

# KNOWLEDGE IN DECISION- MAKING IN FINLAND

Towards greater dialogue

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The interface between knowledge and decision-making is broken. Societal discussion surrounding this interface over the past few years reveals several disappointments and a frustrated atmosphere. The results from a survey Sitra conducted in the summer of 2017 reinforce this notion. Problems have been identified both in knowledge production and decision-making.

Resolving complex societal problems requires a more comprehensive perspective with a more dialogical approach and a broader perspective on what is considered as knowledge and expertise. Despite acknowledging the problems in the interface between knowledge and decision-making, no determined effort for improvement has been made. Why? Where are the greatest obstacles? What type of new thinking does achieving change require?

# 1. OUR ABILITY TO REFORM IS PUT TO THE TEST

Traditional methods of producing knowledge and making decisions within strictly defined sectors function poorly in a world of many interdependencies. No one alone is able to resolve wicked problems such as social exclusion or climate change.

As the problems being resolved become more complex and the amount of competing information increases, societies increasingly call for evidence-based decision-making. The fragmented nature of knowledge and the quick pace of decision-making, however, do not easily allow for evidence-based decision-making processes.

A new type of interaction is needed between different sectors and between different types of expertise in decision-making. Everyone will also gain from it, if existing knowledge and expertise serve society better.

Since the topic is so important, we wanted to examine where the worst problems between knowledge and societal decision-making are and what are the most important areas for development. Where should the starting point be? Who should assume responsibility for fixing the situation?

In the summer of 2017, we sent a knowledge in decision-making survey to those in Finland who work in the interface of knowledge and decision-making and are

interested in the topic. We received 531 responses to the survey conducted online. The respondents were largely from the worlds of administration and research, but many responses were also received from those in the fields of politics, funding, communication and other service providers and stakeholders (Appendix 1).

Knowledge was not defined in detail in the survey. Instead, respondents were allowed to define it for themselves. Some questions broke down knowledge types in more detail (research knowledge, experimental knowledge, foresight knowledge, etc.) and asked respondents to make distinctions. With decision-making, the focus was on societal decision-making.

This report presents the most important findings of the survey. In addition, we link them to a broader topical discussion and present our own interpretations.

**Our core message is that the development of the interaction between knowledge and decision-making is a central strategic competence and governance challenge for the future. Meeting the challenge requires a leap forward in terms of dialogue: a fundamental change in operational culture, at the heart of which is an understanding that knowledge can only be given meaning through interaction.**

## 2. ARE RESEARCHERS FROM VENUS AND DECISION-MAKERS FROM MARS?

### Shared views on the problems

The results of the Finnish knowledge in decision-making survey reveal a concerning story: the current state of interaction between knowledge and decision-making is perceived as poor and biased. Numerous problems were identified in knowledge production as well as in preparing and making decisions: random use of research results, being tendentious and biased and the lack of time

taken for decision-making. In addition, the respondents were critical about the insufficient incentives for information to be presented in a format needed by decision-makers, about the decision-makers' ability to interpret the information and about the difficulty of interpreting the large amount of competing information (Box 1). The same problems have been highlighted in several recent Finnish studies and reports.<sup>1</sup>

<sup>1</sup> The same problems have been identified, for example, in the Binding knowledge to decision-making report (Tuomisto et al., 2017). Thirty-five officials, researchers and experts who work in the field of knowledge use were interviewed for the report. Problems were seen with the supply of and the demand for knowledge, but especially when aiming at evidence-based decision-making the challenges were perceived as being greater with the demand for knowledge.

**BOX 1. THE CHALLENGE IS TIME SENSITIVITY AND THE PURPOSE DRIVEN AND BIASED USE OF KNOWLEDGE**

According to the respondents to our survey, the six most serious problems in terms of using knowledge in decision-making are, in ranked order, as follows.

**1. Urgency:** Decision-makers do not have enough time to examine the knowledge needed for decisions and often demand that the knowledge is presented in too concise a format because of time sensitivity. In contrast, the producers of the information do not have enough available incentives to present knowledge in a format that serves decision-making.

**2. Being purpose driven:** Using information in decision-making is often biased, and people are not open about what knowledge the decisions are based on.

**3. Being tendentious:** When preparing to make decisions, a variety of different information sources are not used and alternatives are not compared systematically. Different types of knowledge (e.g. research, foresight and experiments) are not used systematically side by side in decision-making and different types of experts are not used without prejudice when decisions are prepared and made.

**4. Digitisation:** The opportunities to produce new knowledge created as a result of digitisation are not used in a diverse manner.

**5. Ability to interpret knowledge:** Decision-makers are not able to evaluate the quality of the knowledge and draw the correct conclusions. Sometimes there is too much faith in the objectivity of the knowledge during decision-making.

**6. Competing information:** There is so much competing knowledge that it is difficult to make sense of it.

The views of the respondents were strong (Appendix 2) and different respondent groups had very similar views on the present situation.

Therefore, there is nothing surprising about the critique. Decision-makers and researchers are often said to operate as if they were in different worlds. Scientific research moves at a slow pace and things are examined in great detail. Research is often directed at rather limited entities and subjects are often examined from limited perspectives. Decision-making requires quick answers and understanding of complex wholes. Political decision-making in particular is also often defined by values. Researchers feel that research results often become rhetoric in the field of politics.

However, it is surprising how critical the views on the current status regarding the interface of knowledge and decision-making are in our survey results. Half of the respondents felt that the co-operation and interaction between knowledge production and societal decision-making is poor in Finland.<sup>2</sup> Only one in four respondents (23%) felt that it is good.<sup>3</sup>

Furthermore, a majority of the respondents' descriptions of the interactions between knowledge and decision-making were negative (Figure 1). Interaction was described as being reactive to topical needs, occurring in small circles, being narrow in scope and random, unidirectional, tense and passive rather than their opposites.<sup>4</sup>

The critique of the current status was also evident in the responses to the open questions in the survey. One in four respondents identified societal atmosphere and attitudes as the most important area for development in the interface between knowledge and decision-making. Low appreciation of knowledge in decision-making was

<sup>2</sup> As a group, representatives from funding and administration saw the situation in the most positive light.

<sup>3</sup> As a group, representatives from politics or knowledge and service providers other than research saw the situation as the most negative.

<sup>4</sup> The results were obtained by offering the respondents word pairs with both positive and negative descriptions. With all word pairs, more respondents chose the negative word than its positive alternative.



