well as the complex interplay between economic, environmental, health, cultural and social aspects. Ultimately, optimisation in the decision-making process should lead to a holistic, inclusive and sustainable decision that takes into account different risks and benefits in the context of the prevailing circumstances and aims to achieve the most reasonable outcome for all stakeholders and society as a whole.

Given the complexity of this undertaking, stakeholder involvement appears to be key to the success of optimisation in the decision-making process (NEA, 2017, 2021b, 2021c; Sneve, 2020). Stakeholder involvement can help to ensure a more holistic understanding of a particular problem, its context and underlying socio-cultural aspects. It can also help to build trust and provide guidance on how to balance competing issues. However, the scope of stakeholder involvement processes will depend largely on the nature of the decision being made. For example, a nuclear new build project, a deep geological repository or an issue related to the lifetime extension of a certain type of nuclear reactors will require a more extensive stakeholder involvement process than more operational decisions with less impact on society.

In general, stakeholder involvement should be integrated into the decision-making process as early as possible, taking careful account of existing legal requirements (e.g. Aarhus and Espoo Conventions). It should be based on targeted and situation-specific processes. Each context will require different mechanisms and each stakeholder group can best be reached through different channels (e.g. town hall meetings/webinars; social media/print media) and through different formats (e.g. technical/non-technical language) to ensure the best accessibility of the process. The objective of stakeholder involvement, the rules for engagement, the role of stakeholders and the expected impact on the final decision should be clearly communicated from the beginning of the decision-making process. Stakeholder involvement should be based on constructive dialogue and a mutual learning approach, with the rules and conditions of the process ideally developed in collaboration with stakeholders. It should be ensured that vulnerable and less vocal voices have the opportunity to express themselves and are not overwhelmed. Independent and neutral third-party facilitators could help in this context.

When evaluating different options for addressing a problem, an open dialogue about the assessment of risks and benefits is important. In general, the process of identifying the most appropriate option should be consensual so that the outcome is perceived as transparent, balanced and fair by all stakeholders. In this respect, it seems preferable to focus on a sound and well accepted process, developed in co-operation with stakeholders, rather than on the final outcome of the process. While it may seem unrealistic to achieve a decision that fully satisfies all stakeholders, following a transparent and jointly developed process is likely to facilitate understanding and increase the degree of acceptability of the outcome. Communication about the trade-offs should be factual and provide justification for the underlying judgements. Multi-criteria assessments or cost-benefit analyses can be helpful tools to support dialogue, debate and deliberation approaches on risk management and communication in this context, but these tools have been found to have limited practical applicability due to the importance of socio-cultural aspects that are difficult to quantify. It is important to ensure that the outcome of the decision-making process is informed by the stakeholder involvement process and not predetermined by the decision maker.

Once a decision has been taken, it should be widely communicated to all stakeholders, whether or not they were involved in the decision-making process. This communication should include the rationale for the decision and highlight how the results of the stakeholder involvement process have been taken into account. A communication strategy should be developed with stakeholders before the decision is announced. Where considerations raised by stakeholders have not been taken into account, this should be stated and explained in a transparent manner. Where necessary, stakeholders should be contacted to further explain the reasons for the decision. In this respect, the decision should not be the end of the stakeholder involvement process. Rather, a continuous engagement and feedback mechanism with stakeholders should be established before, during and after the implementation of the decision as a solid basis for trust and relationship building between stakeholders and decision makers. To evaluate and learn from the entire decision-making and stakeholder involvement process, an evaluation strategy should be developed with stakeholders at an early stage of the process in order to benchmark the process against commonly defined criteria. International guidelines or legal requirements could also be used as benchmarks. The data needed to evaluate the process should be identified early in the process and collected throughout.

Finally, a number of outstanding questions were identified that could potentially be considered in more detail in the development of a generic, multidimensional framework to support optimisation in decision making.

Outstanding questions:

- Who is responsible for identifying stakeholders?
- How to successfully build gender, ethnic and demographic diversity into the process?
- How to deal with loud and unconstructive voices in the process?
- How to account for potential errors and knowledge gaps?
- How to balance quantitative and qualitative factors?
- How to account for different values and stakeholders who frame issues in different ways?
- How to ensure adequate capacity and resourcing for effective and broad stakeholder involvement?
- How can stakeholders continuously be kept involved, respected and interested throughout the process?
- How to ensure a high level of knowledge about the process within the stakeholder communities?
- What are the criteria of an efficient and robust after-action review?

