Enlightened trust in governance

EnTrust

# Manual for Evidence-Informed Policy Making

## Deliverable D8.9

**EnTrust: Enlightened Trust: An Examination of Trust and Distrust in Governance – Conditions, Effects and Remedies**

WP8: Dissemination, exploitation, and communication of research
Work Package Leader: USIEGEN
Due Date: 31 January 2024
Submission Date: 31 March 2024

**Project Information**
Project Type: Collaborative Project
Call: H2020 SC6 GOVERNANCE–01–2019: Trust in Governance
Start date: February 2020
Duration: 48 months
Coordinator: Prof. Dr. Christian Lahusen, University of Siegen
Grant Agreement No: 870572
EU-funded Project Budget: € 2,978,151.25

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 870572. The contents of this publication are the sole responsibility of the authors and do not necessarily reflect the opinion of the European Union.

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# Table of Contents



# List of Tables



# List of Figures

# Manual for Evidence-Informed Policy Making

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## 1. Introduction: Objective and scope of this manual

In democratic systems, it is widely accepted that public policies should not only be committed to the common good, respect established laws and respond to public demands, but should also conform to scientific evidence. These expectations are manifest in the ways citizens assess the trustworthiness of political institutions and policy makers.[1] Key criteria used to assess the trustworthiness are transparency, accountability, and lawfulness, but also competence and effectiveness in problem-solving. Good public policies require solid knowledge about the pressing problems to be tackled, the underlying causes to be addressed, the potential solutions to be considered and the contextual circumstances to be respected. For these reasons, scientific evidence plays a significant role in policy making and implementation. The use of science and expertise, however, involves challenges and questions en route to the factual work of identifying, assessing, and using pertinent evidence for policy making. What can be considered to be scientific evidence? How can we identify relevant evidence, particularly in a situation that might be governed by a multitude of different investigations? And how can the adequacy and quality of these sources be recognised?

This manual is devoted to these questions and wishes to provide guidance to those interested in learning how to identify adequate sources, how to assess the quality of scientific evidence and how to make use of it for policy making. It aims to assist knowledge intermediaries (e.g., think tanks, consultants, journalists) who are responsible for gathering, processing and presenting policy-relevant evidence. It also wishes to sensitise policy makers (e.g. politicians and their staff, party, parliamentary and ministry research services), stakeholders and interested citizens about the potential, forms and limitations of scientific evidence as a policy resource. Finally, it may also prove valuable to those interested in developing and/or commissioning evidence that meets scientific standards.

Given the diversity of scientific research and the complexity of policy making processes, reference will be made to various principles and models that deal with different dimensions of evidence in policy making. The manual, however, is not able to address non-scientific, practical forms of evidence and discuss the potential role the expertise by other actors (e.g., practitioners, citizens, civil society organisations, social partners) might play in policy making because this would distract from the specificities of science as a source of knowledge. For these reasons, the manual will start with general remarks about the potentials, challenges, and limitations of scientific evidence, before moving on to the different principles and steps that can be taken to identify, evaluate and use

scientific evidence. Further readings will be listed in the endnotes to provide an opportunity to deepen knowledge about different approaches and guidelines. Finally, information on supportive evidence and the research project authoring this manual is included at the end of the document.

The manual is a product of the EnTrust project, funded by the EU's Horizon2020 programme and devoted to the study of trust and distrust in governance (see Section 6). The project findings have confirmed that public trust in policy making implies, among other things, the expectation that scientific evidence will be properly consulted (see Section 5). Citizens trust science and experts, but this trust is conditional, as the public is aware that evidence has its limits and depends on proper use. Scientific evidence can thus play a trust-furthering role, when properly used, which has stimulated the EnTrust project to draft this manual in order to specify the terms and conditions of what trustworthy usage can be.

# 2. Background: Potentials and limitations of evidence in policy making

The guidelines presented in this manual need to be embedded in contextual considerations that aim to sensitise for the potentials, limitations, and challenges associated with the use of scientific evidence in policy making. In this regard, two questions are paramount.

## 2.1 What should the role of evidence in policy making be?

Discussions concerning the nature and role of evidence in policy making are highly nuanced and complex. Proposals range from a leading role that calls for evidence-driven policies, to a subordinate role that asks for policy-driven evidence.[2] For some, evidence-led policy making is a way out from opinion- or ideology-dominated debates, while for others it favours technocracy or expertocracy.[3] According to the latter position, science should rather be at the service of a democratic process of political deliberation and decision-making. Both positions have good arguments on their side, which means that an informed and well-adjusted relationship between evidence and policy making is the most reasonable approach. Moreover, a modest role for science in policy making is also an adequate approach because there is no consensus as to what constitutes an evidence base in practice.[4]

The need for a cautious approach is reflected by progress made within scholarly debate, as the dominant focus is moving from evidence-based in favour of evidence-informed policy making. Since the 1960s, evidence-based policy making (EBP) was a central focus of specialised publications and conferred high authority on scientific research

methods, as for instance, randomised control trials.[5] This privileging of research evidence was inherited from the concept of evidence-based medicine that continues to be pursued in clinical practice.[6] It was argued that strict scientific knowledge is the best foundation for answering the question of "what works?", concerning the effectiveness of any intervention, among them political measures.[7] Since the 1990s, these conceptions have been increasingly labelled idealistic and aspirational.[8] Evidence alone is said to be insufficient for addressing social problems and needs,[9] and is argued to expose policy making to the risks of technocracy and expertocracy.

In contrast, evidence-*informed* policy making (EIP) has grown in popularity,[10] thus reflecting a more interactive conception of the policy making process than that permitted by the early knowledge-driven model. Evidence is proposed as merely one factor influencing the policy making process,[11] also acknowledging the merit of a variety of diverse knowledge claims and sources of expertise.[12] The semantic shift to evidence-*informed* policy, therefore, embodies practical changes and an increased level of collaborative exchange between policy makers and experts. It is underlined by the idea that research evidence cannot singlehandedly answer the diverse range of questions faced by policy makers in the process of deliberating and taking policy decisions.