## 3. THE WORLD IS CHANGING – WILL OUR PERCEPTION OF KNOWLEDGE CHANGE WITH IT?

### Wicked problems challenge public decision-making

A major change has occurred in the operating environment of public decision-making in the last few decades. The Director General of the Finnish National Board of Education, **Olli-Pekka Heinonen**,<sup>6</sup> describes this change with insight: Decision-making used to run like a big machine. Problems were dropped into the pipes of different administrative sectors and solutions would come out the other end that could be implemented through different levels of the administration, cascading down to the everyday life of citizens. But now an increasing amount of problems no longer fit through the tubes, which is why the tools we have at our disposal seem ineffective. Heinonen writes:

*“Complexity and interdependencies make wicked problems into difficult tangles, which cannot be unravelled by just pulling on one string. Instead, they just become tangled worse when doing so. The tangles consist of paradoxes as well as conflicting and permanently unsolved tensions. Interdependencies and rapid change together cause a wicked problem to evolve non-linearly. It therefore becomes a phenomenon which cannot be successfully addressed with traditional mechanisms of rational and centralised decision-making and planning.”*

There are numerous cognitive and structural challenges to leadership in complex environments. For example, decision-makers often tend to highlight short-term solutions at the expense of long-term goals. Similarly, there is often a desire for logical explanations and undisputed evidence, overemphasising structured information, predicting the future based on the past and overlooking what are known as black swan events. Many decision-makers also have a deeply ingrained planning instinct and an inflated need to try to achieve efficiency. In addition, our leadership culture also often favours debate based on “factual” evidence or solutions over a dialogue that highlights diversity.<sup>7</sup>

When the respondents to the Finnish knowledge in decision-making survey were asked an open question

about what future trends should be focused on at the interface of knowledge and societal decision-making, respondents highlighted the need to respond to the major challenges facing mankind, such as sustainable development, ecological problems, an ageing population, social exclusion and the transformation of working life. Respondents clearly recognised the wicked problems that increasingly characterise our societies and the speed of change, which make predicting the future and planning nearly impossible.

The survey results can be summarised using a familiar saying: “knowledge increases pain”. Indeed, making sense of the whole amid a flood of information and competing information is seen as difficult. The perceived pain may also be a result of the respondents’ deeper awareness of the fact that past operating models no longer work in a world of complex phenomena.

### Expertise is undergoing change

The internet is one of mankind’s greatest inventions. Through it, more people than ever before have access to information. The internet has made it easier to publish information and has allowed significantly greater groups of people to participate in societal discussions.

However, the development also has a dark side. It is often difficult to distinguish between what is true and what is false amid a flood of information. The visibility of various types of misinformation has increased and public dialogue may be based on information that is far from real or accurate. The new media and the self-taught also challenge the legitimacy of expert knowledge in a new way. The political battle over what is considered as expert knowledge and who is considered as an expert is no longer only fought in public administration and on the frontline of representative democracy, but increasingly on different types of digital discussion forums. The bleakest analyses have even contemplated the death of expertise.<sup>8</sup>

6 Heinonen, 2017.

7 Leadership challenges in complex environments were identified at an international workshop organised by Sitra in 2016 June (Doz et al., 2017).

8 Nichols, 2017.

## BOX 2. A COMPLICATED WORLD HAS CREATED A COMPLEXITY GAP

Traditional thinking and operational models of Western societies are in crisis at all levels of society. Life management problems, illness attributed to lifestyle and mental health problems are increasing. Companies and public administrations are actively seeking new organisational models, as the old hierarchies are no longer effective in a rapidly changing operating environment. Political leaders are stumbling from one crisis to another while being engulfed by problems. The UN and other international organisations are unable to solve acute global problems. Why?

Finland and other highly developed societies have come to a historic crossroads, where the specialisation in economic and societal activities, complexity and uncertainty have reached new levels, which can no longer be managed using traditional methods. Several factors have contributed to creating the situation: the globalisation of world economies and production processes; the increased speed of change and interaction; the information overload on individuals and decision-makers; the individualisation of consumer needs; and the change in the structures of the economy and society. **John Casti**<sup>9</sup>, who studies complex phenomena, has referred to this tension created between the old operational models and the more complex world as a “complexity gap”.

Historical examples of similar transitions indicate that the return to a path of sustainable development requires the creation of decision-making and organisational models that suit the new world – otherwise, the result is chaos, crisis or even the collapse of societies. Today's societies are now ominously close to taking this path. The situation is made worse by the fact that increased societal uncertainty and complexity have caused anxiety for many people. There now exists a favourable environment for extreme movements and politicians who seemingly offer simple solutions to complex societal problems.

The complexity gap can be narrowed in two

different ways. The first is based on reducing the complexity of society by, for example, developing simple rules, operational models and performance indicators. Finnish society is almost completely built this way.

The complexity of political decision-making has been reduced by, for example, a strong reliance on individual specialists and investigators, strictly delineated boundaries between the ministries' administrative branch functions, prioritising a linear innovation model and R&D in innovation policies and concentrating on discipline-specific academic achievements at universities.

Finland's traditional operational model, however, is no longer sufficient in a more complex and uncertain world. We now need a different type of strategy that is based on increasing the diversity and freedom of societal thinking and operational models. Only then can sufficient flexibility and the ability to adapt be achieved for a society in a world that is difficult to predict.

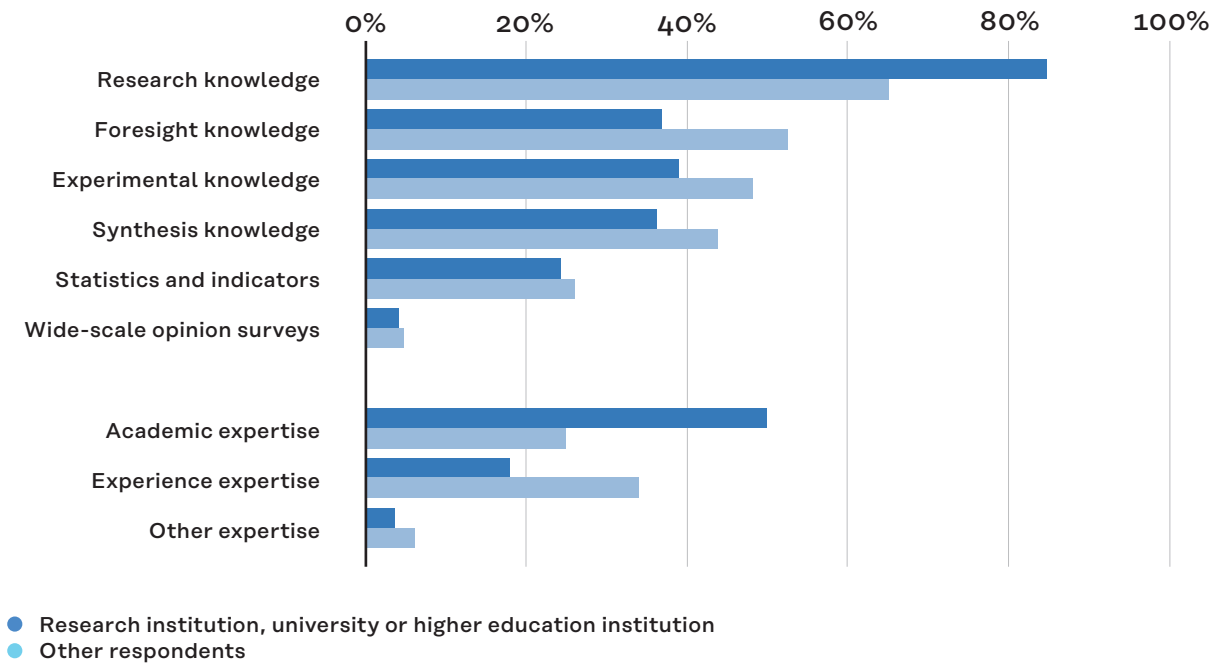
For companies, this requires more network co-operation, developing the platform economy, open innovation processes, experimental activities, crowdsourcing problem solving, design thinking, etc. The research world needs more interdisciplinary research, which aims to achieve scientific breakthroughs and solve the most important societal sustainability challenges. Diversifying the public sector's thinking and operating models requires delegating the decision-making responsibility regionally and organisationally downward. Individuals need to be included in decision-making and development efforts, experimental activities need to be activated and the long-term co-operation between companies and public administration should be increased.

