Relevance of what, relevant to whom? Contested Characterisations of Relevant Knowledge and its Production

Anita Välikangas

Practical philosophy / University of Helsinki, Helsinki, Finland
anita.valikangas@gmail.com
ORCID: https://orcid.org/0000-0003-2581-9314

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Abstract

Relevance has become a central concept in the discussion of academic knowledge production, used in the strategies and guidelines of various research-oriented institutions. This article analyses some of the key contemporary tenets in this area. Having conducted a systematic literature review of 113 academic articles, I distinguish eight main ways of referring to relevance in the context of knowledge production. Some accounts focus on how existing knowledge institutions do or could provide users with relevant knowledge, whereas others take a more dynamic approach reflecting on how stakeholder needs should influence knowledge production and what types of institutional structures allow them to do so. This difference corresponds with the characterisation of the science-policy interface either as a two-world (linear) relationship or as one-world intertwined. It is also worth considering how social and policy relevance, for example, stand against each other. These nuances should be recognised given that the concept of relevance is widely used in institutional design and in discussions about the future of academic knowledge production.

Keywords: relevance, science policy, societal impact, policy relevance, transdisciplinarity, university research, literature review

1 Introduction

Relevance has been an influential notion in the design of institutions and actions located at the interface between science and society. Research funders and universities point out that researchers should aim at societal relevance, and demonstrate this in their funding applications and public research profiles. The development of various guidelines and metrics in research funding and policy has disseminated such thinking across academia, making it necessary to understand the demands and conditions it imposes on academic research (Demeritt, 2000; Hessels et al., 2009; Irwin & Horst, 2024; OECD, 2018; van der Molen et al., 2019). The European Union, for example, places societal relevance in a central position in its strategy for research and innovation (Centre for Strategy & Evaluation Services LLP (CSES) et al., 2020). Relevance is also a potential goal for institutions such as the Intergovernmental Panel on Climate Change (IPCC), with its target of offering "the most relevant and up-to-date research on climate change mitigation" As

yet, however, there is no overarching literature review that encompasses the varying ways in which the notion is used in the discussion on academic knowledge, or the varying goals and epistemic considerations set for its production. My aim is to narrow the research gap.

This article gives an overview of relevance and its various uses, showing how people have approached the phenomenon from contrasting perspectives. It shows how existing research, academic fields and disciplines aim at relevance, and the kind of properties required of knowledge if it is to be relevant. Other authors have a more dynamic perspective, emphasising the tendency in relevant research to involve an active relationship between academic and non-academic actors, often with elements of co-production. Researchers are also encouraged to give more consideration to the relationship between the various sub-categories, particularly policy and social relevance. This varying usage imposes competing goals on researchers and institutions, given their differing interpretations of the relationship between scientific research and society. One of the main questions raised concerns whether knowledge that "is already out there" can be evaluated and assessed in terms of relevance, or if it calls for more fundamental changes of orientation in the production of academic knowledge.

One good reason for enhancing understanding of relevance and its underlying assumptions is its pivotal position in current research policy and in the design of institutions connected to research. Some recent studies analyse its constituents from a bottom-up perspective, focusing, for example, on researchers' articulations (Bieszczad et al., 2025; Hellström & Jacob, 2024; Koch & Varga, 2024; Sigl et al., 2023), practices of 'doing relevance' (Sigl & Fochler, 2025), or institutional strategies connected to it (Irwin & Horst, 2024). These analyses provide details about its various properties and emphases in the context of knowledge production. The following literature review of the diverse uses of relevance shows how the concept has been applied in various contexts such as institutional design and scientific explanation, as well as in the targets of academic disciplines. This wide variation highlights the need to evaluate the compatibility among these usages. What goals does "relevant knowledge" imply, and how do they relate to goals such as being "more relevant"? My aim is to clarify these questions. The findings indicate that one of the main tensions associated with relevance concerns the role of co-production in knowledge production and research organisation.

Relevance has featured in discussions about academic knowledge production for several decades. Aant Elzinga (1997) observed in the late 1990s that people tended to refer to relevance in contexts such as the maintenance and transformation of the relationship between science and society. Building on this, Hessels, van Lente and Smits (2009) point out that relevance is "at the core of the relationship between academic science and society". There are signs of recent changes in how relevance is perceived nowadays, covering more viewpoints aimed at re-orienting research questions, methods and approaches of academic inquiry (Sigl & Fochler, 2025). My target in this paper is to update and supplement current analyses of what constitutes relevant research (Hessels

et al., 2009; Jacob & Jabrane, 2018; Kowalczewska & Behagel, 2019; Nicolai & Seidl, 2010; Schikowitz, 2020; Sigl et al., 2023).

The article continues as follows. Section 2 gives a brief historical overview of the emergence and uses of relevance in the context of academic knowledge production. Section 3 introduces the data and methods used in the review. I present the findings in Section 4, identifying eight distinct applications of the concept. The discussion is extended in Section 5 to include the similarities and differences among the diverse applications . In conclusion, I discuss the contributions of the study, and the need to recognise these tendencies in the context of relevance.

2 Historical background

The key idea behind the term relevance is that of helping. The word derives from the Latin 'relevant', which has the same roots as the word 'relieve' and is used when there are issues, interests and needs to be resolved (Oxford English Dictionary, 2009). Inherent in 'relieving' is the assumption that one has an identified problem, a problem that needs to be solved. Given this background, it is quite easy to see why many people assess relevance against identified needs and interests, such as when evaluating the relevance of a tool or a piece of information in terms of how it meets or alleviates people's needs (e.g., Montuschi, 2017). This aspect of giving help connotes the idea of a relationship: something or someone is or should be helpful for some reason or to/for someone else. In very general terms, one could characterise relevance thus: X is relevant to/for Y. However, there are various potential x's and y's in the context of knowledge production. X could take the form of research items, activities or organisations; Y could range from scientific understanding to society more widely.

The notion of relevance started to gain popularity in academic discussion in the early 20th century, and then particularly in the context of art and philosophy (Tamarkin, 2022, p. 5). However, there is also a long tradition of its use in the context of knowledge production. One influential source for this is Alvin M. Weinberg's article "Science and trans-science" (2000, originally 1962), and the academic discussion conducted in the 1960s about the relationship between science and society. Weinberg argues that the advancement of science and technology introduces a wide set of questions that could be asked of science, but that science alone cannot answer. Referring to these questions as trans-scientific, he distinguishes between the scientific and the social relevance of research. One synonym for scientific relevance is 'importance', meaning 'relevance to neighbouring areas of science' (Weinberg, 2000, p. 261). Meanwhile, social relevance is evaluated against social values and contributions to human welfare (Weinberg, 2000, p. 261). Weinberg's focus is on the responsibility of scientists in trans-scientific questioning, who in his

view should participate in public debate by making it clear when science ends and trans-science begins.

Weinberg's analysis is a comment on US science policy, to which he made an important contribution (Burns & Studer, 1975). In the context of US science policy and the National Science Foundation, it was common in the 1960s and early 1970s to refer to relevance in the context of applied research, connecting it with usefulness (Coren, 1970; Smith & Larsen, 1989). One funding programme in which this orientation was visible was "Interdisciplinary Research Relevant to the Problems of Society", which ran between 1970–1977 (Smith & Larsen, 1989).

The concept of relevance has been in use in Europe for several decades, too, although differing slightly from Weinberg's interpretation. One prominent example of this is Erich Jantsch's (1972) analysis of the role of interdisciplinarity and transdisciplinarity in universities, although his aim was to understand what kind of research universities should produce to give society a continuous source of self-renewal. Both Jantsch and Weinberg refer to relevance as a key concept that promotes reflection on the allocation of labour between science and society, although there are major differences between them. Whereas Weinberg focuses mainly on research conducted in STEM areas, Jantsch's disciplinary coverage is wider and he reflects on the role of higher education in universities. For Weinberg, societal relevance implies the trans-scientific nature of research, and that the outcomes of scientific research cannot be evaluated exclusively by scientists, whereas Jantsch seeks to understand the more complex dynamics between universities and societal needs. His interest is in showing how science and education can be relevant in the present situation, and how the target of relevance and being more relevant could call for the reorganisation of universities and academic disciplines. Both Jantsch's and Weinberg's conceptualisations of relevance describe the relationship between science and society, but they hold divergent assumptions as to the extent and the ways in which science should change in order to be relevant (Schmidt, 2021, p. 78). Jantsch argues that such an orientation requires the highest level of interdisciplinarity, which he calls transdisciplinarity (Schmidt, 2021, p. 78).

Relevant research and knowledge are potentially of use to various actors and institutions in society and in the economy, whereas policy relevance started to gain more traction in the 1980s. Sheila Jasanoff published an influential article entitled "Boundaries in policy-relevant science" in 1987. It assigned a bigger role to actors working on policy, asking how regulatory decisions were made. Her analysis shares similarities with the ideas discussed by Weinberg, stressing that there are limits to scientific knowledge in decision-making. However, her conclusions go further, as she argues that the question of who should have a stake in policy-relevant science is both very important and also political. She uses relevance in diverse ways, sometimes underlining the distribution of labour between researchers and administrations: "Scientists themselves are quick to acknowledge that policy concerns should be addressed through the administrative process, *after*

science has provided all the relevant evidence to the agencies." Yet, on other occasions she points out that stakeholders should have a greater say in what characterises relevant evidence.

The notion of relevance became fashionable in science and technology policy in the 1990s (Elzinga, 1997; Hessels et al., 2009). One reason for its popularity was the publication of *The New Production of Knowledge* (Gibbons et al., 1994) in which it was argued that academic institutions should focus on producing relevant research: "Currently, success in attracting funds for research depends on meeting a complex set of extra-scientific criteria related to social priorities, relevance and accountability" (Gibbons et al., 1994, p. 145). Their account makes a distinction between Mode-1 and Mode-2 knowledge production. Mode-1 refers to traditional, disciplinary-based production built around academic communities, whereas Mode-2 deals with knowledge gathered from wider social domains, and is used for solving practical problems (Gibbons et al., 1994; Jarzabkowski et al., 2010). Mode-2 knowledge production is heterogeneous, meaning that it involves various organisations, not just universities, and that there are varying objectives and needs (Jarzabkowski et al., 2010).