Despite these developments, today's debates and practices mirror a diversity of approaches, where early EBP and more recent EIP paradigms coexist.[13] Knowing what exactly "good evidence" for policy making is, remains a highly contentious debate with no simple answer. Ultimately, the role of evidence will be determined by what policy makers *want* to know, *why* they want to know it, and in what *contexts* the evidence will be used.[14] Evidence users should thus be cautious about attempts to create authoritative and exhaustive evidence standards.[15]

## 2.2 What are the challenges associated with the collaboration of science and policy making?

Science represents an ongoing quest for knowledge.[16] Internally, it hosts a great number of disciplines, paradigms and schools that shape knowledge production through systematic examination, contestation, and falsification.[17] Scientific evidence is marked by a strong differentiation and specialisation, thus contributing to a multitude of scientific discourses within and between disciplines, paradigms and schools that both agree and disagree about facts, inferences and generalisations. This scientific spirit of critical research and debate, however, does not operate in a void. Because of its relevance to policy making, science is enmeshed in societal and political debates that tend to politicise scientific evidence. In fact, different types of research tend to attract the backing of different governments, policy makers and stakeholders.[18] Sceptics thus argue that scientific evidence is a method employed by governments merely to legitimise their policy decisions and justify their political priorities.[19] Additionally, in times of so-called "post-truth politics", mistrust in evidence and experts leads to the increasing

dismissal of widely-accepted facts and the production of new opposing "facts",[20] thus questioning the authority of scientific expertise. However, the role of science in policy making is not only challenged by public criticisms, but also by the increasing differentiation and specialisation of scientific knowledge production, which contributes to an oversupply of information and an overcrowding of scientific experts in policy making processes.[21] These tensions tend to fracture the evidence base, thus complicating the job of knowledge intermediaries and policy makers tasked with selecting "best available evidence" for the bases of writing and adapting public policies.[22] The very nature of science makes the relationship between evidence and policy making increasingly complex, as evidence users have to navigate and interpret varied and contradictory claims.[23]

Against "post-truth" debates, we need to be reminded that not all evidence is equal.[24] There are numerous reasons why particular sources of evidence can be granted primacy over others, among them scientific rigour, reputation, and peer review. First, science tends to grant primacy to information produced by rigorous scientific research methods over other knowledge sources, including practical, experiential or non-experimental evidence.[25] "Hard" scientific research committed to objectivity, validity, reliability and replicability of findings has been privileged when gauging the relevance and evidence in drafting effective interventions.[26] Second, the reputation of a scientist or research institute is a widely used criterion to assess available research outputs.[27] Evidence produced by independent and well-established organisations or researchers can be assumed to be more factual or true, when compared to less established sources with vested interests.[28] And third, evidence that has been peer reviewed at the stage of proposal submission, research implementation and/or publication is also considered to be more credible[29] because it has been proven to adhere to professional research standards and quality controls.

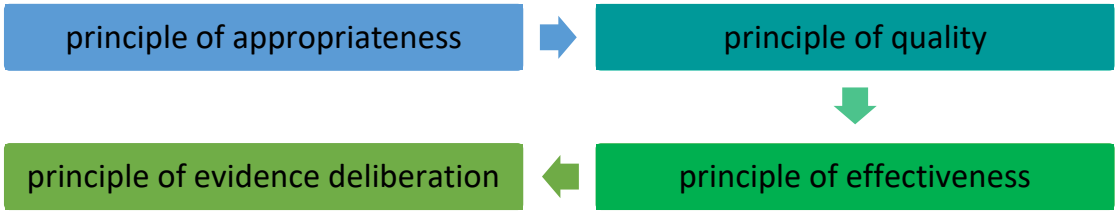
Notwithstanding these indications, the lack of standard nomenclature within the evidence landscape makes it a challenging and confusing space for knowledge intermediaries, policy makers and stakeholders across various policy areas, to navigate. As the validity of evidence is also impacted by environmental contexts and non-scientific determinants,[30] it becomes clear that evidence users must exercise caution about claims to an authoritative evidence standard.[31] At the same time, they needs to be aware that it might contribute (involuntarily) to overstretching and thus compromising scientific evidence. The pervasive question of how evidence users assess the quality of evidence, and use it in the process of policy making, still remains.

# 3. Guidelines for assessing the adequacy and quality of evidence

The challenges associated with the use of scientific evidence in policy making do not only emanate from the complexity of modern science and its high degree of differentiation and specialisation. It also stems from the complexity of policy making itself. As is well known, policy makers deal with a great variety of policy domains and issues, and this means that the demand for scientific evidence greatly varies according to policy issues. Moreover, policy making evolved along a highly complex policy-cycle that requires different forms of evidence, for instance, when decision makers need to understand the nature of the problem and its causes, the solutions that seem most promising, the specific policy interventions to use, the ways to implement them, the predicted side-effects, and the degrees to which the policies might arouse public acceptance or not.

Policy making is thus confronted with a wide range of questions that science might help to answer. In the search for relevant scientific evidence, political deliberation and decision making should be guided by four principles, outlined below:

**Figure 1: Evidence evaluation principles**




## 3.1 Principle of appropriateness

This principle should guide the first steps in identifying pertinent scientific evidence. It addresses the questions: What is the policy making problem that requires input, and which scientific evidence will be appropriate? The principle of appropriateness responds to the emergence of evidence-*informed* policy making approaches that promote more inclusive conceptions of relevant evidence. It wishes to sensitise for the theoretical and methodological pluralism within science, and for the benefit of capitalising on this diversity. Different policy issues and tasks within the policy making cycle will require different scientific methods and findings, which is why the relationship between scientific evidence and policy making is best conceptualised as a matrix. Matrices embody the idea that the best evidence cannot be determined by one authoritative and universally applied schema, but varies according to the question that needs answering.[32] This approach rates the quality of evidence based on the research question being addressed, expanding the evidence ecosystem and bringing into the arena forms

of evidence that were previously excluded. It emphasises the importance of selecting evidence from sources that are ***appropriate*** for a specific question. According to this method of assessment, questions such as, "What (intervention) works?", "How does it work?", and "Is it safe?" may all be best answered by focussing on different bodies of evidence.[33]

The table below (see Table 1) provides an example of such a matrix, by giving an overview of the various types of studies and their potential value for different policy making questions.

Systematic reviews are the preferred source of evidence for most needs because their purpose is to summarise and synthesise the core research findings of available studies in a specific research area. Due to the variety of systematic reviews (e.g., meta-analyses, scoping reviews, mixed method reviews, qualitative reviews or general overviews), their relevance depends on the source studies they rely on: reviews of experimental studies are most appropriate for questions of effectiveness, while those relying on observational studies, qualitative studies or a combination will be more appropriate for the specification of problems and interventions.

Qualitative research refers to a broad range of methodological approaches that are geared towards developing an in-depth understanding of social reality by focusing on the experiences and views of people, and the contextual circumstances that impact on them. They are thus of particular value in better understanding the specificities of societal problems and the potential impact of interventions. Observational studies group a number of quantitative research approaches that centre on numerical data (e.g., polls, surveys, analyses of pre-existing data), statistical analysis and generalisation in order to describe and explain phenomena across groups of people. These studies are particularly helpful in quantifying the magnitude of policy-relevant problems and causes, and the practicability of interventions. Experimental studies aim at testing the effect of specific factors on a phenomenon within a controlled or real-life setting, and are most appropriate to say something about the potential causes of a problem and the probable effectiveness of interventions.