Improving the adaptability of Finnish society requires a change in the societal paradigm.

Timo Hämäläinen, Sitra

This is an extract from an article published in *Talouselämä* on 1 September 2017.

<sup>9</sup> Casti, 2012.



In your opinion, what forms of knowledge and expertise should be used more in societal decision-making in Finland? (Select a maximum of three most important alternatives)

**Figure 2.** Increasing knowledge in societal decision-making. Respondents' views on the forms of knowledge and expertise that should be increased in societal decision-making in Finland. Respondents were allowed to select a maximum of three most important types of knowledge or expertise.

The respondents to our survey also highlighted the threats from and opportunities for digitisation, the crisis in democracy and the “post-truth society”, when they were asked to identify the most significant changes in the operating environment.

According to **Mikko Jakonen**,<sup>10</sup> who has studied changes in the perception of expertise, the easy accessibility of information created by the internet and digitisation has narrowed the knowledge gap and hierarchy between experts and regular people. Expertise can be created in more heterogeneous social environments than before. Through online services, vast amounts of people can be included in resolving problems. Vast amounts of expert knowledge are produced today outside of universities and research institutions. In addition, IT development allows for expertise to be created in a manner where it ceases to be traditional, individualised “craftsmanship” bound to a single person.

*The easy accessibility of information created by the internet and digitisation has narrowed the knowledge gap and hierarchy between experts and regular people.*

Although traditional expertise based on education and experience is unlikely to be made obsolete, expertise has become a less clear and more conflicting concept. Expertise may be based not only on research, but also on experience, insight or from working in positions that provide perspective.<sup>11</sup>

Traditional academic expertise is increasingly only seen as one form of expertise and research information as

10 - 11 Jakonen, 2017.

only a single source of information among many others. This was evident in the survey we conducted in Finland, with different respondent groups feeling that there was nearly as great a need for increased foresight, experimental and synthesis knowledge as there was for increased research knowledge (Figure 2). A majority of respondents also thought it was more important to increase the use of experience-based expertise in decision-making, rather than academic expertise.<sup>12</sup>

The relativity of knowledge must be accepted in a modern society and expertise must be sought in more diverse places. One should aim to understand different types of knowledge, not assume or try to establish one model that encompasses all knowledge and truth. Especially when outlining the future, a diverse field of experts should be listened to, including all the conflicts, threads and differences therein.<sup>13</sup>

Information has established validation methods in the academic world, which is why the hierarchy of information sources often favours research. A similar validation method does not exist for other forms of information and expertise, which may result in difficulty when assigning value to different types of knowledge. In order for the dialogue between different types of

*It would be good to also identify and openly discuss the political goals and tensions associated with the use of different types of expert information.*

information and expertise to be successful, methods must be developed to evaluate and compile other types of information too, other than just academic findings. It would be good to also identify and openly discuss the political goals and tensions associated with the use of different types of expert information.

## **Information is given meaning through interaction**

The relationship between knowledge and decision-making has been influenced for decades by an ideal of linear interaction. This means that new knowledge acts as a key engine driving societal development. Therefore, the goal is to align information production with the most relevant questions from the perspective of decision-makers, to produce the necessary information reliably and efficiently, and to communicate the information in a timely and effective manner to decision-makers.

During recent years, it has been increasingly realised that new knowledge is not a necessary engine for driving development. The innovation process can also be dynamic and chain-like.<sup>14</sup> It may begin with identifying an unmet need, which acts as the development engine throughout the process, all the way from research to formulating the solution and marketing. Instead of the linear progression of the process, there may be many different types of feedback links between every phase. These may also exist between the information sources within the organisation and those available elsewhere in the world, which results in new information only being produced when necessary.

Both the linear and dynamic approaches for using knowledge in decision-making benefit from increased interaction. However, the interaction aims to accomplish different things. Interaction in the linear approach is usually used to ensure that information is produced for questions that are interesting to the users and that the produced results are communicated effectively to the decision-making process.

In the dynamic approach, knowledge production is seen as an interactive process, where experts not only seek answers to predetermined questions, but where both experts and decision-makers contribute to formulating the questions and making sense of the information from the start of the decision-making process.

Resolving especially complex problems requires a drastic reform of current practices and a new type of co-operation and dialogue between all parties. This type of learning-based problem solving, however, takes time. In addition, it must be accepted that the interaction does

<sup>12</sup> When compared to other respondent groups, representatives of research organisations highlighted especially research information and academic expertise. As a group, administration representatives highlighted foresight and synthesis knowledge slightly more than other respondent groups. Experience-based expertise, in turn, was highlighted slightly more in the societal decision-maker group than in other respondent groups.

<sup>13</sup> Jakonen, 2017.

<sup>14</sup> Kline and Rosenberg, 1986.



not always lead to decisions in line with what is considered to be the objective truth. This is because decision-making is not only affected by the acceptability

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of the information used, but also by the perception of how legitimate the process of using knowledge is. Shared knowledge resulting from joint interpretation processes increases the impact of knowledge on decision-making.

According to our interpretation, the respondents to the Finnish knowledge in decision-making survey favoured a dynamic approach to the interaction between knowledge and decision-making, in particular when resolving complex societal problems (Box 3). In the context of complex problems, respondents especially highlighted the diversity of knowledge, compilation and synthesis of different types of information and expertise, multidimensional impact assessments, critical thinking and dialogue. The respondents did not feel that the diversification of the concept of knowledge described in the previous section is sufficient; instead, different types of information and expertise should also be interpreted in relation to one another more effectively. There would appear to be a dire need for systemic knowledge in our era.

### **BOX 3. COMPLEX QUESTIONS REQUIRE A DIALOGUE BASED ON MULTIDIMENSIONAL KNOWLEDGE**

Respondents to the Finnish knowledge in decision-making survey saw five ways to seek solutions for complex problems (Appendix 3, also see Figure 2).