It became increasingly popular in research policy of the late 1990s and the early 2000s to stress the need for academic research to focus on societal problems, contributing to economic growth and to national innovation systems (Hessels et al., 2009), and this extended to the context of sustainable development (Cash et al., 2003). It became even more popular when it entered the domain of science policy, and people started using it as an outcome in disparate ways. Hessels et al. (2009) observed this tendency when reflecting on how science could serve society, and it could even cover elements such as the promotion of a wider understanding of the world and the preservation of socio-cultural values. Actors working in research policy in the 2010s started to pay more attention not only to economic growth and innovation, but also to the ability of academic knowledge to support societal transformation and sustainability (Koch & Varga, 2024; Schot & Steinmueller, 2018).

From the perspective of contemporary discussion on academic knowledge production and innovation policy, a major challenge concerning the notion of relevance is the prevalence of its various sub-categories, which are not always mutually compatible. Societal relevance is not the same thing as economic relevance, and the characteristics of policy-relevant research differ from the relevance transdisciplinary research teams strive to achieve. There is sometimes a lack of explicitness about these differences. In the IPCC, for example, the official target of providing relevant research has imposed various organisational goals on the generation of user-oriented knowledge, including summaries of existing knowledge (Hermansen et al., 2023). The implication here is that organisations and researchers could make general references to relevance while claiming that they are helpful actors in society, even if they hold divergent views on the science-society relationship. I will return to this issue in Section 5.

3 Data and methods

I have shown in the previous section how the concept of relevance has been used in various intellectual traditions, involving various relationships between science and society. My next target is to analyse its use in contemporary discussions on academic knowledge production. What aspects are labelled relevant? What characterises these 'relevant' aspects? The analysis covers the diverse formulations of 'relevance' in the academic discussion on the production of academic knowledge.

This study leans on the systematic literature review (SLR) method (Jesson, 2011; Purssell, 2020). The procedure has five main phases: first, identifying the areas and journals in which the concept of relevance is used; second, searching Thomson Reuter's *Web of Knowledge* citation index; third, reflecting on the inclusion and exclusion criteria of the primary documents and supplementing the data set to gain more comprehensiveness; fourth, going through the list of documents, excluding redundant items and summarising the views in the selected documents; and fifth, interpreting and categorising the findings.

The fields in question were research policy, science and technology studies, and organisation and management. To locate the key journals covering these topics, I included all journals indexed in the Web of Knowledge in the category "philosophy and history of science", supplemented with 115 publications in the fields of science and technology studies as well as organisation studies, including *Research Policy, The Journal of Management* and *Organization.* [1]

The purpose of the analysis was to trace how these publications referred to 'relevance' or policy relevance, or used the notion of 'relevant' with reference to knowledge production. The exact search criteria were "relevan* OR policy-relevance OR policy-relevant", limited to abstracts and titles. The items had to be academic articles, books or book chapters. The data were gathered in October 2022, assembled from the ISI Web of Knowledge database and ranging in time from 2010 to 2022. Figure 1 describes the data-collection procedure.

Insert Figure 1 here

The initial number of items included was 1,309. I read through the titles and abstracts to locate those that used relevance with reference to knowledge, knowledge production or institutions producing knowledge. A large proportion of the articles did not meet this criterion, using relevance in too general a manner and especially when stating that "these findings are relevant to

[1] The question of how different disciplines refer to relevance – including their potential similarities and differences – is an interesting one, but unfortunately beyond the scope of this study.

understanding X". These texts (n=1,096) were excluded from the final analysis. Most of the items included in the final data set used the term 'relevance' rather than the adjective 'relevant'.

The next phase of data inclusion and exclusion required several steps of iteration. First, I read the selected documents (n=213) more closely. Relevance was the main research topic in some of them, which I read in full. Several documents were excluded during this phase (n=53). I supplemented the journal list by including *Research Evaluation*, and added 24 suitable articles from this journal to the data set.[2] I made further exclusions during the data analysis, discarding 47 articles from the final data set.[3] The total number of included articles was 113. All the selected articles and their DOI numbers are listed in Appendix 1.

On the conceptual level, statements about relevance connote a relationship, expressed in a format such as "X is relevant to/for Y" or "X is helpful to/for Y". In the data analysis I tracked down the X ('what is relevant') and the Y ('to/for whom') components in all the articles. Conceptualisations of the actors were rather broad, Y covering notions such as "sustainability transitions", "labour market", "environmental philosophy", "organisational practice" and "industrial innovation". I also noted the journals concerned, and whether the articles referred to relevance in general or more specifically, such as policy or societal relevance. These items focus on content and potential recipients, and whether the analysis leans towards some specific form of relevance. With its focus on "of what" and "to whom", the approach also reflects Hellström and Jacob's (2024) distinction between 'in' and 'of' relevance .

In the next step, I classified the articles into several categories. These share similarities with Brunet et al.'s (2024) typology in that some of them discuss the contents of knowledge and the selection of research topics, for example, whereas others address topics such as institutional targets for relevance, policy relevance, and the need for societal engagement and user-driven research. Other accounts emphasise the dynamic nature of relevance, as something that allows researchers to engage in and reorient their broader research fields (see Sigl & Fochler, 2025). After analysing the similarities and differences I was able to to establish eight categories. Some articles adopted more than one perspective, in which cases I chose the most visible one.

Categories 1–4 focus on how research and knowledge production could be epistemically connected to social interests and issues, frequently starting from grounds that Hellström and Jacob (2024) label 'internal relevance'. The articles in Category 1 explore the types of information and

[2] This journal is categorised under 'bibliometrics and scientiometrics' in the *Web of Science*, and thus is not included in the category 'history and philosophy of science'.

[3] There were two applications of the concept of relevance that were too detached from the discussion of relevant knowledge. First, several philosophy-oriented articles (n=16) discussed relevance in the context of explanation, analysing the relationship between explanandum, explanation and possible alternatives (Woodward and Ross 2021); and second, articles discussing relevance in information science and bibliometric analysis (n=31) that were connected to knowledge databases and search inquiries.

knowledge that are perceived or ranked as relevant specifically in policymaking and policy evaluation. They do not address the wider social context or conditions within which this knowledge is being produced, but rather focus on the characteristics that policymakers and other practitioners find valuable and relevant when evaluating data and evidence. Categories 2 and 3 concern knowledge and institutions, discussing how ideas about relevance influence the selection and reorientation of research topics, disciplines and academic institutions. The articles in Category 2 focus on relevance from the perspective of higher education and academic institutions, and how they are changing to become more relevant. Those in Category 3 examine the diverse articulations and approaches, and include studies on the clash between various forms of relevance and its different framings. Category 4 concerns practical relevance, focusing especially on organisational and management science, and specifically how they strive to engage in practically useful research.

Categories 5–8 deal with user needs and practical demands. The articles typically explore relevance via the interplay between the users and makers of knowledge in a specified context or for certain actors or stakeholders. This approach shares similarities with the notion of 'external relevance', meaning an outcome of the interaction between research and societal actors/concerns beyond academia (Hellström & Jacob, 2024). Category 5 includes articles on policy relevance and policy-relevant research. It covers articles that reflect policymakers' needs in the creation of policy-relevant research. Unlike those in Category 1, they explore policy relevance in terms of a dynamic relationship between science and its users, and many also show how research could gain in this respect. Category 6 focuses on the evaluation of research, specifically concerning its impact in areas such as industry and innovation, among non-academic stakeholders, and on the economy. A large proportion of the articles are published in *Research Evaluation,* which evaluates activities to do with scientific research, technological development and innovation. Potential collaborators discussed in Category 6 include industry and actors interested in the economy and technological development. Category 7 targets issues such as the personal, public and practical relevance of research. It looks at practitioners and the list of potential non-academic actors includes students, museum visitors and the public. Their interests are not always very specific, such as in articles that discuss how museums and higher education degrees help to enhance understanding of the world. The articles in Category 8 concentrate on transdisciplinary and transformative research. It addresses issues such as how to support research on societal and environmental problems and the transition towards sustainability. In sum, the focus in Categories 5–8 is on the actions research institutions and research groups should take to engage more effectively with society, as well as the interplay between knowledge production and user needs. A common target in all four categories is to evaluate the extent to which and how research, higher education and its institutions can be meaningful and useful for specific people.

4 Results

Table 1 summarises the eight main ways of referring to relevance identified in the data set. In the following, I discuss these usages in turn.

Insert Table 1 here

Category 1) Philosophical analyses of policy-relevant evidence, knowledge and technology

This category contains philosophy-oriented articles concerning the characteristics of relevant evidence, knowledge and technology in the contexts of policy analysis and decision-making. The articles discuss the typical properties of relevant knowledge and technology, and how policymakers, decision makers and the public make judgments about relevance. The focus is on evaluating the relevance of research that has already been conducted, with limited discussion of how societal needs and actors influence the production of policy-relevant knowledge.

A typical starting point in these analyses is to consider whether or how well the research data and the methods address the decision-making problem at hand (Drouet et al., 2021), which does not necessarily have a clear definition: "If scientific research generates conceptual impact, it can shift the scope of issues that are considered relevant", as Edler et al. (2022) point out. This category includes several texts about evidence-based policy and evidence-based medicine, and the question of ranking evidence according its perceived usefulness (Parkhurst & Abeysinghe, 2016).

More empirically grounded analyses of policy relevance consider the practical needs and valuations of knowledge users, who tend to evaluate the relevance of knowledge in terms of how much it helps in solving the decision-making problem at hand without neglecting any important dimensions (Drouet et al., 2021). Typical qualities of relevant knowledge valued by users include simplicity, generality and attention to what happens if the estimations are wrong (Yu, 2022). Studies focusing on users also point out the need for policy-relevant research to consider their abilities, willingness and readiness, as well as the institutional structures that have an impact on why knowledge becomes or fails to become policy-relevant (Edler et al., 2022; Sapat, 2021).