**Table 1: Matrix of appropriate evidence**

| Policy and Research Question | Qualitative research | Observational studies | | | Experimental studies | | Systematic review |
|---|---|---|---|---|---|---|---|
| | | Survey | Case–control study | Cohort study | Randomised controlled trial | Quasi-experimental study | |
| **Questions related to the issue/problem** | | | | | | | |
| **Size of the problem**<br>What is the prevalence, incidence, rate? | | ++ | | ++ | | + | +++ |
| **Cause of the problem**<br>Why is it a problem? | | | + | + | ++ | | +++ |
| **Questions related to selecting interventions** | | | | | | | |
| **Effectiveness**<br>Does doing this work better than doing that? | | | + | + | ++ | + | +++ |
| **Process**<br>How does it work? | ++ | + | | | + | + | +++ |
| **Value/importance**<br>Does it matter? | ++ | ++ | | | | | +++ |
| **Safety**<br>Will it do more good than harm? | + | | + | + | ++ | + | +++ |
| **Resource use**<br>How much does it cost? | | ++ | | | | | +++ |
| **Cost–effectiveness**<br>Are the benefits worth the extra costs? | | | | | ++ | | +++ |
| **Equity**<br>What impact does it have on health equity? | | + | + | + | ++ | + | +++ |
| **Acceptability**<br>Is it acceptable to key stakeholders, e.g., users, health-care providers? | ++ | + | | | | | +++ |
| **Feasibility**<br>Is it feasible to implement? | ++ | ++ | | | + | + | ++ |
| **Appropriateness**<br>Is it the right intervention for these people? | ++ | ++ | | | | | ++ |
| **Satisfaction**<br>Are users, providers, stakeholders satisfied with the intervention? | ++ | ++ | + | + | + | + | + |

**Source:** adapted from WHO (2021) Evidence, policy, impact. WHO guide for evidence-informed decision-making. Geneva: World Health Organisation, p. 9.

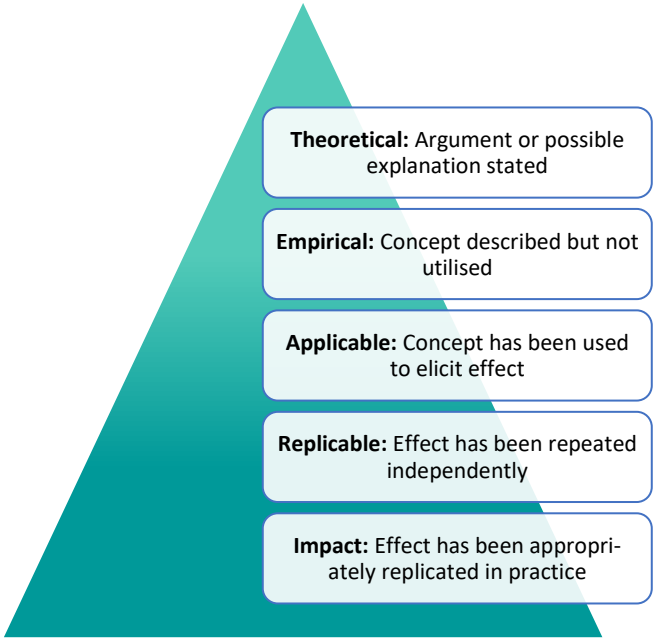
## 3.2 Principle of quality

Once appropriate research evidence has been identified, it is necessary to evaluate the **quality** of the scientific research and its findings. In this regard, it can be advisable to rely on procedures established within science to assign quality, reputation, and impact, as indicated above. For instance, scientific evidence should be selected that has been peer-reviewed, published in high impact and highly ranked journals, has been widely cited in other studies and/or is authored by well-renowned research teams. However, reliance on inner-scientific quality-checks might unreasonably reduce the number of relevant and/or appropriate evidence. Policy making has its own needs in terms of knowledge, and these needs might not coincide with scientific research agendas. Policy makers might require evidence that is innovative, speculative or less established, and has thus not (yet) received the accolades of the scientific community. Moreover, they have to assess the quality of scientific evidence on their own terms because the main focus is the relevance and applicability for policy making. In this sense, it is important to reflect on how to determine an individual study's quality.

A starting point to assess the quality of evidence is to use the conventional quality standards of science: the objectivity, validity, and reliability of a given study, as well as its ethical underpinnings. These three concepts refer to scientific values and quality standards that can never be fully achieved, but need to be rigorously applied – as much as possible – when designing and conducting a study. ***Objectivity*** refers to the idea that scientific evidence is not influenced by personal interests, social biases, value judgements, or other limiting views. Several indicators can help to identify high degrees of objectivity. Does the evidence build on a well-defined theory? Does the research team follow formalised and proven methods? Are findings inserted into broader research debates? Do researchers reflect on their perspectivity and limitations? ***Validity*** relates to the idea that scientific evidence should be well-founded in reality and make statements that accurately mirror the real world. Does a study clearly define the phenomenon under study and the assumed causes, effects, and consequences? Does it describe and measure these dimensions accurately, and is it able to provide convincing proof of the effects of potential interventions? Can the study show that its findings apply to real-life, possibly also beyond the limited scope of the study design? ***Reliability*** expresses the idea that scientific evidence is consistent, robust, and replicable. Can a research study's authors show that their findings are not the consequences of human error, study biases or mistakes made during data analysis? Has the evidence been confirmed or replicated in other studies, thus proving that it is not tied to specific research designs, cases, or contexts? ***Ethical considerations*** have also become an important criterion to assess the quality of science because research should comply with fundamental rights and prevent individual and collective harm. While the extent to which science should be guided and/or limited by ethical norms has been controversially discussed, there is consensus about the fact that the quality of scientific evidence can be assessed against the degree to which ethical concerns are critically reflected and addressed.