A more detailed list of findings from the different webinars is provided in Annex A. Findings from a selection of past NEA activities dealing with the topic of optimisation and stakeholder involvement can be found in Annex B.

1st NEA Stakeholder Involvement Workshop on "Stakeholder Involvement in Nuclear Decision Making", January 2017.

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Annex A: Key findings from the preparatory webinars

Initial thoughts on the first phase: How to better frame problems for more holistic, inclusive and sustainable decisions?

The first phase of the decision-making process begins when a problem, including its context, is identified and explicitly stated, along with the method(s) for evaluating it. For example: What is the problem? Why should it be solved? What are the consequences of not addressing the problem? What are the legal/regulatory triggers? Who needs to be involved in framing the problem? Who would be affected by the decision(s)? Is there a current legal or legislative framework in place for addressing this problem? The following aspects were raised during the discussions:

- Stakeholders should be involved as early as possible in the decision-making process to support a holistic understanding of the problem.

- Depending on the specific context, there may be legal requirements for stakeholder involvement (e.g. Aarhus Convention), which should be carefully implemented. This includes contacting statutory stakeholders, as defined by any applicable legal requirements.

- Identifying all stakeholders that should be involved in the decision and finding the right mechanisms and channels to involve them is key for this stage of the decision-making process.

- Depending on the nature and context of the situation, the methods and extent of stakeholder involvement will vary: a nuclear new build project will have different stakeholder involvement mechanisms and scope than the decommissioning of a legacy site or an emergency situation.

- The tools to identify, contact and engage stakeholders in the decision-making process play an important role.

- Ensuring the accessibility of the process, e.g. through different formats such as online/face-to-face meetings, webinars, social media information pages or newsletters, is a key requirement to build trust from the beginning of the process.

- Using plain language to ensure inclusion and appropriate access to the process for vulnerable groups, e.g. Indigenous communities, older people or people with reading/seeing/hearing disabilities.

- Existing social networks and experience from previous similar stakeholder involvement processes should be leveraged.

- Stakeholders could be involved in the process of identifying the stakeholders to be involved for a specific issue.

- Broad discussion with stakeholders needs to start early in the decision-making process, e.g. in the form of town hall meetings.

- The decision-making process may take years (e.g. waste repository). Decision makers should ensure that the process of stakeholder involvement is continuous and adaptive.

- To build mutual trust between stakeholders and decision makers from the beginning of the process, the objectives, the envisaged role of stakeholders and their potential impact on the outcome of the decision should be transparently communicated.

- The decision-making process should be based on an approach of open and transparent dialogue and mutual learning between stakeholders, ideally reflected in the co-development of the rules and processes for stakeholder engagement.

- Trust in the process also comes from the confidence of all stakeholders that their participation will/can have an impact on the final outcome.

- Considering involving an independent and neutral third-party facilitator would foster trust between stakeholders and decision makers.

- Relying on experienced staff with sufficient time and resources would support the whole process.

- Where multiple government agencies are involved in a decision-making process, they should ensure that consistent messages are communicated.

- The communication strategy should acknowledge the importance of "justice", i.e. acknowledging past mistakes or misunderstandings.
- Ongoing involvement and active listening are key.
- Decision makers should avoid a teaching attitude towards stakeholders, but rather consider their contributions in an active learning approach or a "co-expertise" process as defined in ICRP Publication 146 (ICRP, 2020).
- Clarity about the ground rules of engagement should be established. This includes ensuring that the loudest voices do not overwhelm less vocal or vulnerable groups in the process.
- Ensure that stakeholders feel comfortable sharing their views. A relaxed and open environment should be created. The use of the Chatham House Rule[1] could also be considered.
- Decision makers should be prepared to discuss both technical and non-technical aspects with stakeholders and to allow for the emotions associated with the nuclear field.
- Empathy and honesty are key.

Open questions

Who is responsible for identifying stakeholders?

How to successfully build gender, ethnic and demographic diversity into the process?

How to deal with loud and unconstructive voices in the process?

Cross-cutting keywords for optimisation and stakeholder involvement

- Transparency
- Mutual learning
- Openness
- Clarity
- Accountability
- Independence
- Accessibility
- Empathy
- Dialogue
- Justice
- Co-expertise
- Honesty

Initial thoughts on the second phase: How to balance competing aspects and interests in decision making to arrive at holistic, inclusive and sustainable decisions?