Category 2) Relevance in institutions of higher education and research

The second category comprises articles that explore how the need for relevance influences the targets of higher-education and research institutions, and how the authors have attempted to make them more relevant. Most of the articles are published in journals such as *Minerva, Science and Public Policy,* and *Studies in Higher Education*. Several of them discuss how academic knowledge and institutions of higher education provide societally helpful research, thereby

demonstrating their value to society (Jacob & Jabrane, 2018; M. A. Lim, 2018; Santoalha et al., 2018). Bandola-Gill (2019) argues that the increased emphasis on relevance derives from the broader institutional changes in academia, and the need for researchers to demonstrate the broader applicability of their findings in the social, political and economic environment. Gläser et al. (2022) analyse the ways in which different academic disciplines generate knowledge about legal, economic, political, social and cultural problems, and the relationship between these aims and research autonomy. The question of autonomy is also visible in Düppe's (2015) analysis of economic sciences in Humbolt University in Berlin, which covers the conflict between the targets of practically relevant knowledge and researcher autonomy. Håkansta and Jacob (2016) locate a potential conflict between excellence and relevance in their analysis of research on Swedish working life, in that requirements of scientific quality may digress from stakeholders' interests and their views on what counts as relevant research.

Several of the articles consider the interplay between social demands and academic knowledge production. Some of them identify and discuss different formulations of relevance. Stehr and Adolf (2016), for example, locate some tension between individual, economic and public relevance when discussing the benefits of academic knowledge. Hessels and van Lente (2011) distinguish between academic and societal relevance, showing that the distinction is not always very clear in assessments of academic performance. Some texts discuss the requirements of relevant research, and the institutional obstacles that may make it difficult for researchers to achieve relevance. Neff (2018) discusses priority-setting Mexican ecological research, and how the relevance of national needs was not given equal priority with the target of international publishing. Jacob and Jabrane (2018) analyse the humanities and social sciences, discussing the difficulty of combining the target of relevance with the requirements of an academic career.

Some articles discuss the typical properties of relevant research. Boaz et al. (2021), for example, identify stakeholder engagement, including co-production, as one way of improving "the value, relevance and utilization of research". Olson and Pinto da Silva (2020) and Kwiek (2018) connect relevance with applicability. The former conducted interviews with fisheries scientists, and observed that relevant research was often perceived also to be interdisciplinary.

Category 3) Defining social and societal relevance and their characteristics

The questions addressed in this category concern what makes research groups and projects, universities and academic research relevant to society, local actors and the economy, and how those involved perceive such relevance . A typical focus is on the characteristics of socially relevant research, compared with more specific formulations such as policy or industrial relevance. They can look, for example, at the differences between academic and societal relevance (Brenninkmeijer, 2022).

As Brenninkmeijer (2022) points out, during the past fifteen years research organisations have been under increasing pressure to consider not only traditional indicators of academic impact (e.g. citations), but also the societal impact (e.g. policy advice). Müller and de Rijcke (2017) discuss the role of quantitative performance indicators, arguing that too strict a focus on academic indicators could downplay the other norms and criteria for scientific quality, including epistemic originality, long-term scientific progress, societal relevance and social responsibility. In this context, the authors suggest that some research topics have greater societal relevance than others, and that the study of such topics is connected with people's desire to contribute to the greater good (Müller & de Rijcke, 2017).

Several studies in this category analyse articulations of societal and social relevance in different academic fields and disciplines (Blümel, 2018; Holmes et al., 2016; van der Weijden et al., 2012). Blümel (2018) considers relevance in the context of translational research, and its potential role in increasing societal relevance. He points out the assumption in traditional articulations that the best scholarly output is also the most societally relevant (Blümel, 2018). Van der Weijden et al. (2012) conducted a study of biomedical and health research in the Netherlands. They approached societal relevance in terms of societal impact, which could be assured by producing non-scholarly output for stakeholders drawn from the expertise of researchers (van der Weijden et al., 2012). Outputs could include new treatments, policy advice and plans for organising healthcare systems, healthcare innovation, and generally informing the public (van der Weijden et al., 2012). The implication in these studies is that there may be extensive differences between academic fields in terms of what counts as societally relevant.

Sigl et al. (2020) analyse articulations of societal relevance by life-science researchers, who tend to perceive societally relevant research as motivated by societal concerns. These concerns are so strong that they affect the choice of research topic and approach, such as having direct interaction with societal actors (Sigl et al., 2020). The authors also point out the apparent tension between societal relevance and the workings of inner-scientific logic, which typically prioritises topics other than the concerns of the actors (Sigl et al., 2020). This finding resonates with a study conducted by Rosenlund et al. (2017) showing that researchers frequently reflect upon the social and environmental relevance of their work, and that such considerations could influence their research choices and dissemination activities (Rosenlund et al., 2017). A similar emphasis is visible in Klenk and Hickey's (2012) work, which analyses cross-sector research networks in Canada's nature resource sector. The authors argue that one of the biggest challenges its organisation faced was the goal to engage with civil society groups, and that this collaboration could foster innovation and produce socially robust science (Klenk & Hickey, 2012). In combination, these studies show how the notion of social relevance is used in multiple ways in the literature, some of which leaves the scientific process intact, focusing rather on dissemination.

However, it is also suggested in several analyses that research on societal relevance should engage with non-academic stakeholders in a more profound way.

Various studies in this category approach social relevance from the perspective of local relevance, showing that such a target may be in conflict with the typical demands of academic knowledge production. Mizrahi-Shtelman and Drori (2021) analyse the governance of Israeli Higher Education Organisations, distinguishing between a global orientation and local relevance. They argue that there is tension between these two organisational goals in that recognition requires different actions from universities. A similar perspective is also visible in Kitagawa (2010), who separated international research excellence from regional relevance.

A few articles refer to both social and economic relevance. One example is Hicks (2012), who studied performance-based research funding systems and their aims of enhancing the economic relevance of research. Such thinking is also visible in the funding and evaluation of Dutch research: for example, the national Standard Protocol for scientific research includes the component 'relevance to society' as one of its key assessment criteria (van der Molen et al., 2019).

Category 4) Academic disciplines striving to be practically relevant

This category covers articles that question the usefulness of academic knowledge and training to practitioners. A substantial proportion of the texts (eight articles out of nineteen) refer to organisational and management science. The analyses stem from the academic discussion in the early 2000s that criticised business schools for favouring scientific rigour over relevance to practitioners (Knights & Scarbrough, 2010, p. 1288). The authors evaluate the relevance of organisational and business science to practice, practitioners and the innovation process. In terms of scope, this category shares some similarities with Category 2 in that both concern changes in academic institutions and disciplines. The aim is to spell out and define user needs more clearly. A typical context in which research could strive to be relevant is "organisational practice" rather than "to resolve societal and scientific problems".

Given that it represents an applied science, the field of management studies typically has to display practical relevance (Nicolai and Seidl 2010). Indeed, relevance is one element in the science-practice gap, meaning the gap between management literature and recommendations made to practitioners (Avenier 2010; Banks, Barnes, and Jiang 2021; Jarzabkowski, Mohrman, and Scherer 2010; Wolfenden, Sercombe, and Tucker 2019). One reason for the gap is the preference among journal reviewers to over-emphasise rigour at the expense of relevance (Wolfenden et al. 2019). This is sometimes referred to as the rigour-relevance gap, and concerns the extent to which management scholars conduct research on topics that matter to practitioners (Banks et al. 2021). Research is relevant if it has the capacity to influence practice and policy-making positively (Banks et al. 2021). One way of boosting this is to maximise communication

and collaboration, making academics more aware of the problems faced by practitioners instead of generating problems from within the discipline (Wolfenden et al. 2019). As Nicolai and Seidl (2010) argue, management science could also demonstrate relevance on the conceptual level, meaning that not only would scientists offer recommendations to practitioners, they would also enrich their understanding of the decision situation.

Category 5) Policy relevance and the characteristics of policy-relevant research

The articles in this category target and discuss the relevance of research, scientific knowledge and different academic disciplines to policymakers, policy or climate action, for example. They provide analyses of the relationship between research and policy. Several of them refer to relevance as one component of "credibility, salience (relevance) and legitimacy" in studies on the generation of actionable knowledge, often in the context of sustainable development (Clark & Holmes, 2010; Dunn & Laing, 2017; Heink et al., 2015; White et al., 2010). Cash et al. (2003), for example, applied this framework to determine how science and technology could assume a more central role in sustainable development. One typical starting point in this category is the notion of boundary organisations, referring to institutions operating at the interface of politics, society and public action (Clark & Holmes, 2010; White et al., 2010). The notion of relevance in this context refers to the requirement among these organisations to provide information that meets the needs of decision makers (Heink et al., 2015; White et al., 2010). This stance connects relevance with the capacity to influence policy (Heink et al., 2015).

The role of users' needs is significant. According to the "Destination's view" (Saracevic, 1975), only information that is relevant is judged as relevant by users, and these judgments are influenced by factors such as the policy process and the timing of knowledge delivery (Heink et al., 2015). This calls for a dynamic stakeholder perception of what is relevant: such factors are not typically known at the beginning, but are an outcome of deliberative processes (Heink et al., 2015). Van Wee (2019), in turn, discusses the ethical questions that arise from policy-relevant research, and how politicians, policy makers and interest groups know that it is carried out and reported independently and without bias.

The role of stakeholders' perceptions is pivotal in this category. As Kowalczewska and Behagel (2019) point out, research becomes relevant when the results satisfy policymakers' needs, and match societal needs. Policy-relevant research tends to involve transdisciplinary collaboration, which narrows the intellectual and practical gaps between researchers and users of knowledge (Kowalczewska & Behagel, 2019; Ramirez & Belcher, 2019; White et al., 2010). Such an orientation could also affect academic disciplines. Dix (2019) and Cointe et al. (2019), in turn, discuss how macroeconomic forecasting and the development of integrated assessment models (IAMs) aimed to provide policy-relevant evidence.