The adequacy of these quality standards is undisputed in science. However, it needs to be highlighted that they are applicable to empirical research, that is, to science that strives for knowledge by means of observation or experience, and is thus organised around systematic data retrieval and analysis. Theoretical and speculative science, however, might also be an important source of inspiration for policy making because it can provide new ideas about problems, its causes and consequences, solutions and interventions. For this purpose, it is advisable to extend the principle of quality towards a set of criteria that are more inclusive and favourable for policy making purposes. The following figure summarises these criteria by referring to a rating system that identifies five pertinent dimensions to evaluate quality: the theoretical and empirical content, its applicability, replicability, and its potential impact (see Figure 2).[34]

**Figure 2: Ranking of evaluation criteria**




The first question to ask a scientific study to assess its quality relates to the **theoretical argument, claim or explanation** that is stated. This question is relevant for any scientific study, that is, also empirical examinations, but applies particularly to research whose main ambition is purely theoretical. Does the study clearly define its objectives and concepts? Does it have a clear argument related to the problem under scrutiny? Does it provide a plausible explanation? And may it be used to identify the effects of potential interventions? Such studies are valuable, even if empirical validation is not possible, or not yet feasible. They might be formulated in the form of a descriptive or analytic theory. The second evaluative dimension is the **empirical validity**, which is relevant for research that engages in data retrieval and analysis. Does the study describe, observe and measure a phenomenon by means of a systematic retrieval and analysis of data? Do the analyses test and/or extract clearly delimited explanations? Are questions of empirical validity clearly reflected on?

In regard to policy making, a further evaluation criterion refers to the **applicability**, meaning that the researchers might have been interested in identifying processes or effects related to interventions. Does the study specify interventions and their direct or indirect effects on the problem under analysis? Which methods are used to measure and validate the processes and effects? Do these studies discuss practical implications? The next evaluative question to consider is **replicability**, which refers to the potential

confirmation and generalisability of findings. Can the study claim to be replicable, i.e., is it transparent and viable in its concepts and methods? Is the study able to confirm the validity of a problem, its causes and consequences, and the effects of interventions with reference to other studies? Has the study itself confirmed or replicated findings, maybe even by variating cases, settings, and methods? Finally, the quality of scientific evidence for policy making is determined also by the question of **impact** assessment, which is given when research is interested in validating the practical effects of interventions in the real world. Does the study translate research insights into practical recommendations and conclusions that are empirically validated? Does it confirm or replicate these findings through real-world testing, possibly in different settings? Does it even analyse and evaluate the implementation of interventions in practical settings?

## 3.3 Principle of effectiveness

The previous specifications show that knowledge intermediaries, policy makers and stakeholders will need to evaluate evidence sources against one another. While evidentiary rigour remains important, contemporary understanding of evidence-informed policy making recognises that the way to judge the quality of evidence and identify a good source will often be dependent on the type of evidence in question. For each different method, a different quality criterion may be required.[35] Additionally, no matrix or set of principles can provide a substitute for the employment of professional judgement and discretion on the part of evidence users. Ultimately, the "appropriateness of the study design" and the "quality of research" must be complemented by an evaluative principle that focuses on the need for "good evidence for policy".[36] This is the case because knowledge intermediaries, policy makers and stakeholders must make predictions about the **effectiveness** of a policy intervention for bringing about the intended result. In this regard, effectiveness theory is helpful, given that it proposes three stages to make such predictions. These are: knowing that it *worked/works* somewhere, assessing the possibility that it *could* work here, and predicting that it *will* work here. [37] For these purposes, intermediaries, policy makers and stakeholders will need to rely on their own experiences and skills in order to assess what scientific evidence is helpful, and to what extent, in answering these questions, and/or they might rely on experiences of the targeted groups of the population, among them, in particular, disadvantaged groups that may not normally be consulted or heard. However, intermediaries, policy makers and stakeholders can perform two checks: a horizontal and a vertical one.

The first **horizontal check** refers to the respective policies at work. Evidence users have to identify the specific circumstances that need to be in place if the policy is going to produce a positive contribution to the effect on the problem that they wish to address. They should compile a list of the support factors that do not only include contextual variables (legal framework, political constellations, societal interests and needs, etc.), but also the relevant policy in its internal components, as well as other interrelated

policies that might be incompatible or unfavourable. Horizontal checks require knowledge intermediaries, policy makers and stakeholders to ask questions like: What support factors have to be present if the policy in its component parts is to produce the desired contribution? If the support factors are not all there, what happens? Are there many ways that the policy might make a good contribution? 'Pre-mortem' examinations of a policy can be applied by imagining that a policy has been implemented, and that it has not worked. In these cases, actors involved in policy making could ask: What went wrong? What caused the outcomes not to materialise? Additionally, they can think step-by-step and/or backwards to identify the necessary support factors at the various stages of the policy cycle. What is needed at each stage, for the next stage to happen?

The **vertical check** is about identifying the right level of abstraction or description needed to decide that a policy can be applied to the situation or problem at stake. It requires two key steps. The first step moves up the ladder of abstraction from the policy for which there is good evidence that it worked somewhere. The advice is to take the specific qualities of the policy as it was implemented, and derive from their broader and more generalisable principles to apply elsewhere. In a second step, assessments must climb back down the ladder of abstraction, back to a level of specificity which is necessary if it is to have any actual effect. This is because the policy can only be successful if it works at the lowest level of generality, that is, at the most basic level. As the policy needs to work on the ground, knowledge intermediaries, policy makers and stakeholders have to translate general policy principles into a low-level operational principle that is specific enough to be helpful in the relevant setting. These strategies require them to realise that the policy that they are advocating, developing or introducing will not bring about the intended outcome in and of itself, but happens somehow, by some means.

These techniques to assess policy effectiveness are dependent on the experiences and skills of knowledge intermediaries, policy makers and stakeholders, who might know how to identify supportive factors and desirable policy components. Scientific evidence, however, provides a further source of evidence that can transcend the personal scope of knowledge. In particular, scientific research has a long tradition in conducting **public policy analysis and evaluation** that aim at assessing the (intended and non-intended) effects of policy interventions on societal problems. These research studies are an invaluable source of information for policy making. In this context, a wide array of handbooks[38] have been published. Moreover, agencies or warehouses (e.g., What Works Clearing House, Campbell Collaboration, and Cochrane[39]) have set up platforms and databases with policy assessment evidence that present policies that are backed by good evidence. In addition, public institutions such as parliaments, ministries or agencies have their own research services that carry out assessments of the added value, impact or implementation of public policies, some of which can be consulted.[40]

While evaluation studies have the disadvantage of reflecting the effectiveness of established policies, developed and implemented in the past, thus lagging behind the continuous adaptation of policy making to changed circumstances, they can support the claim that past policy interventions, which exhibited similar principles as the newly formulated policies, have worked somewhere. This allows us to specify policy interventions that have succeeded in places similar to the policy making's own setting. Additionally, policy analysis and evaluation also comprise systematic reviews, and multi-centred studies that allow us to reflect on contextual conditions affecting policy effectiveness. In all these cases, it is necessary to remind ourselves that public policy analyses and evaluations also need critical examination regarding the principles of appropriateness and quality, as specified in the previous sections.