The second phase of the decision-making process is to identify and evaluate options for the decision. This involves assessing different options in terms of their risks, benefits, feasibility and impact, taking careful account of the prevailing circumstances. Other aspects include, for example, the timeframe for their potential implementation. The following aspects were raised during the discussions:

- It is important to take a holistic approach. This allows all the competing aspects to be considered and balanced in the most effective way possible.
- In order to balance competing aspects, stakeholders should be involved in an open dialogue to assess aspects such as current and future benefits. The process of involving stakeholders in this assessment should be inclusive and consensual.

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1. The Chatham House Rule stipulates that "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed." (Chatham House, n.d.).

- Getting all stakeholders to agree on the process of weighting and evaluating different options against each other is the most important and promising way to have the decision-making process understood by all.
- If stakeholders feel that the process is inclusive, transparent and fair, their understanding and, possibly, the acceptability of the outcome will be enhanced.
- The ultimate goal should be to reach a compromise within an approach that is acknowledged as transparent, balanced and fair by all parties involved to avoid a sense of "losers" and "winners".
- Factual and open communication of the rationale and justification of the assessment of different options are key.
- All stakeholders should expect an open and transparent sharing of views and opinions.
- How different aspects should be weighted depends largely on the specific situation and (cultural) context in which the options are evaluated.
- The physical and emotional well-being of civil society should be the main orientation for weighting different aspects.
- Evidence must lead, but it should be recognised that even quantitative factors often have an inherent qualitative dimension.
- Decision support tools, such as multi-criteria analysis or cost-benefit analysis, may be appropriate to assist the process, particularly in terms of communicating risks/benefits to stakeholders. However, such tools were quickly judged to be technocratic and limited in practice, e.g. due to cultural context or limitations in quantifying aspects. The limitations of finding a single comparable value, e.g. expressing aspects in monetised values, were highlighted and the need for stakeholder involvement in defining the underlying assumptions of such tools was noted.
- Local networks and local governments should be leveraged to involve stakeholders.
- Independent facilitators could ensure equity and transparency in the assessment of different options.
- A clear and common understanding of the different issues, aspects and definitions used during the process is needed.
- The use of deliberative methods should be considered.
- Decision makers are accountable to stakeholders and should ensure transparent communication of the trade-offs made and the reasons for them.
- The decision-making process should be an open process that can be influenced by the stakeholders. To the extent practicable, decisions should not have been taken in advance.

Open questions

How to account for potential errors and knowledge gaps?

How to balance quantitative and qualitative factors?

How to account for different values and stakeholders who frame issues in different ways?

How to ensure adequate capacity and resourcing for effective and broad stakeholder involvement?

Cross-cutting keywords for optimisation and stakeholder involvement

- Holistic approach
- Consent
- (Cultural) context
- Process over outcomes
- Deliberative methods
- Compromise
- Fairness
- Common understanding

Initial thoughts on the third phase: How can decisions be implemented transparently and evaluated in terms of their comprehensiveness, inclusiveness and sustainability?

The third phase of the decision-making process involves implementing a decision based on the results of the options analysis in the previous phase, communicating the underlying rationale to stakeholders, and evaluating the success of the optimisation and stakeholder involvement processes. The following aspects were raised during the discussions:

- It is essential to communicate the decision that has been taken and how the various factors that have been weighed against each other have been taken into account.
- Communication to support the final decision should be targeted and in plain language, requiring a specific communication strategy that should be prepared before a decision is announced.
- Effective channels should be used to reach different audiences, bearing in mind that there may be digital divides in society.
- Communication should support the justification for the decision taken and be transparent about the process followed, the trade-offs, the choices made to consider or disregard certain factors.
- Justification of a decision should avoid any automatic dismissal of concerns.
- Communication material should include documented, plain language reports on the various aspects mentioned above.
- Information about the decision should be widely disseminated. Stakeholders involved in the decision-making process should also be involved in designing the communication strategy. They could also act as ambassadors within their communities.
- Existing and applicable legal requirements should be respected.
- All stakeholders, regardless of their prior involvement in the decision-making process, should be informed of the outcome of the decision and the process that led to it.
- Where the considerations of a stakeholder group have not been fully or partially taken into account in the decision, they should be specifically addressed in order to explain the decision and avoid a sense of being left behind.
- Unresolved issues or uncertainties should be avoided and, where they remain, a clear strategy for addressing them should be presented.
- While the decision is an important milestone in the decision-making process, it is not the end of the stakeholder involvement process.
- Continuous feedback from stakeholders as the decision unfolds and the possibility of an appeal process are needed.
- The criteria for a retrospective evaluation of the decision-making process are important. The definition of such criteria should be included in the definition of the process during the first decision-making phase.
- Stakeholders should be involved in the definition of such criteria. In addition to criteria agreed with stakeholders, benchmarking against best practice or international guidelines should also be part of the assessment.
- It should be demonstrated what impact the involvement of the stakeholders has had on the final decision.
- The feasibility of implementing the decision is an important criterion – while certain decisions may allow consent, their technical feasibility or durability may be limited.
- The legitimacy and fairness of a process were suggested as criteria.
- It should be ensured that all stakeholders had an equal opportunity to be represented and that more vocal parties did not overwhelm less vocal parties. In this context, the potential benefits of strong and independent facilitators for the process were reiterated.
- The definition and formal collection of data in a transparent and accessible way is a pre-requirement for evaluation.
- Evaluation should be an ongoing activity throughout the decision-making process.