Category 6) Research evaluation, research impact and university governance

The articles in this category cover research evaluation and performance measurement, and offer empirical assessments concerning the relevance of universities, academic knowledge and technology transfer to production, innovation, economic growth and development (Evangelista & Vezzani, 2010, p. e.g.; Noack & Jacobsen, 2021). Many of them analyse collaboration among research institutions, companies and public-sector organisations. Relevance is typically approached from two angles, namely the stakeholder's perspective and participatory monitoring and evaluation, and on a general societal/economic level. An example of the former is the work of Belcher et al. (2016), who refer to relevance as the main criterion for good transdisciplinary practice, namely "the importance, significance, and usefulness of the research problem, objectives, processes, and findings to the problem context". Bölling and Eriksson (2016, p. 213), in turn, discuss collaboration between universities and society in terms of relevance, referring to a call from the Swedish Research Council to "assess the relevance and benefit to society of universities' research". Given that many of these articles focus on impact evaluation, the emphasis tends to be on ex-post rather than ex-ante relevance. This is atypical in claims of relevance that typically highlight potential applications or uses of research (Hellström & Jacob, 2024).

Several of the articles consider societal and economic relevance from a local perspective (e.g., Bölling & Eriksson, 2016; Coombs & Meijer, 2021), reflecting research policy in the 1990s and 2000s when many European governments instructed institutions of higher education to focus more strongly on regional development and professional practice (Jongbloed, 2010; Sleuwaegen & Boiardi, 2014). Analyses of knowledge transfer and regional innovation systems shed light on how research institutions produced economically relevant knowledge that aims to contribute to economic growth and regional development (Nilsson & Moodysson, 2015; Noack & Jacobsen, 2021). Some authors use quantitative analysis to highlight differences between institutions of higher education (Lepori, 2022), as well as the diverse nature of academic engagement and commercialisation (Perkmann et al., 2015).

Category 7) Educational, practitioner and public relevance

The seventh category comprises articles that consider the relevance of academic research and knowledge from the viewpoint of students, the public and working life. They investigate the relevance to students of elements such as university teaching, history and philosophy, museums, humanities, values and morals, and the understanding of individuals and society. Several of them focus on museums and their aim to become more relevant (e.g., Hetland, 2019). A common trait in these analyses is the association of relevance with "meaningful".

In the context of education, many articles explore the extent to which and why students consider their education to be relevant (Green et al., 2021; J. H. Lim et al., 2021). Kapon et al. (2018), for

example, assume that students in higher education find personal relevance in their studies, particularly if they address targets of life beyond academia, or serve the needs of working life (Kapon et al., 2018). Analyses of public relevance are based on the premise that knowledge is not inherently relevant or irrelevant, and that information and knowledge will become more relevant if they target the right types of action. In the context of climate change, for example, academics could increase the effectiveness of their work if they took into account the worldviews and values of their audiences, and if they engaged with the public (Thompson & Whyte, 2012; van Eck et al., 2020).

Category 8) Transdisciplinary and societally transformative research

The articles in this final category consider relevance in the context of transdisciplinarity (Binder et al., 2020; e.g. Rau et al., 2018). In other words, they investigate the relevance of universities, research processes, innovation and technology policy, and multiple forms of knowledge to sustainability transitions, societal actors, transdisciplinary research, and both global and local communities. A typical assumption is that academics should work more with local communities, sometimes further suggesting that research should aim at societal transformation (Bell & Lewis, 2022; Fagerberg, 2018). These studies examine diverse strategies whereby research groups could broaden their engagement with the public, such as becoming involved in participatory action research, community-based participatory research, citizen science and the co-production of knowledge (Bell & Lewis, 2022; Phillips et al., 2019). Many of the analyses share aspirations with societally relevant philosophy of science, in which the target is to address "scientific research *topics* and scientific *practices* that are directly relevant to public welfare" (Fehr & Plaisance, 2010). I also included articles evaluating the impact of transdisciplinary and interdisciplinary research (Belcher et al., 2016, 2019; de Sandes-Guimarães et al., 2022; Franssen, 2022; Hansson & Polk, 2018).

One key question here concerns how research can lead to societal transformation (e.g., Fagerberg, 2018; Kern et al., 2019). Turnheim and Nykvist (2019) analyse the feasibility of sustainability transition pathways (STP) in evaluations of the Intergovernmental Panel on Climate Change (IPCC), arguing that the institution should give more attention to governance, and to integrating multiple types of knowledge, thereby supporting the transition to sustainability. Ely et al. (2014) point out the importance of readjusting technology assessment to enhance its potential in achieving the Millennium Development Goals set by the United Nations, and to encompass broader stakeholder and citizen deliberation. Several articles in this category underline the need for critical and heterogeneous dialogue between research and practice communities to facilitate mutual shared understanding (Binder et al., 2020; Shavit & Silver, 2022; Tavenner & Crane, 2022).

5 Discussion

Let us return now to the big question. What is relevant? When people speak about relevance, to what types of action or institutions do they refer? As noted in the previous section, there are several synonyms for 'relevance' and 'relevant', and a major target in the data analysis was to collect 'what' and 'to/whom' information. Some accounts place more emphasis on the *kind of* knowledge or institutions that are relevant (Categories 1–4), whereas others focus more strongly on how research and knowledge may be relevant *to/for someone* (Categories 5–8). There was some overlap between these two approaches. In the context of policy-relevant research (Category 5), for example, stakeholders' needs typically occupy a central position, but these targets also set requirements for institutions and the acquisition of knowledge.

Before drawing my conclusions I will identify and discuss a number of key topics and issues, namely: 1) relevance as a property of knowledge or an active relationship; 2) diverse sub-categories of relevance; 3) recent historical trends; 4) a turn towards coproduction; 5) dual understandings of policy-relevant research; and 6) knowledge gaps and further research avenues.

1) Relevance as a property of knowledge or an active relationship

References to the relevance "of something" versus "to/for someone" emphasise the difference between more static and more dynamic accounts of the relationship between research and society. As such, it reflects Hellström and Jacob's (2024) differentiation between the "relevance in" and "of" research. As Hellström and Jacob (2024) point out, some usages focus on internal relevance, assessing how social interests and issues can be epistemically connected to research, whereas external relevance is actively established through the strengthening of ties between research and societal actors. Whereas Hellström and Jacob (2024) focus on the social sciences and humanities, the present study shows that such a distinction is prevalent more widely across academic fields. Furthermore, from the perspective of research policy, I suggest that these two approaches are dissimilar in their portrayal of the science-policy relationship: some accounts draw from the linear model of transmission from science and policy, whereas others characterise the relationship between these two domains in terms of continuous interaction (Grundmann & Stehr, 2012; Hermansen et al., 2023). In the present study, these differences are particularly visible in the articles belonging to Categories 1 and 5.

2) Diverse sub-categories of relevance

The results of this study show how widely knowledge production and its targets have been addressed from the perspective of relevance. The concept is multi-faceted, and it covers several subcategories including social, academic, personal, practical and policy relevance. Of these,

social or societal relevance is the most common, and it can be combined with several sub-categories. The only major exception is academic relevance, which focuses mainly on the relevance of academic knowledge in enhancing scientific understanding and furthering academic discussion.

It is worth considering how these different sub-categories of relevance stand against each other, not least because the various formulations are frequently used to describe the targets of research-led projects, and in the context of research evaluation. Jacob and Jabrane (2018) identify several contested aspects in the various definitions of relevance, including what could be characterised as relevant, who should decide what is relevant, and whether relevance is or should be a funding criterion. I used these distinctions when comparing the diverse sub-categories. For example, economic and industrial relevance typically call for different types of action and orientation than general societal relevance. The latter could involve transdisciplinary collaboration with non-traditional stakeholders, whereas industrial relevance prioritises goals such as economic growth and societal transformation. It thus seems that relevance, in its general form, sets very vague targets for research-led institutions. Such vagueness could cause difficulties and power-related problems in the design of research policy and in various institutions. In the context of grand challenges, for example, it has been observed that vague formulations have tended to result in prioritising and legitimising research that favours the interests of actors in societally dominant positions (Ludwig et al., 2022; van der Molen et al., 2019). An over-restricted focus on relevance could exclude important questions to do with practical implications, such as defining stakeholders and their needs, as well as the goals set for research projects and institutions. From this perspective, one can understand why several studies (Håkansta & Jacob, 2016; Jacob & Jabrane, 2018; Nicolai & Seidl, 2010) point out that scientists and non-academic actors apply this concept in a general manner without needing to agree upon its specification.

3) Recent historical trends: towards greater engagement and context sensitivity

The findings of this study underline the central role of users and their needs in reflections on relevance and its implications for knowledge production. It is clear from the data that this dynamic and societally more engaged approach developed in academic discussion between 2010 and 2022. A major proportion of articles in Category 8 on transdisciplinary research (14 out of 18) were published from 2018 onwards. At the same time, the discussion on practical relevance and questions concerning the practical value of research, especially in the organisational sciences, had its heyday in the early 2010s: a substantial proportion of the articles in Category 4 (11 out of 18) were published before 2018. The recent articles on relevance published in the *Minerva* special issue in 2025 were not included in the data set, but they underline further that the need for relevance calls for a more pluralistic, reflexive and context-sensitive approach to research (Klenk, 2025). In fact, relevance may be something that researchers are actively doing to conduct

actionable research that strengthens the connection between the academia and wider societal fields and communities (Sigl & Fochler, 2025).