**1. Holistic perception, syntheses and systemic understanding** (collecting and synthesising knowledge from multiple sources and multidimensional impact assessment)

**2. Questioning the prevailing conditions** (questioning the prevailing assumptions and practices)

**3. Dialogue and interaction** (the dialogue between different scientific disciplines and the interaction between academic and practical experts)

**4. Use of diverse information and expertise\***

**5. Long-term approach that extends beyond terms of government\***

Making information understandable and swiftly available for decision-makers or the increase in practical knowledge were not widely supported when seeking answers to complex questions. It was surprising that the potential for using big data or artificial intelligence to provide answers to complex issues was hardly recognised.

There were some differences in the views of different respondent groups. For example, representatives of the **administration** group highlighted collecting knowledge from multiple sources more than other groups, but felt that questioning the existing conditions was less important than other groups. As a group, representatives of **research** organisations highlighted dialogue and questioning the existing conditions more than the other groups. Differing from the other groups, representatives of **politics** highlighted experiments more than multidimensional impact assessments.

\* This option was not included in the survey, but the perspective was strongly highlighted in the open responses.

## 4. THERE IS A WILL TO DEVELOP, SO WHY IS NOTHING HAPPENING?

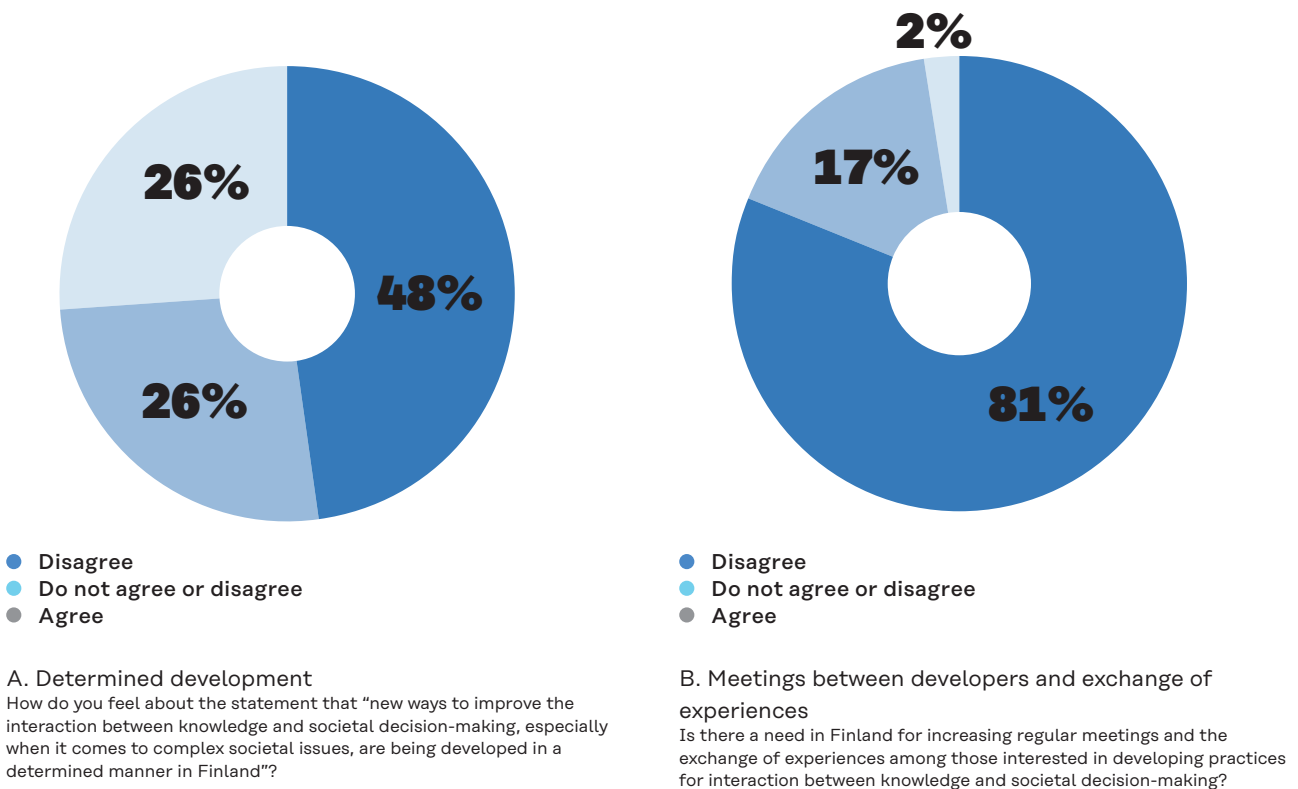
### There is awareness, but few competences or resources

The respondents to the Finnish knowledge in decision-making survey shared a pessimistic perception of the status of using knowledge in decision-making. But respondents did recognise rather well how important forces of change, such as complex phenomena in a rapidly changing world, the problems with democracy and rapidly evolving digitisation challenge our views on knowledge and how it is created. Regardless of the respondent group, respondents also recognised the need to take the initiative in the development activities within their own operational area and felt that the need for development is well recognised in their organisations. So then why is nothing happening? Why do respondents still have a strong perception that the interaction of knowledge and decision-making is not being developed in a sufficiently determined manner (Figure 3)?

The survey and its results provide grounds for three interpretations:

- **Resources, resources, resources.** The respondents felt that the lack of resources and funding was the most important obstacle to the development of the interaction between knowledge and decision-making in their own organisations. Administration representatives felt that the resource problem was the most critical.

Our view, however, is that the lack of resources is not the underlying reason for the limited development activities, but is a symptom of something else instead. So why is it that competences are not developed or resources directed in a more determined manner to improve the interaction of knowledge and decision-making?



**FIGURE 3.** Current status and need for development activities associated with the interaction of knowledge and decision-making.

— **Lack of competences and thin developer networks.** A majority of the survey respondents felt that the competences in their organisations for interaction practices was insufficient. The methods highlighted by the respondents for developing their competences included discussions and exchanging experiences with colleagues. Less than half of the respondents stated that they read publications or articles on the topic. The lack of competences was highlighted the most by respondents who represented the administration group.

We believe that development of the interaction between knowledge and decision-making is also made more difficult by the lack of competences on dialogue-based facilitation methods. In fact, different types of interaction processes are often outsourced to service providers instead of developing the competences needed for implementation in-house as strategic competences of organisations.

When planning the survey, we also observed that it is very difficult to identify key individuals in developing the interaction between knowledge and decision-making in each organisation based on titles or job responsibilities. The development efforts are often made more based on personal interest than job responsibilities. We did not really identify any active developer networks on the subject.

— **Shared responsibility** – no one’s responsibility? Survey respondents strongly felt that the responsibility for taking the initiative in the development of the interaction between knowledge and decision-making was a shared responsibility. The perception of shared responsibility was highlighted by the fact that each respondent group saw their responsibility to take the initiative as being at least as great as how it was perceived by other respondent groups. When analysing the views, there appeared to be many people willing to assume responsibility, but does the old saying “everyone’s responsibility is no one’s responsibility” also hold true here?