- Feedback mechanisms should be developed together with stakeholders, e.g. what kind of data should be collected, how it should be collected and by whom.
- The analysis of the results should be done in collaboration with stakeholders. Sufficient resources need to be allocated to this review in terms of staff, time, expertise, etc.
- Real life experiences and case studies could be used as a transferable source of lessons learnt to improve future decision-making processes.
- The importance of sharing lessons learnt widely, including at the international level, was underlined. However, the specificity of cultural and situational contexts should be taken into account.

Open questions

How can stakeholders continuously be kept involved and interested throughout the process?

How to ensure a high level of knowledge about the process within the stakeholder communities?

What are the criteria for an efficient and robust after-action review?

Cross-cutting keywords for optimisation and stakeholder involvement

- Multi-support communication
- Justification
- Data (identification and collection)
- Accountability
- Legitimacy
- Plain language
- Justice

Annex B: Findings from past NEA activities

The Nuclear Energy Agency (NEA) has played a pioneering role in the complex topics of stakeholder involvement and the optimisation in policymaking through the organisation of a number of workshops. This included the first two editions of the NEA Stakeholder Involvement Workshop on "Stakeholder Involvement in Nuclear Decision Making" (2017) and on "Risk Communication – Towards a Shared Understanding of Radiological Risks" (2019). Other relevant workshops included the joint NEA and Norwegian Radiation and Nuclear Safety Authority (DSA) workshop on a "Regulatory Framework of Decommissioning, Legacy Sites and Wastes from Recognition to Resolution: Building Optimization into the Process" (2019), the NEA workshop on "Optimisation: Rethinking the Art of the Reasonable" (2020), and the NEA workshop on "Multifactor Optimisation of Predisposal Management of Radioactive Waste" (2020).

NEA Workshop on Stakeholder Involvement in Nuclear Decision Making

The 1st "NEA Workshop on Stakeholder Involvement" was held in January 2017. The workshop contributed to a number of conclusions on stakeholder involvement, which are summarised on pages 9-10 of the workshop summary report. Some of the key findings are outlined below (NEA, 2017):

- Availability of information, substantive public participation and engagement are necessary for delivering clear, well-informed and sustainable decisions, as well as for optimising their implementation.
- Stakeholder involvement is a process or a tool to reach a decision that is better-informed, sound and widely accepted.
- The legal framework for stakeholder involvement has progressed since the first days of nuclear applications.
- A "tiered approach", in which each consecutive phase of decision-making addresses only the issues within the option already selected at the preceding phase, could be beneficial.
- Regulators must balance the need to involve stakeholders against their need to make decisions independently of any pressure.
- Decisions are informed by science, but are driven by societal considerations.
- Local communities should play a key role in deliberating choices.
- Importance of transgenerational perspective.
- Effective stakeholder involvement requires significant resources (e.g. personnel, training, financial resources, time).
- Seeking consent with stakeholders is more effective than trying to convince them of an organisation's viewpoint.
- Stakeholders expect fair procedures and equitable sharing of risks and benefits across people, space and time.
- Need for a transparent process with clarity on who can participate and to what extent.
- Benefit of continuous engagement compared to one-off consultations.
- Public authorities receive stakeholder input, but retain the responsibility for final decisions.
- Stakeholder involvement requires early support of top-level managers, and sometimes of political actors to ensure sufficient resources, a strategy and a plan.
- The stakeholder involvement process needs to be adapted to the country and situation-specific context. Involvement will be different in the case of a general, policy-type decision compared with a project or site-specific decision.
- Decision-making authorities must demonstrate that stakeholder views are given consideration and explain why they are or are not retained for the ultimate decision.
- Importance of considering the views of less vocal stakeholders.
- Local knowledge needs to be considered and respected.

1st NEA Workshop on Stakeholder Involvement, January 2017.