According to some recent studies (Brunet et al., 2024; Klenk, 2025), many current approiaches towards relevance emphasise its context-dependent and situated nature, and its emergence via interactions among actors, tools and expectations rather than being an inherent property of research outputs. Such a view is in accordance with the distinction discussed above regarding the "relevance of something" and "relevance to/for someone". It seems that the goals of relevant research have become more diverse during the studied period. Our data set covers several articles from the early 2010s, in which the primary focus in terms of relevance was on the capability of universities and research organisations to promote innovation and economic growth (cf. Evangelista & Vezzani, 2010). Meanwhile, more recent accounts tend to offer a richer and more societally engaged description of the potential goals. Even in the context of research evaluation, more recent studies emphasise the multi-dimensional nature of evaluative practices: evaluation happens on several organisational levels and supports various social objectives, creating a richer understanding of the research impact (Sandin & Benner, 2022).

4) A turn towards co-production

The idea of a stronger relationship between research and society is evident throughout the data set. In many cases, especially in Category 8, socially relevant research connotes collaboration with non-academic actors (e.g. Olmos-Penuela et al., 2014; Olson & Pinto da Silva, 2020; Schikowitz, 2020; Zapp & Powell, 2017). Category 6, in turn, comprises articles about research collaboration with business and industry. A focus on stakeholders' needs is a central target in co-production, which aims at the creation of meaningful knowledge for particular contexts of action (Bremer & Meisch, 2017; Jasanoff, 2004). Similarly, the discussion on co-production may help in explaining some of the main topics and issues related to relevance. Examples include: institutions and public services (such as how to build adaptative capacities in governance institutions and the design of government agencies); empowerment and social learning (how to draw from multiple knowledge systems and facilitate new learning); interactive interaction and extended science (how to promote consultative interaction between academic and non-academic stakeholders and support the agency of various groups); and constitutive and interactional aspects (how knowledge influences perceptions, and how science changes as a result of institutional and wider problems) (Bremer & Meisch, 2017). A major topic in the discussion on co-production and relevance is the capacity of research to assist societal transformation and change (Horcea-Milcu et al., 2019; Klenk, 2025). If a target of relevance is to take a transformative approach it could foster changes in knowledge production, such as when researchers need to consider a broader range of problems or integrate research into perspectives from several disciplinary domains (Sigl et al., 2023).

5) Dual understandings of policy-relevant research

Policy relevance is one of the largest sub-categories of social relevance. It is approached in the data set from diverse perspectives, some of which emphasise "of something", and some "to/for someone". This difference resonates with the analysis conducted by Schikowitz (2020), which distinguishes two main forms of social relevance, namely local and policy-related. The major difference between the two is that policy-relevant knowledge reflects the complexity of a situation and estimates the outcomes if people were to take diverse measures, whereas locally relevant knowledge addresses the experiences and threats faced by local actors (Schikowitz, 2020). Consequently, policy-relevant knowledge may either summarise the existing state of research, or offer a more contextual and local perspective. According to Schikowitz (2020), there is a dissimilarity in aims between policy and transdisciplinary relevance, the target in the former being to explore the outcomes of different decisions, whereas in the latter it is to conduct research that is useful to collaborators beyond academia. The findings of this study do not fully support this view. It is true that some accounts approach policy relevance in terms of the extent to which knowledge can help in solving particular decision-making problems (cf. Drouet et al., 2021). However, there are also several examples of studies that describe it as the outcome of a process, paying special attention to policymakers' and societal needs (Kowalczewska & Behagel, 2019), and claim that an interest in societal issues could influence academic fields and disciplines (Cointe et al., 2019; Dix, 2019).

Within this data set, the subject of policy relevance arises not only in reflections on the targets of knowledge, but also in the setting of goals for research institutions and boundary organisations. It is a topic that has been addressed in contexts such as climate-change-related research and policy. Hermansen et al. (2023) present four reform agendas, which the IPCC uses to generate policy-relevant knowledge. It is argued that these forms differ in their approaches to policy relevance (process- or outcome-oriented) and representations of the science-policy interface (a two-world linear relationship, or one-world intertwined). The process-oriented approach emphasises the need for research assessment to be comprehensive, objective and transparent, whereas the outcome-oriented approach calls for reports that are neutral, objective and relevant to policymaking (Hermansen et al., 2023). Potential policymakers and organisations with a need for IPCC knowledge include countries, cities, companies and civil society (Hermansen et al., 2023). In recent years the organisation has shifted its emphasis from summarising research to giving due consideration to the demands and needs of various people and groups, recognising that different actors may have different needs for different types of knowledge (Asayama et al., 2023; Cointe et al., 2019). The results of this literature review indicate that an increasing number of studies consider policy relevance a property that involves more active engagement with users and their needs. Such an orientation could make knowledge more useful and applicable. It could also raise

new questions concerning topics such as the role of values and interests in policy-relevant research and expertise (Douglas et al., 2024; cf. van Wee, 2019), and how to align research when there are clashing demands from the academic environment and other stakeholders (cf. Huitema & Turnhout, 2009; Parker & Crona, 2012).

6) Knowledge gaps and further research avenues

Academic disciplines and research orientations approach relevance from diverse perspectives. As yet, however, there has not been extensive research on these disciplinary differences, or on the potential changes within these fields concerning their claims of relevance. This is a significant research gap, and closer consideration might enhance understanding of how diverse academic disciplines evolve and change in response to non-academic demands. It is pointed out in some recent studies that researchers could adopt various strategies to make and portray their research as more societally relevant. Sigl, Falkenberg and Fochler (2023) analysed articulations of relevance by soil scientists, identifying five types of action in their approach. Some of these relied on the separation of research-related actions and societal engagement (Sigl et al., 2023). On the other hand, soil scientists are also developing new methods of collaboration to address societal and environmental problems and to become more responsive. This is visible, for example, in the development of boundary concepts that both academic and societal actors can use, and the provision of regional scenarios for soil management (Sigl et al., 2023). Their analyses represent the bottom-up approach to these disciplinary changes, but it would be useful to have a more nuanced understanding of the differences in which relevance is used across disciplines.

I excluded from the data set several articles published in the fields of bibliometrics and information retrieval that did not discuss knowledge production in general. However, it is worth noting that, in recent years, relevance has also assumed importance in ranking, presenting and recommending information and knowledge (e.g. Breuer et al., 2022), usually synonymously with ‘being used’ (de Fremery & Buckland, 2024). The ranking of information according to its perceived relevance is not only descriptive, but also self-fulfilling in that such rankings influence the type of knowledge that is used and that which is not. This understanding of relevance is not currently connected to the academic discussion of knowledge production. Hence, it could be said that relevance currently means something quite different in the contexts of bibliometrics and information retrieval than it does in knowledge production.

The contested nature of relevance is not only a theoretical issue. It has practical implications in the context of science policy and research striving to demonstrate social or policy relevance. The ambiguity leads to contrasting approaches and funding instruments, differing in the definition of the actors and groups that constitute relevant stakeholders, and in how much interaction there should be between researchers and non-academic actors. This literature review highlights the fact

that academic articles approach relevance from diverse perspectives. One major difference among them concerns the extent to which the concept is evaluated only in hindsight, or if it affects the organisation of research on a more profound level. The difference in emphasis has significant consequences for research-led institutions aiming to provide 'relevant' knowledge, and to demonstrate that they have enough relevance themselves.

6 Conclusion

Relevance as a concept encompasses a spectrum of meanings, applications and implications for researchers and stakeholders. As Jacob and Jabrane (2018) observe, the criteria for determining what is deemed relevant may differ widely, leading to potential conflicts in priorities and interpretations. It is essential to take into account the type of relationship between research and society that is implied, as well as questions such as who defines relevance, what are its targets, and how it is measured. These considerations would allow for a much clearer understanding of its impacts on knowledge production, including the type of knowledge that is prioritised.

This study sheds some light on the different perspectives from which relevance is viewed. It distinguishes eight main categories, some of which characterise various entities that make claims about relevance and policy-relevant knowledge, including universities, research units as well as academic fields and disciplines. Other papers reflect the interplay between knowledge production and various societal actors. Such a focus was most visible in the articles on transdisciplinary research, with its interest in exploring the dynamics of co-production.

Relevance has been a commonplace aspect of research policy for over fifteen years. There seems to have been a shift in emphasis in how it is referenced in academic discussion from 2010 onwards. Earlier accounts typically discuss the notion on a rather general level, such as considering how research could be more impactful. More recent accounts tend to offer a more nuanced and dynamic understanding, also showcasing how researchers are able to craft it in different directions. However, the findings of this article indicate that few studies thus far have analysed the extent to which and in what ways diverse academic disciplines have responded to calls for higher levels of relevance. Given the flexibility inherent in the notion, it may be that this general goal has led to several, sometimes even contradictory, changes in diverse academic disciplines and research institutions.