Despite the shared responsibility, all respondent groups felt that taking the initiative was particularly needed from the administrations that prepare societal decisions and from different ministries (Figure 4). In particular, the administrations were identified as being the most important owners and initiators of the interaction processes. In addition, Sitra was mentioned in one in five open responses.<sup>15</sup> The responses suggested that Sitra should be active, particularly when dealing with developing new practices and initiating co-operation and the exchange of experiences among developers.



**Figure 4.** Respondents’ suggestions on those with responsibility for taking the initiative. Respondents were asked to name those seen as key actors for developing interaction practices between knowledge and societal decision-making.\*

15 The number of responses that mentioned Sitra is likely to have been affected by Sitra’s role as executor of the survey. Respondents were asked to name some of those actors that they viewed as vital to the development of interaction practices between knowledge and societal decision-making.

\* Abbreviations used: Sitra (the Finnish Innovation Fund Sitra), Tekes (Tekes - the Finnish Funding Agency for Innovation), Kuntaliitto (Association of Local and Regional Authorities), VN-TEAS (The government’s analysis, assessment and research activities), Tutkas (Society of researchers and MPs), UNIFI (Network of universities), TIN (Research and Innovation Council), TJNK (Committee for Public Information), TEA working group (Working group for co-ordinating the governments’ analysis, assessment and research activities), Tietojohdantaminen ry (Society for knowledge management)

#### **BOX 4. THE CHALLENGE OF COMPETENCE AND GOVERNANCE IS NOT RECOGNISED**

The respondents to the Finnish knowledge in decision-making survey were asked with an open question what single thing they would like to change in the interaction between knowledge and decision-making. There was a largely equal desire to change the supply of knowledge and expertise (31%), preparing and making decisions (31%) and the interaction between knowledge and decision-making (27%). Only a few (8%) saw a need for primarily developing competences or governance.

Although the question was obligatory to the respondents, very few practical development suggestions were made. Most of them were associated with the following topics.

**1. Developing competences** – on both sides. The use of knowledge in decision-making on issues involving complex phenomena requires new competences in dialogue and in designing interactive processes. Increasing such competences should be made a central element of the training of decision-makers, officials and researchers. As this pertains to cultural change, room must be made for new learning through unlearning. It can be supported with incentives that support, for example, career development or achieving merits. For developers interested in the subject area, new meeting places and platforms for exchanging experiences are needed.

**2. Experimenting and developing new practices.** The interactive and dynamic approaches needed for addressing complex issues require systematic and easy-to-apply practices. In particular, methods that create dialogue between different types of

knowledge and sources of information (e.g. research, foresight, experiments) are needed. Good practices should be modelled, experimented with and shared.

**3. Strengthening the knowledge base for preparing and making decisions.** The openness about the knowledge used for preparing and making decisions should be increased. In order to diversify the use of knowledge and expertise, respondents called for the reform of the hearing practices of parliamentary special committees, a renewed way of working in committees and wider participation in the drafting of the future outlooks of ministries, among other things. In order to improve the reliability of knowledge used in decision-making, respondents proposed nominating a scientific counselor to the Finnish Government, the use of different types of expert panels, strengthening information centres and services for decision-makers, and reliability monitoring of used knowledge.

**4. National policies and directing resources.** The approaches needed for addressing complex societal issues should be better considered in national policies, all the way from government programmes to different types of research, education and innovation policies. They should more comprehensively include different types of information sources and forms of expertise and the dynamic dialogue between them. For example, it is difficult to direct resources to developing new competences and adopting new practices without enabling national policies and the will to do so.

## Competences and governance must be developed

Our view is that the lack of resources, competences and assuming responsibility are reflective of the weaknesses associated with sharing the goals and policies necessary for change.

When the survey respondents were asked what single thing would they like to change, only a few suggested the development of competences or governance. Many of the actions suggested by respondents (Box 4), however, are not possible unless the interaction between knowledge and decision-making is made a strategic area of governance among both knowledge-producing and knowledge-using organisations.

Two extremes could be seen in the responses. Some respondents called for a better atmosphere and increased interaction. In contrast, some of the proposed practical actions reflect a sense of restoring the control lost in the abundance of knowledge by using top-down management of knowledge that highlights its rational use. An attempt was made to address the fragmentation of knowledge and the decision-makers' lack of time by calling for new institutions, by directing the use of information for decision-making in a centralised fashion or by introducing controls to ensure that knowledge is used "correctly".

The ability to assume a new organisational culture that relies on more decentralised decision-making significantly affects what types of solutions can be adopted and how. Therefore, the change requires that the old roles of super experts, researchers or politicians must be discontinued.<sup>16</sup>

Although we have highlighted complex societal problems in this report, not all societal problems are complex by nature. With many of the issues on today's policy agenda, linear approaches to using knowledge are still effective. However, decision-makers must be able to recognise what problem is ultimately being resolved and what issues are truly so multidimensional that they cannot be solved by introducing "correct" knowledge in a linear fashion to the decision-making process. This requires new competences.

In addition to the decision-makers' ability to interpret knowledge as called for by the respondents, contextual awareness is also needed. The successful use of knowledge in decision-making starts with understanding the nature of the problem, including its time span and scope. Only in this way is it possible to evaluate what type of knowledge and interaction is required to resolve the problem and how limited or sufficient the available information is in relation to the problem. Better contextual awareness is also required from knowledge producers and their funders.

Many national research and innovation policies (for example, the government programme, research and innovation policy, and government resolution on the reform of research institutions and research funding) encourage more diverse inter-administrative or interdisciplinary co-operation or co-operation between different sectors. Do the above initiatives offer sufficient methods to improve our ability to address complex societal problems?<sup>17</sup>

The recent OECD country assessment of Finland's research and innovation policy<sup>18</sup> calls for a new vision to address major societal challenges (for example, energy efficiency, the ageing population and climate change).

16 Doz et al., 2017.

17 The goal of the current government programme (Finnish Government, 2015) is to boldly renew governance and policy implementation by improving knowledge-based decision-making and openness and by utilising methods that support experiments and citizen participation. The programme includes 26 key projects, of which 10 contain research and innovation policy activities. For example, the key project that aims to strengthen the experimental culture corresponds with the need identified in this report to diversify our perception of knowledge. However, according to the recent OECD country assessment (OECD, 2017), the government's research and innovation policy activities have not been compiled together as a coherent research and innovation policy.

The most recent research and innovation policies (Finnish Research and Innovation Council, 2014) highlight improving the quality of expertise, making choices and supporting the leading experts, securing R&D funding and strengthening the effectiveness of knowledge. The renewal of the perception of knowledge, the holistic perspective and the creation of knowledge through dialogue called for by respondents to the Finnish knowledge in decision-making survey are not emphasised.