2nd NEA Stakeholder Involvement Workshop, September 2019.

NEA Stakeholder Involvement Workshop on Risk Communication

The 2nd "NEA Stakeholder Involvement Workshop" was held in September 2019. The workshop produced a number of conclusions on risk communication, which are summarised on pages 9-10 of the workshop summary report. Some of the key findings are outlined below (NEA, 2021a):

- Communicating to stakeholders what is known and what is uncertain is a central element of the process to identify and implement an option that is acceptable and sustainable.
- Communicate scientific, technical and regulatory information to stakeholders is essential to achieve decisions that are effective and sustainable.
- Communicating risks to stakeholders can be complex since people can judge and evaluate risks differently depending on the context and on their risk perceptions.
- Communicating risk is not a one-step process but a dynamic process.
- Dialogue with stakeholders should be an institutional requirement for regulatory authorities.
- Non-governmental organisations and local stakeholders have a specific understanding and knowledge of the local context, which can be particularly useful to national, regional and local decision makers.
- Local and long-term engagement is key to obtaining and maintaining trust.
- Trust and successful communication are interdependent: to be trusted, you must communicate successfully. To communicate successfully, you must be trusted.
- Listening to and addressing stakeholder concerns, focusing on capturing all the relevant, radiological and non-radiological aspects of the prevailing circumstances, should help countries more effectively achieve sustainable decisions through well-informed decision-making processes.

NEA/DSA Workshop on Regulatory Framework of Decommissioning, Legacy Sites and Wastes from Recognition to Resolution: Building Optimization into the Process

In October/November 2019, the NEA and DSA organised this workshop in Tromsø. The workshop resulted in a number of findings related to optimisation in the context of legacy sites and waste, which are summarised on pages 5-6 of the workshop report. Some of the key findings are outlined below (Sneve, 2020):

- Stakeholder involvement is an important aspect of optimisation.
- Stakeholders should be engaged early to build trust and include their input in the process.
- A graded and iterative decision-making process could be beneficial.
- Decision-making processes should allow for flexibility and adaptation to new information and technology.
- Decision-making processes need to be open and avoid predefined outcomes.

- A holistic approach is needed to reach optimised decisions.

- Generally accepted definitions of terms can help avoid misunderstanding and confusion.

- It is recommended to establish guidance on the application of all-hazards and holistic approaches in the optimisation of protection decisions.

NEA Workshop on Optimisation: Rethinking the Art of the Reasonable

The "NEA Workshop on Optimisation: Rethinking the Art of the Reasonable", focusing on optimisation in radiological protection, was held in January 2020. The main results of the workshop are summarised on pages 9-11 of the workshop summary report. Some of the key findings are outlined below (NEA, 2021b):

- The objective of optimisation of radiological protection can be interpreted differently depending on the situation (e.g. deep geological repository vs. radon exposure).

- Optimisation is informed by the scientific understanding of the risks involved but is a case-specific, stakeholder-dependent, circumstance-driven judgement.

- Optimisation depends strongly on stakeholder involvement, which in turn depends strongly on trust.

- Achieving accepted and sustainable solutions can be long-lasting and resource intensive.

- There is currently no common, practical understanding of what optimisation means, or what it is intended to achieve.

- Optimisation is case specific and depends heavily on the prevailing circumstances, in particular cultural and community-related aspects.

- A holistic approach is needed to enable optimisation.

NEA Workshop on Multifactor Optimisation of Predisposal Management of Radioactive Waste

The "NEA Workshop on Multifactor Optimisation of Predisposal Management of Radioactive Waste" was held in February 2020. The main results of the workshop are summarised on pages 8-9 of the workshop summary report. Some of the key findings are outlined below (NEA, 2021c):

- Optimal decisions depend on country-specific technical and non-technical factors.

- The inclusion of an informed and vigilant civil society is key.

- Holistic and optimised decisions require: a high degree of willingness from all involved to co-operate as well as to sometimes compromise; the ability to understand others in their own organisation as well as authorities and the public's perspective; and the identification of a solution that is acceptable to everyone.

- A step-wise decision-making process can be helpful, for example to ease some of the challenges related to changes in technologies and regulations.

- From an economic perspective, the allocation of responsibilities to those parties that are best equipped to handle them can be beneficial.

- Decisions in the back end of the fuel cycle and/or predisposal management require more advanced assessment methods representative of dynamic multi-stakeholder decision environments; uncertain futures where the ability of a given scenario to provide more flexibility in the decision process can be of significant value to all stakeholders; and complex systems requiring representation from the physical/technological level to socio-political objectives.

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