References

Asayama, S., De Pryck, K., Beck, S., Cointe, B., Edwards, P. N., Guillemot, H., Gustafsson, K. M., Hartz, F., Hughes, H., Lahn, B., Leclerc, O., Lidskog, R., Livingston, J. E., Lorenzoni, I., MacDonald, J. P., Mahony, M., Miguel, J. C. H., Monteiro, M., O'Reilly, J., … Hulme, M. (2023). Three institutional pathways to envision the future of the IPCC. *Nature Climate Change*, *13*(9), 877–880. https://doi.org/10.1038/s41558-023-01780-8

Bandola-Gill, J. (2019). Between relevance and excellence? Research impact agenda and the production of policy knowledge. *Science and Public Policy*, *46*(6), 895–905. https://doi.org/10.1093/scipol/scz037

Belcher, B. M., Ramirez, L. F., Davel, R., & Claus, R. (2019). Retraction: A response to Hansson and Polk (2018) "Assessing the impact of transdisciplinary research: The usefulness of relevance, credibility, and legitimacy for understanding the link between process and impact". *Research Evaluation*, *28*(2), e1. https://doi.org/10.1093/reseval/rvy022

Belcher, B. M., Rasmussen, K. E., Kemshaw, M. R., & Zornes, D. A. (2016). Defining and assessing research quality in a transdisciplinary context. *Research Evaluation*, *25*(1), 1–17. https://doi.org/10.1093/reseval/rvv025

Bell, M., & Lewis, N. (2022). Universities claim to value community-engaged scholarship: So why do they discourage it? *Public Understanding of Science*, 09636625221118779. https://doi.org/10.1177/09636625221118779

Bieszczad, S. R., Fochler, M., & de Rijcke, S. (2025). Diving into Relevance: How Deep Sea Researchers Articulate Societal Relevance within their Epistemic Living Spaces. *Minerva*. https://doi.org/10.1007/s11024-025-09577-z

Binder, C. R., Fritz, L., Hansmann, R., Balthasaar, A., & Roose, Z. (2020). Increasing the relevance of science for practice and practice for science: Quantitative empirical insights. *Science and Public Policy*, *47*(6), 772–787. https://doi.org/10.1093/scipol/scaa066

Blümel, C. (2018). Translational research in the science policy debate: A comparative analysis of documents. *Science and Public Policy*, *45*(1), 24–35. https://doi.org/10.1093/scipol/scx034

Boaz, A., Borst, R., Kok, M., & O'Shea, A. (2021). How far does an emphasis on stakeholder engagement and co-production in research present a threat to academic identity and autonomy? A prospective study across five European countries. *Research Evaluation*, *30*(3), 361–369. https://doi.org/10.1093/reseval/rvab013

Bölling, M., & Eriksson, Y. (2016). Collaboration with society: The future role of universities? Identifying challenges for evaluation. *Research Evaluation*, *25*(2), 209–218. https://doi.org/10.1093/reseval/rvv043

Bremer, S., & Meisch, S. (2017). Co-production in climate change research: Reviewing different perspectives. *WIREs Climate Change*, *8*(6), e482. https://doi.org/10.1002/wcc.482

Brenninkmeijer, J. (2022). Achieving societal and academic impacts of research: A comparison of networks, values, and strategies. *Science and Public Policy*, scac022. https://doi.org/10.1093/scipol/scac022

Breuer, T., Schaer, P., & Tunger, D. (2022). Relevance assessments, bibliometrics, and altmetrics: A quantitative study on PubMed and arXiv. *Scientometrics*, *127*(5), 2455–2478. https://doi.org/10.1007/s11192-022-04319-4

Brunet, L., Fochler, M., Müller, R., & Sigl, L. (2024). Modes of Relevance in Research. Towards Understanding the Promises and Possibilities of Doing Relevance. *Minerva*. https://hal.science/hal-04746011

Burns, E., & Studer, K. (1975). Reflections on Weinberg,am—Case Study on Social Foundations of Science Policy. *Research Policy*, *4*(1), 28–44. https://doi.org/10.1016/0048-7333(75)90009-8

Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., Jäger, J., & Mitchell, R. B. (2003). Knowledge systems for sustainable development. *Proceedings of the National Academy of Sciences*, *100*(14), 8086–8091. https://doi.org/10.1073/pnas.1231332100

Centre for Strategy & Evaluation Services LLP (CSES), Directorate-General for Research and Innovation (European Commission), Whittle, M., & Rampton, J. (2020). *Towards a 2030 vision on the future of universities in Europe*. Publications Office of the European Union. https://data.europa.eu/doi/10.2777/510530

Clark, R., & Holmes, J. (2010). Improving input from research to environmental policy: Challenges of structure and culture. *Science and Public Policy*, *37*(10), 751–764. https://doi.org/10.3152/030234210X534887

Cointe, B., Cassen, C., & Nadaï, A. (2019). Organising Policy-Relevant Knowledge for Climate Action: Integrated Assessment Modelling, the IPCC, and the Emergence of a Collective Expertise on Socioeconomic Emission Scenarios. *Science & Technology Studies*, *32*(4), Article 4. https://doi.org/10.23987/sts.65031

Coombs, S. K., & Meijer, I. (2021). Towards Evaluating the Research Impact made by Universities of Applied Sciences. *Science and Public Policy*, *48*(2), 226–234. https://doi.org/10.1093/scipol/scab009

Coren, S. (1970). Is relevance relevant in research? *American Psychologist*, *25*(7), 649–650. https://doi.org/10.1037/h0037873

de Fremery, W., & Buckland, M. K. (2024). Relevance and creativity—A linear model. *Journal of Documentation*, *Early access*. https://doi.org/10.1108/JD-02-2023-0023

de Sandes-Guimarães, L. V., Velho, R., & Plonski, G. A. (2022). Interdisciplinary research and policy impacts: Assessing the significance of knowledge coproduction. *Research Evaluation*, *31*(3), 344–354. https://doi.org/10.1093/reseval/rvac008

Demeritt, D. (2000). The New Social Contract for Science: Accountability, Relevance,and Value in US and UK Science and Research Policy. *Antipode*, *32*(3), 308–329. https://doi.org/10.1111/1467-8330.00137

Dix, G. (2019). Microeconomic forecasting: Constructing commensurable futures of educational reforms. *Social Studies of Science*, *49*(2), 180–207. https://doi.org/10.1177/0306312719837364

Douglas, H., Halpern, M. K., & Louson, E. (2024). Engaging publics in science: A practical typology. *Journal of Responsible Innovation*, *11*(1), 2419238. https://doi.org/10.1080/23299460.2024.2419238

Drouet, I., Andler, D., Barberousse, A., & Jebeile, J. (2021). Expert reports by large multidisciplinary groups: The case of the International Panel on Climate Change. *Synthese*, *199*(5), 14491–14508. https://doi.org/10.1007/s11229-021-03430-y

Dunn, G., & Laing, M. (2017). Policy-makers perspectives on credibility, relevance and legitimacy (CRELE). *Environmental Science & Policy*, *76*, 146–152. https://doi.org/10.1016/j.envsci.2017.07.005

Düppe, T. (2015). Border cases between autonomy and relevance: Economic sciences in Berlin—A natural experiment. *Studies in History and Philosophy of Science Part A*, *51*, 22–32. https://doi.org/10.1016/j.shpsa.2015.01.004

Edler, J., Karaulova, M., & Barker, K. (2022). Understanding Conceptual Impact of Scientific Knowledge on Policy: The Role of Policymaking Conditions. *Minerva*, *60*(2), 209–233. https://doi.org/10.1007/s11024-022-09459-8

Ely, A., Van Zwanenberg, P., & Stirling, A. (2014). Broadening out and opening up technology assessment: Approaches to enhance international development, co-ordination and democratisation. *Research Policy*, *43*(3), 505–518. https://doi.org/10.1016/j.respol.2013.09.004

Elzinga, A. (1997). The science-society contract in historical transformation: With special reference to "epistemic drift". *Social Science Information*, *36*(3), 411–445.

Evangelista, R., & Vezzani, A. (2010). The economic impact of technological and organizational innovations. A firm-level analysis. *Research Policy*, *39*(10), 1253–1263. https://doi.org/10.1016/j.respol.2010.08.004

Fagerberg, J. (2018). Mobilizing innovation for sustainability transitions: A comment on transformative innovation policy. *Research Policy*, *47*(9), 1568–1576. https://doi.org/10.1016/j.respol.2018.08.012

Fehr, C., & Plaisance, K. S. (2010). Socially relevant philosophy of science: An introduction. *Synthese*, *177*(3), 301–316. https://doi.org/10.1007/s11229-010-9855-7

Franssen, T. (2022). Enriching research quality: A proposition for stakeholder heterogeneity. *Research Evaluation*, *31*(3), 311–320. https://doi.org/10.1093/reseval/rvac012

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. SAGE Publications Ltd.

Gläser, J., Ash, M., Buenstorf, G., Hopf, D., Hubenschmid, L., Janßen, M., Laudel, G., Schimank, U., Stoll, M., Wilholt, T., Zechlin, L., & Lieb, K. (2022). The Independence of Research—A Review of Disciplinary Perspectives and Outline

of Interdisciplinary Prospects. *Minerva*, *60*(1), 105–138. https://doi.org/10.1007/s11024-021-09451-8

Green, S., Andersen, H., Danielsen, K., Emmeche, C., Joas, C., Johansen, M. W., Nagayoshi, C., Witteveen, J., & Sørensen, H. K. (2021). Adapting practice-based philosophy of science to teaching of science students. *European Journal for Philosophy of Science*, *11*(3), 75. https://doi.org/10.1007/s13194-021-00393-2

Grundmann, R., & Stehr, N. (2012). *The Power of Scientific Knowledge: From Research to Public Policy*. Cambridge University Press.

Håkansta, C., & Jacob, M. (2016). Mode-2 and the tension between excellence and utility: The case of a policy-relevant research field in Sweden. *Minerva*, *54*(1), 1–20. https://doi.org/10.1007/s11024-015-9288-z

Hansson, S., & Polk, M. (2018). Assessing the impact of transdisciplinary research: The usefulness of relevance, credibility, and legitimacy for understanding the link between process and impact. *Research Evaluation*, *27*(2), 132–144. https://doi.org/10.1093/reseval/rvy004

Heink, U., Marquard, E., Heubach, K., Jax, K., Kugel, C., Neßhöver, C., Neumann, R. K., Paulsch, A., Tilch, S., Timaeus, J., & Vandewalle, M. (2015). Conceptualizing credibility, relevance and legitimacy for evaluating the effectiveness of science–policy interfaces: Challenges and opportunities. *Science and Public Policy*, *42*(5), 676–689. https://doi.org/10.1093/scipol/scu082

Hellström, T., & Jacob, M. (2024). Claiming Relevance for Social Science and the Humanities: Relevance Expressions Across Methodological Divides. *Minerva*. https://doi.org/10.1007/s11024-024-09561-z

Hermansen, E. A. T., Boasson, E. L., & Peters, G. P. (2023). Climate action post-Paris: How can the IPCC stay relevant? *Npj Climate Action*, *2*(1), 1–8. https://doi.org/10.1038/s44168-023-00058-1

Hessels, L. K., & van Lente, H. (2011). Practical Applications as a Source of Credibility: A Comparison of Three Fields of Dutch Academic Chemistry. *Minerva*, *49*(2), 215–240. https://doi.org/10.1007/s11024-011-9167-1

Hessels, L. K., van Lente, H., & Smits, R. (2009). In search of relevance: The changing contract between science and society. *Science and Public Policy*, *36*(5), 387–401. https://doi.org/10.3152/030234209X442034

Hetland, P. (2019). Constructing publics in museums' science communication. *Public Understanding of Science*, *28*(8), 958–972. https://doi.org/10.1177/0963662519870692

Hicks, D. (2012). Performance-based university research funding systems. *Research Policy*, *41*(2), 251–261. https://doi.org/10.1016/j.respol.2011.09.007

Holmes, C., Carlson, S. M., McDonald, F., Jones, M., & Graham, J. (2016). Exploring the post-genomic world: Differing explanatory and manipulatory functions of post-genomic sciences. *New Genetics and Society*, *35*(1), 49–68. https://doi.org/10.1080/14636778.2015.1133280

Horcea-Milcu, A.-I., Abson, D. J., Apetrei, C. I., Duse, I. A., Freeth, R., Riechers, M., Lam, D. P. M., Dorninger, C., & Lang, D. J. (2019). Values in transformational

sustainability science: Four perspectives for change. *Sustainability Science*, *14*(5), 1425–1437. https://doi.org/10.1007/s11625-019-00656-1

Huitema, D., & Turnhout, E. (2009). Working at the science-policy interface: A discursive analysis of boundary work at the Netherlands Environmental Assessment Agency. *Environmental Politics*, *18*(4), 576–594.