## 3.4 Principle of scientific expert deliberation

Policy analysis and evaluation studies are considered to be more valuable for policy making than expert opinion acquired through oral consultations with scientific experts because ad-hoc interventions might quote scientific studies and explicate scientific findings, but they are not able to warrant a trustworthy claim as to the effectiveness of a policy: Expert opinions cannot validate the probable success or failure of a policy, when compared to rigorous research methods (e.g., randomised controlled trial), which analyse the effects of interventions under scientific conditions.[41] As stipulated in the previous sections, knowledge intermediaries, policy makers and stakeholders need thus to choose appropriate and high-quality evidence in order to identify adequate and effective policies.

However, the principles of appropriateness, quality and effectiveness do not preclude the importance of **scientific evidence deliberation** for policy making. Scientific evidence (e.g., statistical effects, numerical observations, empirical facts) does not necessarily speak for itself, but more often than not requires weighting, evaluation, and interpretation, particularly with respect to the diversity of societal interests, political choices and orientations involved in policy making. As a consequence, policy making requires the right balance of good scientific evidence, experience-based judgement and political reflections in order to assemble the necessary knowledge to identify adequate and effective policy interventions. Restricting the available knowledge to individual sources, such as policy evaluation databases, rigorous experimental research or review studies, can produce incomplete or misleading policy results.[42]

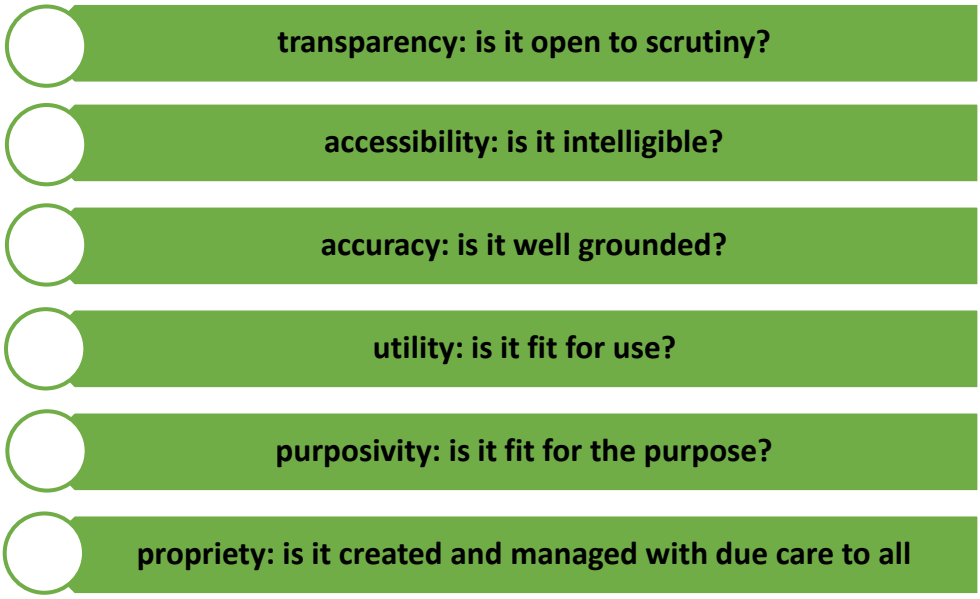
An adequate and feasible way of developing this balance, in an inclusive and productive way, is to conduct additional evidence deliberations among various sources of knowledge, as is often practiced in regard to policy consultations and deliberations. The variety of knowledge can thus be purposefully used to identify the core of the problem to be addressed, the decisive causes and consequences, the most promising

policy solutions, and the necessary supportive contextual factors to ensure its effectiveness. Evidence deliberations will not level out different forms of knowledge because participants are aware about the differences between scientifically validated evidence, professional expertise or practical experiences, but they can help to generate the complementarity between different forms of knowledge, and the complex wisdom necessary for policy making.

Scientific research is contributing to this development towards a more inclusive approach of knowledge production by enriching research with **participatory methodologies**. Research methods have been developed to increase collaboration with and participation in research subjects, among them citizens, groups, local communities or civil society organisations. This is true for methodological approaches, such as participatory action research,[43] which involves members of the groups or communities into the processes of data gathering, analysis and/or interpretation. The same applies to the broader field of citizen science,[44] which builds on the participation of the general public. While the degree of involvement and participation varies greatly, the commitment to more collaboration and participation has been disseminated in many different research areas and scientific disciplines (e.g., biodiversity, oceanography, health, history or social sciences). The inclusion is primarily targeted at citizens as amateur participants, or nonprofessional researchers, but also addresses decisionmakers, stakeholders and practitioners. It indicates that the involvement of different forms of knowledge and epistemologies bears substantial benefits, not only to broaden scientific wisdom, but also policy making knowhow. It is, nonetheless, important to ensure that the involvement of citizens, individual practitioners or civil society organisations is done in a way that brings both benefits to scientific research soundness and to participants who should not just be used for purely ancillary work and/or to justify a research study and/or a certain outcome. One avenue would be to assess the contribution of citizens or civil society organisations to evidence informed policy making through co-ownership of scientific research.

The recommendation to organise and host policy evidence deliberations involves the necessity to channel and process the diversity of perspectives and knowledge. In this context, evidence principles can be used to ascertain not only the value of different sources of knowledge, but also the contributions of different claims within evidence deliberations. One of these proposals lists six principles[45] that can be applied in regard to different participants (e.g., practitioners, policy makers, stakeholders, researchers, citizens, organisational representatives). According to these principles (see Figure 3), knowledge claims must conform to the requirement of transparency and accessibility, accuracy, utility and purposivity, as well as propriety. Following these principles, evidence deliberations might help to identify and combine different types of policy-relevant knowledge.

**Figure 3: Evidence principles**




## 4. Conclusions and synthesis

Scientific evidence plays an important role in policy making, even though this role should not be overstated, given that good policies depend on several supportive factors (e.g., legal frameworks, institutional capabilities, political skills, societal compliance), and thus require the right balance of different sources of knowledge (e.g., scientifically validated evidence, professional expertise, practical experiences). This manual is committed to an assessment of the role of scientific evidence in policy making, and aims to provide guidance for knowledge intermediaries, policy makers, stakeholders and interested citizens to navigate through a complex field, given the diversity of available scientific evidence in terms of disciplines, approaches and issues, and the variety of policy problems and tasks. For this purpose, it proposes four consecutive principles to evaluate the adequacy and utility of scientific evidence for policy making purposes: the principles of appropriateness, quality, effectiveness, and evidence deliberation. Guidelines and recommendations can be summarised as follows:

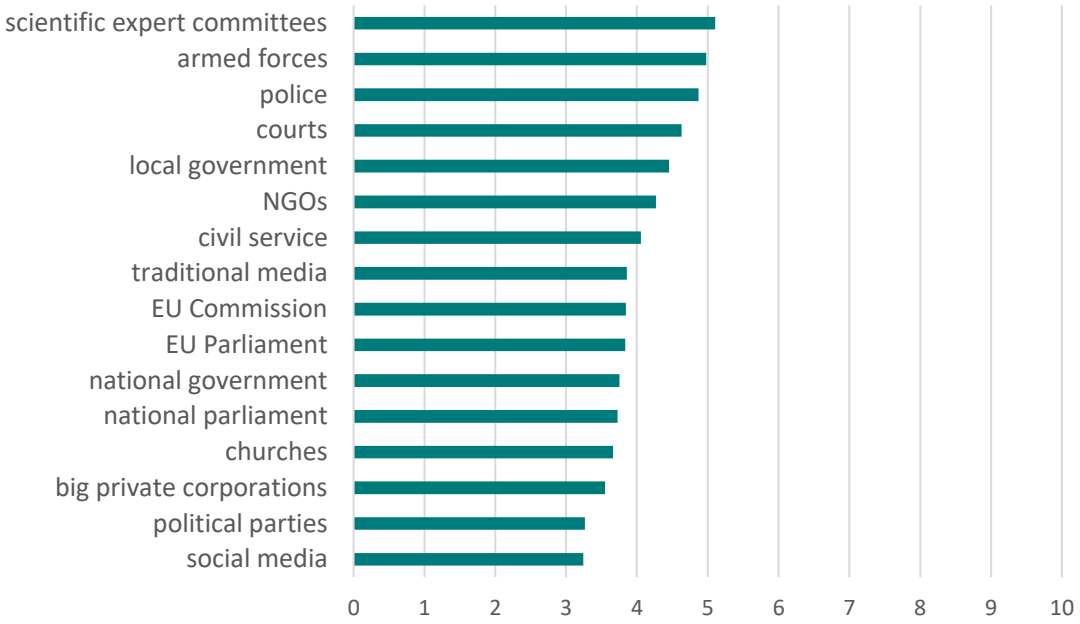
- Policy makers are responsible and accountable for decision making, which is why scientific evidence can only play a supportive role. Its mission is to inform decision makers about the adequacy and effectiveness of policy interventions, about expected and non-intended consequences.
- In democratic systems, scientific evidence can help to increase the trustworthiness of political institutions and policy makers among the citizenry in terms of competence and effectiveness, thus complementing other criteria, such as lawfulness, transparency, and accountability.

- The consideration of scientific evidence must be inclusive because science is marked by a high degree of differentiation and specialisation, thus providing very diverse forms of evidence in terms of theory, methodology and findings. The idea of evidence-*based* policy making should be supplanted by a more modest and inclusive approach of evidence-*informed* policy making.
- The richness of scientific evidence is a curse and a blessing for policy making, and implies that no homogenous, standardised quality-checking tool is available to identify and select good evidence. Instead, inclusive matrices, hierarchies and principles of evidence should be applied to determine what evidence to consider in which ways during policy making.
- Using the principle of appropriateness can help to determine which forms of evidence may be "good enough" for responding to the policy issues at different stages of the policy making process.
- Despite the diversity of knowledge sources and claims, different forms of evidence are not equally good, meaning that scientific evidence needs to be assessed in regard to quality criteria in terms of theoretical claim, empirical validity, applicability, replicability and impact assessment.
- Policy effectiveness is a major concern of policy makers, but effectiveness can be appraised by making use of a broad range of public policy analyses, evaluation studies and related databases and platforms.
- Policy makers should promote policy evidence deliberations, involving different agents and sources of knowledge in order to respond to gaps in policy-useful evidence, scientific dissent, shortfalls in the synthesis of available evidence, conflicting information of equal quality, and the need to respond to public opinion and wishes.

## 5. Research background

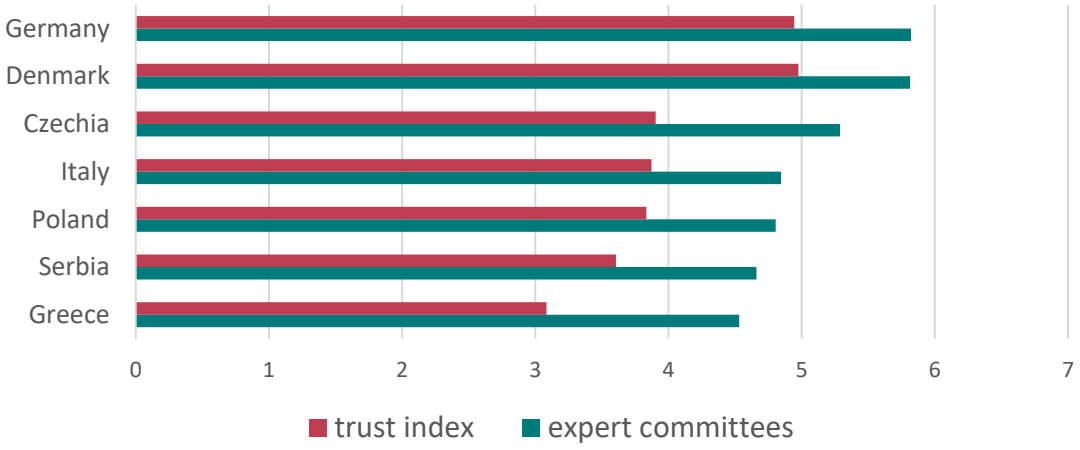
The research findings of the EnTrust consortium show that scientific evidence is important criteria for citizens when assessing trustworthiness. The mass population survey we conducted in the seven countries of the consortium (the Czech Republic, Denmark, Germany, Greece, Italy, Poland and Serbia) demonstrate that personal trust in institutions is highest for committees of scientific experts (an average of 5.1 on an eleven-point scale), and much lower for national government, parliaments and political parties (3.8, 3.7 and 3.3, respectively), as Figure 3 shows. Citizens are more optimistic in their expectations that institutions will perform well, but also here scientific expert committees rank first (an average of 5.9), while national governments (5.1), parliaments (5.0) and political parties (4.6) are relegated to lower ranks.

**Figure 4: Personal trust in institutions (means, 11-point scale)**




Levels of personal trust diverge considerably between countries (see Figure 4), with Germany and Denmark at the higher end, Czechia, Italy and Poland in intermediate positions, and Serbia and Greece at the lower end. However, also in the low trust countries, scientific committees are much better assessed than the rest of the institutions (see the trust index measuring average trust levels across all institutions), with 0.8 to 1.5 points difference. Citizens rate the performance of scientific committees positively, thus certifying that these groups exhibit a clear commitment to fulfilling their mission in generating evidence.