The Finnish government's resolution on the reform of research institutions and research funding (2013) aims to base societal policies and decision-making and its implementation on researched knowledge that would guide decision-making in a long-term manner. With the goal of strengthening the horizontal nature of the knowledge base and the interaction between knowledge production and decision-making through strategic research funding and government research, foresight, assessment and research activities, the reform is a step in the right direction. However, the reform is insufficient because a majority of the development activities pertain to knowledge production and organising funding for it without really addressing the problems with the political and administrative decision-making system. A more important issue than funding instruments, according to Heinonen (2017), is for political decision-makers and those preparing the decisions to be able to engage in dialogue that constructs a shared view with those producing the knowledge.

18 OECD, 2017.

At the same time, it is recommended that there be a comprehensive reform of public sector governance that leads to a more united government and new partnerships and interaction between the public, private and third sectors. In accordance with the OECD recommendations, the new vision for research and innovation policy is currently being drafted by the Research and Innovation Council of Finland.

The respondents to the survey highlighted a shared development responsibility. However, a shared responsibility is no one's responsibility until it is carried

systematically and with determination at all levels of society.

In addition to the government programme and research and innovation policies, strategic decisions and uniform principles and processes for knowledge-use are needed at different organisational levels. The development and adoption of new practices must be introduced to the action plans of organisations that both produce and use knowledge. This will be fundamental to Finland's ability to reform.

## 5. IN ADDITION TO DIGITAL PROGRESS, WE NEED GREATER DIALOGUE

Despite the concerns identified by the Finnish knowledge in decision-making survey, one cannot conclude that things are particularly bad in Finland or even worse than elsewhere. The survey reflects the more general difficulties faced by societies operating in a new type of information environment.

The survey, however, provides grounds for some optimism. A majority of the respondents, at least on a cognitive level, have detected the changes in direction in the use of knowledge in decision-making, which are required to address complex issues. Complex phenomena and the uncertainty associated with them challenge our perception of knowledge and how we use it, among other things.

In order for us to also use knowledge in changing conditions in a progressive manner, we need the goal-oriented development of competences, leadership and governance. It should stem from the ability to recognise the contexts that require new approaches where it is necessary to move away from the traditional ideal of linear knowledge production and use. Digital progress and greater dialogue are the spearheads of this change.

**Digital progress.** We did not seek or find an answer in the survey that defines citizens' roles in the interaction between knowledge and decision-making or

how citizen-based information is used as a part of decision-making. Many of today's reform initiatives come from civil society. In addition, a large share of the increase in new knowledge occurs beyond the reach of authorities and the share of knowledge in the possession of the authorities is decreasing. Regardless of this, the decision-making systems are primarily centred around official information.

A surprising aspect of the survey results was that although respondents almost unanimously felt that the opportunities created by digitisation for supporting knowledge production were not utilised sufficiently (Appendix 2), they gave very little significance to developing and adopting artificial intelligence, for example, to help resolve complex societal problems (Box 3). Is artificial intelligence still such a new concept that knowledge producers or even those who study the use of knowledge in decision-making have not been able to grasp it?<sup>19</sup>

The interaction between knowledge and decision-making was perceived as occurring between people – experts. However, the interaction between machines may have a more important role in compiling and synthesising knowledge and in providing automatic operative guidance – and even decision-making – in future societies. With the use of artificial intelligence, for

<sup>19</sup> Only 15% of respondents from the group representing research organisations felt that developing artificial intelligence was an important approach when handling complex societal phenomena. The figure was approximately the same (14%) for those who study the use of knowledge in decision-making. One in four respondents of the entire study believed in the opportunities provided by artificial intelligence.

example, it would be possible to access the information described above as being beyond the reach of decision-makers.

*In a complex world even high-quality knowledge may not lead to a good decision and even good decisions are not alone sufficient to create change.*

Today, digital solutions are called for when reforming administrative practices and producing services in different contexts. It remains to be seen how the growing opportunities created by digitisation can be utilised when seeking solutions to the major issues facing humanity. Digital progress, which increases and compiles available information, must also be extended to the use of knowledge in decision-making.

**Greater dialogue.** When thinking in accordance with the traditional linear knowledge-use model, this survey and the interpretation of its results have produced significant new knowledge for decision-makers to use. Now we just have to get the decision-makers to adopt the knowledge through effective communication and wait for the knowledge to be used and for the well-justified proposals to be implemented.

As we have highlighted in this report, the world does not operate like this with complex phenomena – and the use of knowledge in societal decision-making is a complex challenge. Although wicked problems affect our future now more than ever, our decision-makers and our entire societal machinery are poorly prepared to address them. In a traditional decision-making culture that is based on examining linear cause-and-effect relationships, complexity is easily disregarded because addressing complexity challenges rational decision-making that has predictable impacts. In complex phenomena, changes usually occur in a dispersed manner and gradually, and not through transformational one-off decisions. Therefore, in a complex world even high-quality knowledge may not lead to a good decision and even good decisions are not alone sufficient to create change.

Amid the current change, the roles of different actors may also change.

Therefore, one must go deeper than simply reforming the individual practices, processes or institutions highlighted in the survey (see Box 4) when developing knowledge in decision-making, especially for use with complex questions. The challenge is the refining of one's awareness of a need for change into internalised principles of action. There is need for a cultural change that can only occur through dialogue and personal discovery.

National policies, decision-making processes or methods of knowledge production and interaction will not change without a significant unlearning of the prevailing linear model of knowledge production, communication and decision-making, or without a better understanding of the roles of different actors and the changes they are facing. We must continue the development of a shared perception of the changes in the interaction between knowledge and decision-making that are required by complex phenomena. For that, we need a greater societal dialogue.

#### **SITRA - THE FUND FOR THE FUTURE - PARTICIPATES IN THE WORK**

In Sitra's knowledge in decision-making project, we recognise the challenges and opportunities associated with the changing relationship between knowledge and decision-making. We introduce new perspectives, increase interaction between those interested in the subject and share best practices. We help experimenting with new interaction models and developing existing arenas aiming at interaction between knowledge and decision-making. ([sitra.fi/knowledge-decision-making](https://sitra.fi/knowledge-decision-making)).





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## Appendix 1. Target group, respondents and materials of the survey

The Finnish knowledge in decision-making survey was carried out between 24 May and 30 June 2017. It was marketed to selected target audiences, allowing recipients to forward the questionnaire to other people within the target audiences. The target audiences of the survey were decision-makers, public officials, knowledge and service producers, funding providers and other stakeholders interested in the interaction of knowledge and decision-making. The survey was directed at the leadership of organisations and at people who work with the interaction of knowledge and decision-making.

The content of the survey is saved in the Finnish Social Science Data Archive ([www.fsd.uta.fi](http://www.fsd.uta.fi)) for anyone to use. More detailed results and figures can be found on the Sitra website and on SlideShare. The data and results are published in Finnish.