Irwin, A., & Horst, M. (2024). Always Relevant? Finding a Place for the Social Sciences in the Technical University and the Business School. *Minerva*. https://doi.org/10.1007/s11024-024-09553-z

Jacob, M., & Jabrane, L. (2018). Being there in the flex: Humanities and social science collaborations with nonacademic actors. *Studies in Higher Education*, *43*(10), 1718–1729. https://doi.org/10.1080/03075079.2018.1520414

Jantsch, E. (1972). Inter- and transdisciplinary university: A systems approach to education and innovation. *Higher Education*, *1*(1), 7–37. https://doi.org/10.1007/BF01956879

Jarzabkowski, P., Mohrman, S. A., & Scherer, A. G. (2010). Organization Studies as Applied Science: The Generation and Use of Academic Knowledge about Organizations Introduction to the Special Issue. *Organization Studies*, *31*(9–10), 1189–1207. https://doi.org/10.1177/0170840610374394

Jasanoff, S. (2004). *States of Knowledge: The Co-Production of Science and Social Order*. Routledge.

Jesson, J. (2011). *Doing Your Literature Review: Traditional And Systematic Techniques* (First edition). SAGE Publications Ltd.

Jongbloed, B. (2010). The regional relevance of research in universities of applied sciences. In S. Kyvik & B. Lepori (Eds.), *The research mission of higher education institutions outside the university sector: Striving for differentiation* (pp. 25–44). Springer.

Kapon, S., Laherto, A., & Levrini, O. (2018). Disciplinary authenticity and personal relevance in school science. *Science Education*, *102*(5), 1077–1106. https://doi.org/10.1002/sce.21458

Kern, F., Rogge, K. S., & Howlett, M. (2019). Policy mixes for sustainability transitions: New approaches and insights through bridging innovation and policy studies. *Research Policy*, *48*(10), 103832. https://doi.org/10.1016/j.respol.2019.103832

Kitagawa, F. (2010). Pooling Resources for Excellence and Relevance: An Evolution of Universities as Multi-Scalar Network Organisations. *Minerva*, *48*(2), 169–187. https://doi.org/10.1007/s11024-010-9147-x

Klenk, N. (2025). From Problem-Solving to Meaning-Making: Reframing the Societal Relevance of Research. *Minerva*. https://doi.org/10.1007/s11024-025-09583-1

Klenk, N., & Hickey, G. M. (2012). Improving the social robustness of research networks for sustainable natural resource management: Results of a Delphi study in Canada. *Science and Public Policy*, *39*(3), 357–372. https://doi.org/10.1093/scipol/scs024

Knights, D., & Scarbrough, H. (2010). In Search of Relevance: Perspectives on the Contribution of Academic—Practitioner Networks. *Organization Studies*, *31*(9–10), 1287–1309. https://doi.org/10.1177/0170840610374398

Koch, S., & Varga, J. (2024). All that Matters are Forests and Seas? Practising Relevance in Interdisciplinary Environment-Focused Social Science Fields. *Minerva*. https://doi.org/10.1007/s11024-024-09556-w

Kowalczewska, K., & Behagel, J. (2019). How policymakers' demands for usable knowledge shape science-policy relations in environmental policy in Poland. *Science and Public Policy*, *46*(3), 381–390. https://doi.org/10.1093/scipol/scy065

Kwiek, M. (2018). Academic top earners. Research productivity, prestige generation, and salary patterns in European universities. *Science and Public Policy*, *45*(1), 1–13. https://doi.org/10.1093/scipol/scx020

Lepori, B. (2022). The heterogeneity of European Higher Education Institutions: A configurational approach. *Studies in Higher Education*, *47*(9), 1827–1843. https://doi.org/10.1080/03075079.2021.1968368

Lim, J. H., Hunt, B. D., Findlater, N., Tkacik, P. T., & Dahlberg, J. L. (2021). "In Our Own Little World": Invisibility of the Social and Ethical Dimension of Engineering Among Undergraduate Students. *Science and Engineering Ethics*, *27*(6), 74. https://doi.org/10.1007/s11948-021-00355-0

Lim, M. A. (2018). The building of weak expertise: The work of global university rankers. *Higher Education*, *75*(3), 415–430. https://doi.org/10.1007/s10734-017-0147-8

Ludwig, D., Blok, V., Garnier, M., Macnaghten, P., & Pols, A. (2022). What's wrong with global challenges? *Journal of Responsible Innovation*, *9*(1), 6–27. https://doi.org/10.1080/23299460.2021.2000130

Mizrahi-Shtelman, R., & Drori, G. S. (2021). World-Rank and/or Locally Relevant? Organizational Identity in the Mission Statements of Higher Education Organizations in Israel, 2008–2018. *Minerva*, *59*(1), 1–25. https://doi.org/10.1007/s11024-020-09414-5

Montuschi, E. (2017). Using science, making policy: What should we worry about? *European Journal for Philosophy of Science*, *7*, 57–78.

Müller, R., & de Rijcke, S. (2017). Thinking with indicators. Exploring the epistemic impacts of academic performance indicators in the life sciences. *Research Evaluation*, *26*(3), 157–168. https://doi.org/10.1093/reseval/rvx023

Neff, M. W. (2018). Publication incentives undermine the utility of science: Ecological research in Mexico. *Science and Public Policy*, *45*(2), 191–201. https://doi.org/10.1093/scipol/scx054

Nicolai, A., & Seidl, D. (2010). That's Relevant! Different Forms of Practical Relevance in Management Science. *Organization Studies*, *31*(9–10), 1257–1285. https://doi.org/10.1177/0170840610374401

Nilsson, M., & Moodysson, J. (2015). Regional innovation policy and coordination: Illustrations from Southern Sweden. *Science and Public Policy*, *42*(2), 147–161. https://doi.org/10.1093/scipol/scu024

Noack, A., & Jacobsen, H. (2021). Transfer scouts: From intermediation to co-constructors of new knowledge and technologies in Germany. *Research Policy*, *50*(4), 104209. https://doi.org/10.1016/j.respol.2021.104209

OECD. (2018). *New trends in public research funding* (pp. 185–204). OECD. https://doi.org/10.1787/sti_in_outlook-2018-13-en

Olmos-Penuela, J., Castro-Martinez, E., & D'Este, P. (2014). Knowledge transfer activities in social sciences and humanities: Explaining the interactions of research groups with non-academic agents. *Research Policy*, *43*(4), 696–706. https://doi.org/10.1016/j.respol.2013.12.004

Olson, J., & Pinto da Silva, P. (2020). Knowledge production at the science–policy interface: Lessons from fisheries scientists. *Science and Public Policy*, *47*(1), 47–55. https://doi.org/10.1093/scipol/scz045

Oxford English dictionary. (2009). Relevant, adj. In *OED Online*. Oxford University Press. https://www.oed.com/view/Entry/161893

Parker, J., & Crona, B. (2012). On being all things to all people: Boundary organizations and the contemporary research university. *Social Studies of Science*, *42*(2), 262–289.

Parkhurst, J. O., & Abeysinghe, S. (2016). What Constitutes "Good" Evidence for Public Health and Social Policy-making? From Hierarchies to Appropriateness. *Social Epistemology*, *30*(5–6), 665–679. https://doi.org/10.1080/02691728.2016.1172365

Perkmann, M., Fini, R., Ross, J.-M., Salter, A., Silvestri, C., & Tartari, V. (2015). Accounting for universities' impact: Using augmented data to measure academic engagement and commercialization by academic scientists. *Research Evaluation*, *24*(4), 380–391. https://doi.org/10.1093/reseval/rvv020

Phillips, T. B., Ballard, H. L., Lewenstein, B. V., & Bonney, R. (2019). Engagement in science through citizen science: Moving beyond data collection. *Science Education*, *103*(3), 665–690. https://doi.org/10.1002/sce.21501

Purssell, E. (with McCrae, N.). (2020). *How to perform a systematic literature review: A guide for healthcare researchers, practitioners and students*. Springer. https://doi.org/10.1007/978-3-030-49672-2

Ramirez, L. F., & Belcher, B. M. (2019). Stakeholder perceptions of scientific knowledge in policy processes: A Peruvian case-study of forestry policy development. *Science and Public Policy*, *46*(4), 504–517. https://doi.org/10.1093/scipol/scz003

Rau, H., Goggins, G., & Fahy, F. (2018). From invisibility to impact: Recognising the scientific and societal relevance of interdisciplinary sustainability research. *Research Policy*, *47*(1), 266–276. https://doi.org/10.1016/j.respol.2017.11.005