**Figure 5. Personal trust (means, 11-point scale)**



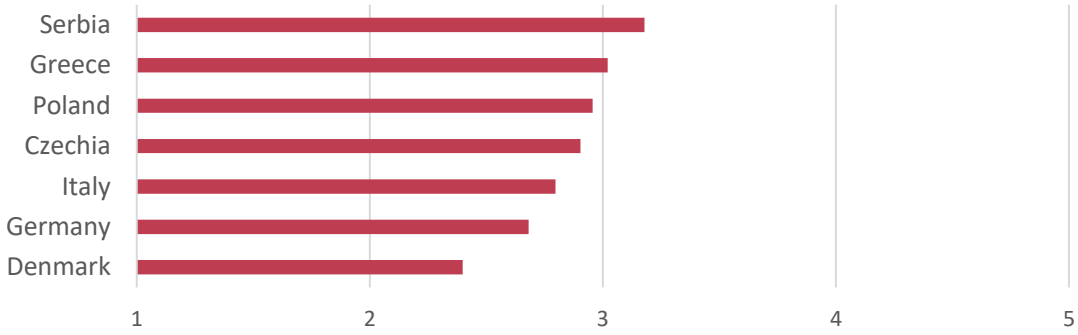

The high relevance of scientific evidence has also implications for policy making because citizens testify that competence is an important criterion to assess a politician's trustworthiness. Overall, European citizens assess the trustworthiness of politicians rather negatively because 54% say that they are unreliable, 64% believe they lie, and 66%

argue that they are more interested in being re-elected than in solving problems. Citizens are less often critical of politicians when assessing their law abidingness, although still 43% do not think that politicians obey the law. Scepticism is less diffused in regard to the competence of politicians (39% do not think that they are competent). Overall, of all five criteria of trustworthiness, politicians thus perform best regarding competence. Country differences prevail, with Poland, Serbia, and Czechia disparaging politicians most often as incompetent.

The expectation that politics should be made competently is subscribed by a further item of the questionnaire. It indicates that 58% of the respondents expect that future political decisions will conform to factual information and available expertise. This opinion is most diffused in Poland (79%), Germany (74%) and Denmark (66%), while in Greece (30%), Serbia (45%) and Czechia (47%), expectations are much lower, possibly due to low levels of generalised trust in institutions. These findings suggest that political institutions are able to maintain levels of trust, or even increase their trustworthiness, when they ensure – among other important factors – that policy making is sufficiently based in scientific expertise and related deliberations.

This conclusion, however, needs to be qualified partly because European citizens are not unconditionally trustful of science. In fact, distrust in science spreads across the seven countries of our study, when considering that 31% of the respondents agree that the "dangers of vaccines are being hidden by the medical establishment". Even 16% of the respondents agree that climate change is a hoax perpetrated by corrupt scientists and politicians. Variations between countries broadly correspond to the differences already indicated (see Figure 5 with average rates of agreement in regard to the aforementioned vaccines).

**Figure 6: The dangers of vaccines are hidden (means, 5-point scale)**




Findings thus unveil that citizens are generally very supportive of the idea that science can be trusted and that scientific evidence can be a trust-enhancing factor. Citizens seem to approve that policy making should be informed and backed by scientific evidence. And a related competence seems to be an important ingredient of public trust

in political institutions and politicians. However, the trust-benefit is not generally accorded, as there are doubts about the role of science in politics. Trust seems to be conveyed conditionally. This is particularly true in countries with low levels of trust, where it is expected that science does not generally play a beneficial role. In this regard, we can thus speak of watchful or enlightened forms of trust in science and evidence-informed politics. And this implies that citizens expect political decision makers to use scientific evidence, but in a prudent way.

## 6. Research parameters and project information

The EnTrust project is funded by the EU in the context of the Horizon2020 Research and Innovation Programme (Grant Agreement No. 870572). The recommendations and findings presented in this manual are based on desk research, ongoing discussions within the EnTrust consortium and the results of a lunchtime expert roundtable discussion between the EnTrust team, Christiaan Van Lierop and Nera Kuljanic (European Parliament Research Service) and Soohyun Lee (Capgemini).

The EnTrust consortium consists of eight partner teams conducting research and dissemination activities in seven countries (the Czech Republic, Denmark, Greece, Germany, Italy, Poland and Serbia) and at the EU-level. Its work-plan consists of seven work-packages devoted to the systematic analysis and reflection of different aspects of the topic:

1. The Theoretical and Normative Underpinnings of Trust and Distrust
2. Trust and Distrust at the Street-level of Public Policy
3. The Role of Democratic Social Movements in the Formation of Trust and Distrust
4. The Role of the Media in Trust and Distrust Building: Information or Polarisation?
5. Developmental-psychological Insight into Trust and Distrust
6. Appraising Citizens' Trust and Distrust in Governance: Forms, Determinants, Effects and Remedies
7. Civilising Trust and Distrust: Role Models and Recommendations

Further work-packages are committed to the dissemination, exploitation and communication of research, management, and ethical issues.

**Consortium:**

Civil Society Europe (Brussels, Belgium)
Masaryk University (Brno, Czech Republic)
Panteion University of Social and Political Sciences (Athens, Greece)
University of Belgrade, Institute of Philosophy and Social Theory (Serbia)
University of Copenhagen (Denmark)
University of Siegen (Germany)
University of Siena (Italy)
University of Warsaw (Poland)

Further information on the EnTrust project is available at: www.entrust-project.eu

## 7. Endnotes

[1] See Section 5 (´Research background‘), and the EnTrust reports documenting the assessment of citizens in regard to street-level encounters with public authorities (Entrust, Integrated Report on Trust and Distrust at the Street-level of Public policy, 2021), the views of social movement activists and engaged citizens in regard to political institutions (EnTrust, Integrated Report on the Role of Democratic Social movements, 2022), and public debates in the mass media about the Covid-19 pandemics (EnTrust, Integrated Report on Trust and the Media, 2022).
[2] Young, Ken, Deborah Ashby, Annette Boaz, and Lesley Grayson. "Social science and the evidence-based policy movement." Social policy and society 1, No. 3 (2002): 215-224.
[3] Sutcliffe, Sophie, and Court, Julius. "Evidence-Based Policy making: What is it? How does it work? What relevance for developing countries?." (2005).
[4] Bowen, Sarah, Tannis Erickson, Patricia J. Martens, and Susan Crockett. "More than “using research”: the real challenges in promoting evidence-informed decision-making." Healthcare Policy 4, no. 3 (2009): 87.
[5] Boaz, Annette, Huw Davies, Alec Fraser, and Sandra Nutley. 2019. “WHAT WORKS NOW? : Evidence-Based Policy and Practice Revisited”. Policy Press; Stockard, Jean, and Timothy W. Wood. "The threshold and inclusive approaches to determining “best available evidence” An empirical analysis." American Journal of Evaluation 38, no. 4 (2017): 471-492.
[6] Boaz, Annette, Huw Davies, Alec Fraser, and Sandra Nutley. 2019. WHAT WORKS NOW? : Evidence-Based Policy and Practice Revisited. Policy Press.
[7] Ibid.
[8] Cairney, Paul. The politics of evidence-based policy making. Springer, 2016.
[9] For example, see Cairney, Paul, and Kathryn Oliver. "Evidence-based policy making is not like evidence-based medicine, so how far should you go to bridge the divide between evidence and policy?." Health research policy and systems 15, no. 1 (2017): 1-11.