Examples of the target groups used for marketing:

### Politics

Party leaders and party offices, parliamentary special committees, counsels to parliamentary committees, party think tanks, society of researchers and members of parliament (Tutkas).

### Administration, policy councils and policy working groups

The Research and Innovation Council, leading civil servants within ministries, the policy analysis unit and government strategy secretariat of the Prime Minister's Office, governance specialists under the Ministry of Finance, participants in Sitra's public leadership training programme, steering groups of the government's analysis, assessment and research activities (VN-TEAS), the Sustainable Development Co-ordination Network, the Council of Regulatory Impact Assessment.

### Research

Directorates and communication chiefs of government research institutions and universities, board members of research and education networks (UNIFI, ARENE, KOTUMO), directors and interaction specialists of the government's strategic research programmes, project managers of the government's analysis, assessment and research activities, science policy researchers.

### Expert panels

The Expert Panel on Sustainable Development, National IPBES Panel, the Finnish Climate Change Panel, the Bioeconomy Panel, Future Earth Finland, the Economic Policy Council.

### Other knowledge and service production

The National Foresight Network, Experimental Finland, think tanks and co-creation experts, scientific and research communicators network, the media.

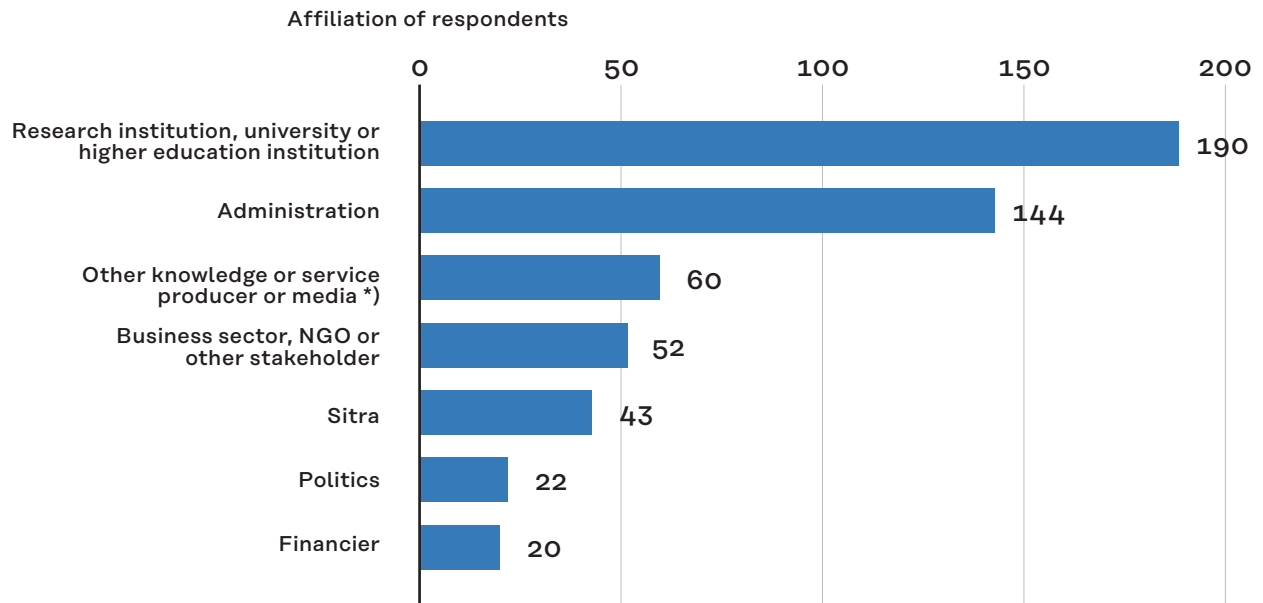
### Funding

Academy of Finland, Tekes – The Finnish Funding Agency for Innovation, Strategic Research Council and Secretariat, managers of research activities in ministries, the Council of Finnish Foundations, some of Finland's largest foundations.

### Others

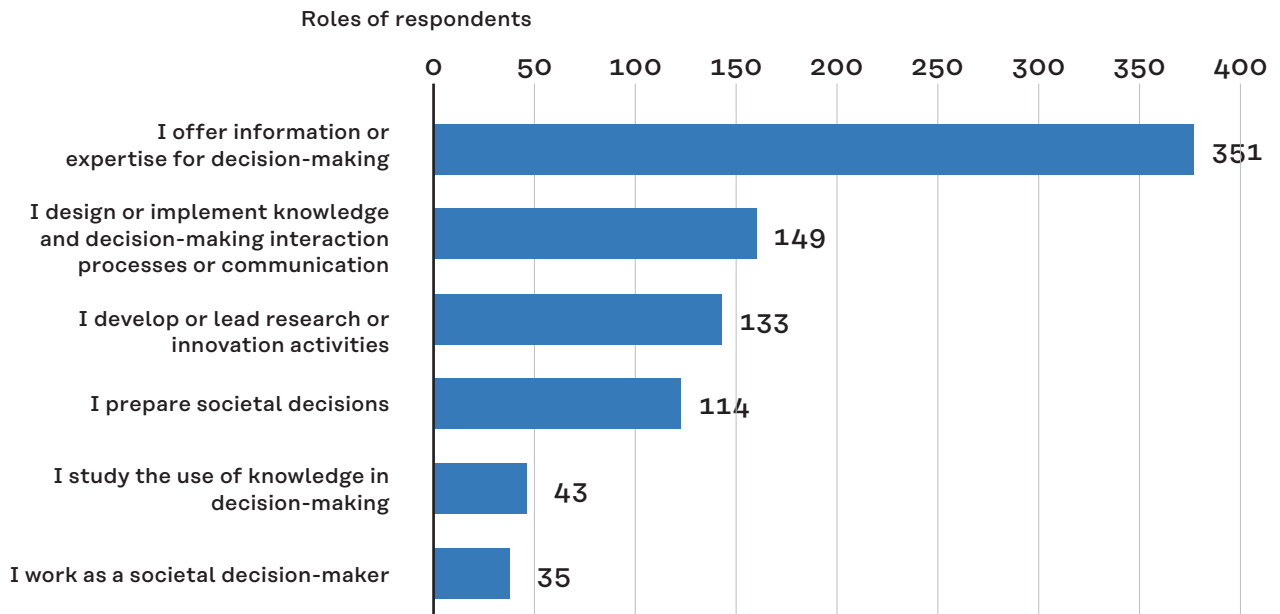
Society of knowledge management (Tietojohtaminen ry.), alumni of Sitra's societal training programmes, Sitra employees, Sitra's Board of Directors and the Supervisory Board of Sitra.