Rosenlund, J., Notini, P., & Bravo, G. (2017). Exploring attitudes to societal relevance: The effects of reflection on research practices among Swedish environmental scientists. *Journal of Responsible Innovation*, *4*(3), 337–353. https://doi.org/10.1080/23299460.2017.1387509

Sandin, S., & Benner, M. (2022). Research evaluations for an energy transition? Insights from a review of Swedish research evaluation reports. *Research Evaluation*, *31*(1), 80–92. https://doi.org/10.1093/reseval/rvab031

Santoalha, A., Biscaia, R., & Teixeira, P. (2018). Higher education and its contribution to a diverse regional supply of human capital: Does the binary/unitary divide matters? *Higher Education*, *75*(2), 209–230. https://doi.org/10.1007/s10734-017-0132-2

Sapat, A. (2021). Lost in Translation? Integrating Interdisciplinary Disaster Research with Policy Praxis. *Risk Analysis*, *41*(7), 1232–1239. https://doi.org/10.1111/risa.13198

Saracevic, T. (1975). RELEVANCE: A review of and a framework for the thinking on the notion in information science. *Journal of the American Society for Information Science*, *26*(6), 321–343. https://doi.org/10.1002/asi.4630260604

Schikowitz, A. (2020). Creating relevant knowledge in transdisciplinary research projects—Coping with inherent tensions. *Journal of Responsible Innovation*, *7*(2), 217–237. https://doi.org/10.1080/23299460.2019.1653154

Schmidt, J. C. (2021). *Philosophy of Interdisciplinarity: Studies in Science, Society and Sustainability*. Routledge. https://doi.org/10.4324/9781315387109

Schot, J., & Steinmueller, W. E. (2018). Three frames for innovation policy: R&D, systems of innovation and transformative change. *Research Policy*, *47*(9), 1554–1567. https://doi.org/10.1016/j.respol.2018.08.011

Shavit, A., & Silver, Y. (2022). Academic excellence and community relevance: Can we have it all? *Public Understanding of Science*, *31*(3), 314–322. https://doi.org/10.1177/09636625221087321

Sigl, L., Falkenberg, R., & Fochler, M. (2023). Changing articulations of relevance in soil science: Diversity and (potential) synergy of epistemic commitments in a scientific discipline. *Studies in History and Philosophy of Science*, *97*, 79–90. https://doi.org/10.1016/j.shpsa.2022.12.004

Sigl, L., Felt, U., & Fochler, M. (2020). "I am Primarily Paid for Publishing…": The Narrative Framing of Societal Responsibilities in Academic Life Science Research. *Science and Engineering Ethics*, *26*(3), 1569–1593. https://doi.org/10.1007/s11948-020-00191-8

Sigl, L., & Fochler, M. (2025). Towards a "Hinterland" for Doing Relevance. A Typology of Practices and Competencies to Guide the Development of more Relevant Research and Career Paths. *Minerva*. https://doi.org/10.1007/s11024-024-09569-5

Sleuwaegen, L., & Boiardi, P. (2014). Creativity and regional innovation: Evidence from EU regions. *Research Policy*, *43*(9), 1508–1522. https://doi.org/10.1016/j.respol.2014.03.014

Smith, C. S., & Larsen, O. N. (1989). The criterion of "relevance" in the support of research in the social sciences: 1965–1985. *Minerva*, *27*(4), 461–482. https://doi.org/10.1007/BF01096540

Stehr, N., & Adolf, M. T. (2016). The Price of Knowledge. *Social Epistemology*, *30*(5–6), 483–512. https://doi.org/10.1080/02691728.2016.1172366

Tamarkin, E. (2022). *Apropos of Something: A History of Irrelevance and Relevance*. University of Chicago Press.

Tavenner, K., & Crane, T. A. (2022). Hitting the target and missing the point? On the risks of measuring women's empowerment in agricultural development. *Agriculture and Human Values*, *39*(3), 849–857. https://doi.org/10.1007/s10460-021-10290-2

Thompson, P. B., & Whyte, K. P. (2012). What Happens to Environmental Philosophy in a Wicked World? *Journal of Agricultural and Environmental Ethics*, *25*(4), 485–498. https://doi.org/10.1007/s10806-011-9344-0

Turnheim, B., & Nykvist, B. (2019). Opening up the feasibility of sustainability transitions pathways (STPs): Representations, potentials, and conditions. *Research Policy*, *48*(3), 775–788. https://doi.org/10.1016/j.respol.2018.12.002

van der Molen, F., Ludwig, D., Consoli, L., & Zwart, H. (2019). Global challenges, Dutch solutions? The shape of responsibility in Dutch science and technology policies. *Journal of Responsible Innovation*, *6*(3), 340–345. https://doi.org/10.1080/23299460.2019.1603569

van der Weijden, I., Verbree, M., & van den Besselaar, P. (2012). From bench to bedside: The societal orientation of research leaders: The case of biomedical and health research in the Netherlands. *Science and Public Policy*, *39*(3), 285–303. https://doi.org/10.1093/scipol/scr003

van Eck, C. W., Mulder, B. C., & Dewulf, A. (2020). Online Climate Change Polarization: Interactional Framing Analysis of Climate Change Blog Comments. *Science Communication*, *42*(4), 454–480. https://doi.org/10.1177/1075547020942228

van Wee, B. (2019). The Need for a Code of Conduct for Research Funders. *Science and Engineering Ethics*, *25*(6), 1657–1660. https://doi.org/10.1007/s11948-019-00145-9

Weinberg, A. M. (2000). Criteria for Scientific Choice (Minerva, I (2), (1962), 158–171). *Minerva*, *38*(3), 253–266. https://doi.org/10.1023/A:1026512029530

White, D. D., Wutich, A., Larson, K. L., Gober, P., Lant, T., & Senneville, C. (2010). Credibility, salience, and legitimacy of boundary objects: Water managers' assessment of a simulation model in an immersive decision theater. *Science and Public Policy*, *37*(3), 219–232. https://doi.org/10.3152/030234210X497726

Yu, L. (2022). On Social Robustness Checks on Science: What Climate Policymakers Can Learn from Population Control. *Social Epistemology*, *36*(4), 436–448. https://doi.org/10.1080/02691728.2022.2049916

Zapp, M., & Powell, J. J. W. (2017). Moving towards Mode 2? Evidence-based policy-making and the changing conditions for educational research in Germany. *Science and Public Policy*, *44*(5), 645–655. https://doi.org/10.1093/scipol/scw091

Category	What is relevant?	To/for whom is this relevant?	Publication journals
1	Evidence, knowledge, general knowledge	Policymakers, practitioners, decision makers	European Journal for Philosophy of Science, Minerva, Social Epistemology, Synthese
2	Academic research, disciplines, higher education, university rankings	Societal and scientific problems, society, policy-relevant research fields, policy makers	Higher education, Minerva, Science and Public Policy, Studies in Higher Education
3	Academic research, scientific knowledge, universities, research groups, science policy	Society, research practices, local actors, economy and society	Journal of Responsible Innovation, Minerva, Research Policy, Science and Engineering Ethics, Science and Public Policy
4	Organisational science, management science, researcher training	Practice, practitioners, careers outside university sector	Organization Studies, Research Evaluation, Research Policy, Science and Public Policy, Studies in Higher Education
5	Researchers, scientific knowledge, academic fields, policy documents,	Policy-making, policy, climate action, policy implementation	Research Policy, Science and Public Policy, Social Studies of Science
6	Universities, academics, researcher training, research programmes,	Industry, the economy, innovation, regional actors, society, innovation, technological development	Minerva, Research Evaluation, Research Policy, Science and Public Policy
7	University teaching, science communication, critical thinking, museums	Students, museum visitors, the general public, audiences, practice	Public Understanding of Science, Science Communication, Science Education, Social Epistemology, Studies in Higher Education
8	Transdisciplinary research, responsible innovation, research processes, researchers and practitioners working in transdisciplinary projects	Sustainability transitions, society and policy, local and global knowledge communities, transdisciplinary research	Agriculture and Human Values, Public Understanding of Science, Research Evaluation, Research Policy, Science and Public Policy

Table 1 – Different categories of relevance

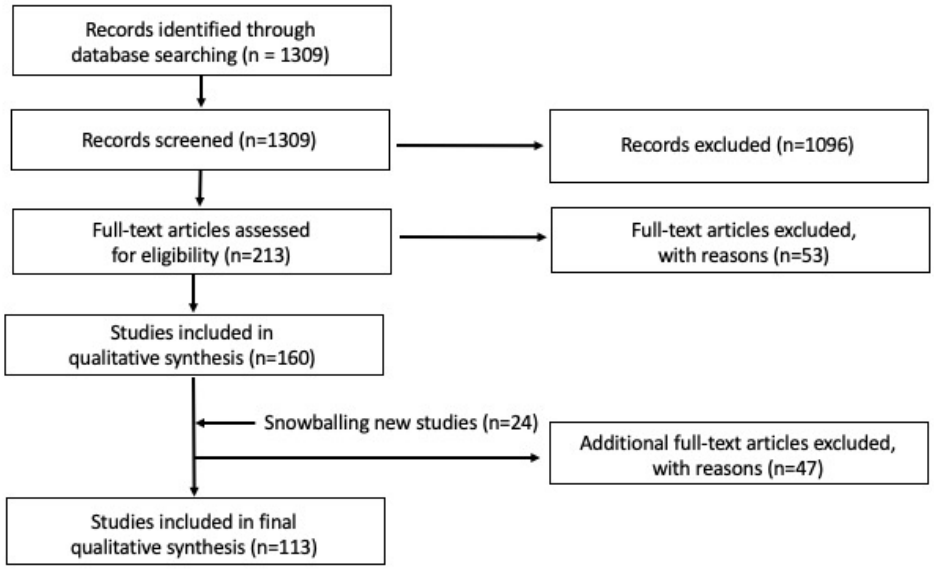

Figure 1 - The process of selecting the publications