Which of the following best describes your affiliation?  
(Select one)



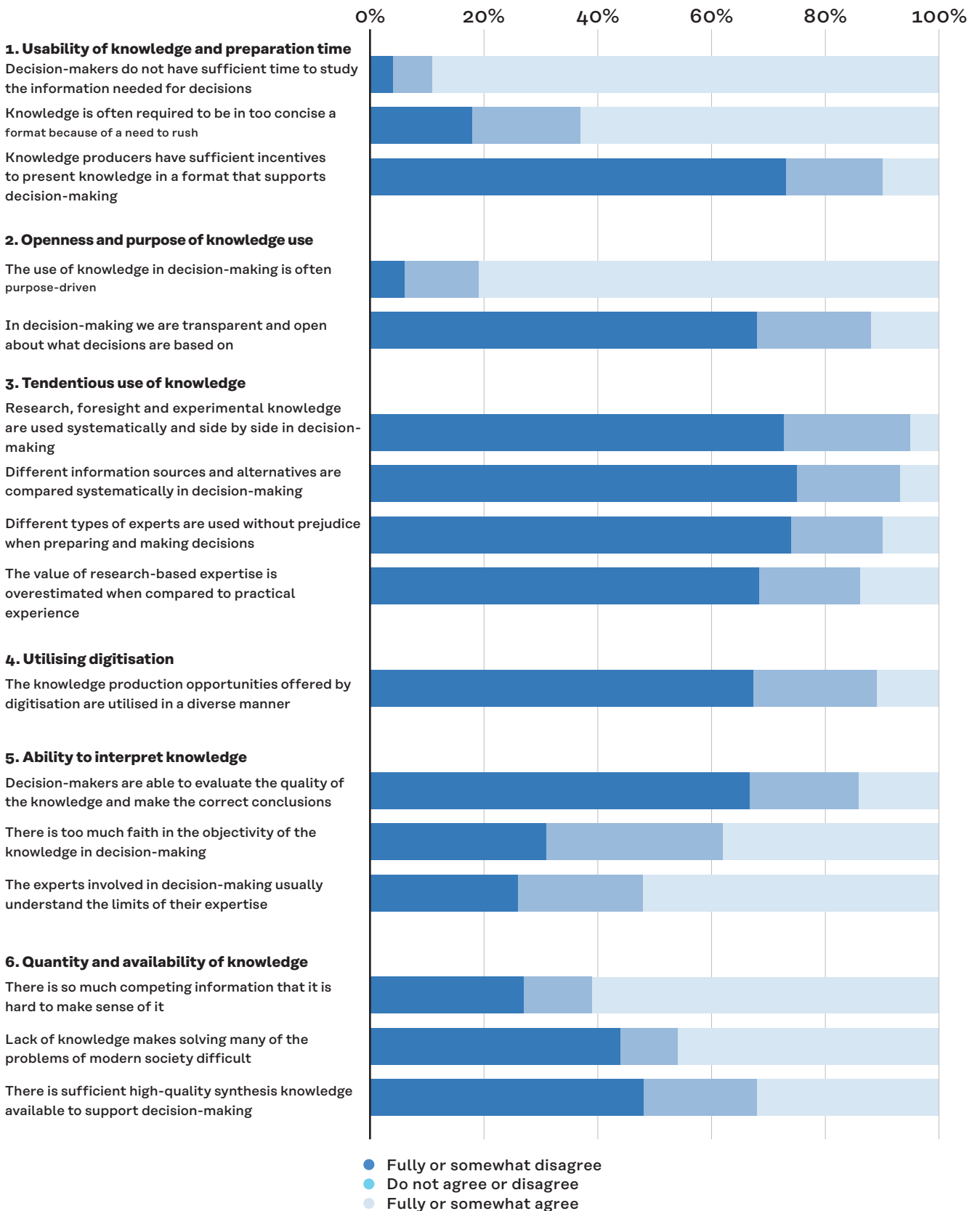
\*) Think tank, consulting, experimental activities, communication, media, etc.

What is your role in the fields of knowledge production and societal decision-making?  
(Select a maximum of two alternatives that best describe you)



## Appendix 2. Statements regarding current status

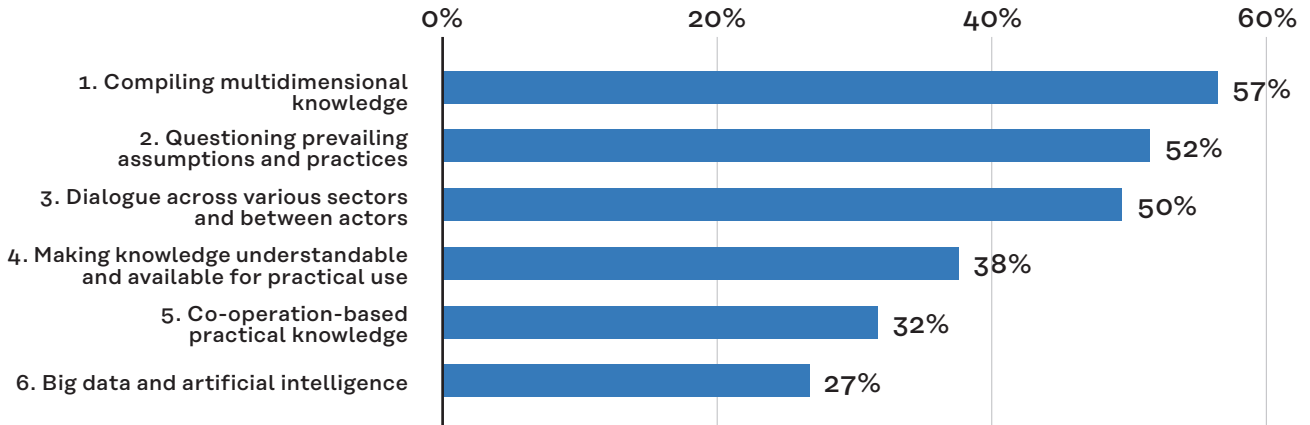
How do you feel about the following statements to describe the current status?  
(Select the alternative that best describes your view)



### Appendix 3. Approaches to complex questions

Which of the following approaches in particular should be improved in Finland when seeking solutions to complex societal problems?

(Select a maximum of five most important alternatives)



#### Suggested approaches \*:

**1. Compiling multidimensional knowledge**

- Multidimensional analysis of the effects of decisions
- Compilation and synthesis of multi-source knowledge

**2. Questioning prevailing assumptions and practices**

- Questioning prevailing assumptions and practices

**3. Dialogue across various sectors and between actors**

- Dialogue between disciplines
- Interaction between academic and practical experts

**4. Making knowledge understandable and available for practical use**

- Quick availability of the most recent knowledge for use
- Making in-depth specialist knowledge understandable

**5. Co-operation-based practical knowledge**

- Increasing experimentation
- Participative knowledge production and co-creation

**6. Big data and artificial intelligence**

- Analysis of vast data materials
- Developing and adopting artificial intelligence

\*) Respondents were presented with 11 arguments, from which they were allowed to select a maximum of five. The above combines thematically similar arguments and responses and presents mean values for them.


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