[10] World Health Organization. "Evidence, policy, impact: WHO guide for evidence-informed decision-making." (2021).
[11] Head, Brian W. "Toward more “evidence-informed” policy making?." Public administration review 76, no. 3 (2016): 472-484.
[12] For further reading on this see Head, Brian W. "Toward more “evidence-informed” policy making?." Public administration review 76, no. 3 (2016): 472-484.
[13] To read about the ongoing impact of EBP on different policy areas see Boaz, Annette, Huw Davies, Alec Fraser, and Sandra Nutley. 2019. WHAT WORKS NOW? : Evidence-Based Policy and Practice Revisited. Policy Press.
[14] Boaz, Annette, Huw Davies, Alec Fraser, and Sandra Nutley. 2019. WHAT WORKS NOW? : Evidence-Based Policy and Practice Revisited. Policy Press.
[15] Ibid. p. 244
[16] Rescher, Nicholas. The Limits Of Science: Revised Edition. University of Pittsburgh Pre, 1999.
[17] Fallibility and uncertainty in science refer to the inevitable margin of error in research and of its subsequent claims. For further reading see Jamieson, Dale. "Scientific uncertainty and the political process." The Annals of the American Academy of Political and Social Science 545, no. 1 (1996): 35-43.
[18] Walshe, Kieran, and Huw TO Davies. "Research, influence and impact: Deconstructing the norms of health services research commissioning." Policy and Society 29, no. 2 (2010): 103-111.
[19] Sanderson, Ian. "Evaluation, policy learning and evidence-based policy making." Public administration 80, no. 1 (2002): 1-22.
[20] Françoise, Margaux, Cléa Frambourt, Paige Goodwin, Fabian Haggerty, Marjolaine Jacques, Maya-Lhanze Lama, Clara Leroy et al. "Evidence based policy making during times of uncertainty through the lens of future policy makers: four recommendations to harmonise and guide health policy making in the future." Archives of Public Health 80, no. 1 (2022): 140.
[21] For further reading on scientific paradigms see the work of Kuhn e.g. in Brad Wray, K. "Kuhn and the discovery of paradigms." Philosophy of the Social Sciences 41, no. 3 (2011): 380-397.
[22] Boaz, Annette, Huw Davies, Alec Fraser, and Sandra Nutley. 2019. WHAT WORKS NOW?: Evidence-Based Policy and Practice Revisited. Policy Press.
[23] This has been called an “infodemic” by the WHO, see Diseases, The Lancet Infectious. "The COVID-19 infodemic." The Lancet. Infectious Diseases 20, no. 8 (2020): 875.
[24] Evans, David. "Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions." Journal of clinical nursing 12, no. 1 (2003): 77-84.
[25] Cartwright, Nancy, and Jeremy Hardie. Evidence-based policy: A practical guide to doing it better. Oxford University Press, 2012.
[26] Ibid.
[27] Goldman, Alvin I. "Experts: Which ones should you trust?." Philosophy and phenomenological research 63, no. 1 (2001): 85-110.
[28] Moynihan, Ray, and Lisa Bero. "Toward a healthier patient voice: more independence, less industry funding." JAMA internal medicine 177, no. 3 (2017): 350-351.
[29] As is the case for the founders of the THEARI evidence standard. See Ruggeri, Kai, S. Linden, Claire Wang, Francesca Papa, Zeina Afif, Johann Riesch, and James Green.

"Standards for evidence in policy decision-making." Nature Research Social and Behavioural Sciences (2020).
[30] See Feyerabend, Paul. 2010. Against Method. London: Verso.
[31] Ibid.
[32] Leir, S., and J. Parkhurst. "What is good evidence for policy?." (2016).
[33] World Health Organization. "Evidence, policy, impact: WHO guide for evidence-informed decision-making." (2021).
[34] See Ruggeri, Kai, S. Linden, Claire Wang, Francesca Papa, Zeina Afif, Johann Riesch, and James Green. "Standards for evidence in policy decision-making." Nature Research Social and Behavioural Sciences (2020).
[35] Leir, S., and J. Parkhurst. "What is good evidence for policy?." (2016).
[36] Ibid. p. 5
[37] Cartwright and Hardie (p. 72)
[38] See, for instance, Stuart S. Nagel (ed.) (2002). Handbook of Public Policy Evaluation. Thousand Oaks: Sage; Frank Fischer, Gerald J. Miller and Mara S. Sidney (eds.) (2007). Handbook of Public Policy Analysis. New York: Routledge; Frédéric Varone, Steve Jacob and Pirmin Bundi (eds.) (2023). Handbook of Public Policy Evaluation. Cheltenham: Edward Elgar. There are also specialised publications addressing specific policy fields: Katherine E. Ryan and J. Bradley Cousins (eds.) (2009). The Sage International Handbook of Educational Evaluation. Los Angeles: Sage; Helge Jörgens, Christoph Knill and Yves Steinebach (eds.) (2023). Routledge Handbook of Environmental Policy. Milton Park Abingdon: Routledge; World Health Organization (2021). "Evidence, policy, impact: WHO guide for evidence-informed decision-making.", pp. 53ff.
[39] WWC | Find What Works! (ed.gov), Better evidence for a better world, Our evidence | Cochrane
[40] One example is the European Parliamentary Research Service (EPRS), which regularly carries out policy evaluation studies, including European added value, impact or implementation assessments. The European Parliament also has a Panel on the Future of Science and Technology (STOA), which operates a research service specialising in the evaluation of science and technology policies and regularly publishes its reports.
[41] Cartwright, Nancy, and Jeremy Hardie. Evidence-based policy: A practical guide to doing it better. Oxford University Press, 2012.
[42] Stockard, Jean, and Timothy W. Wood. "The threshold and inclusive approaches to determining “best available evidence” An empirical analysis." American Journal of Evaluation 38, no. 4 (2017): 471-492.
[43] See, for instance, Reason P, Bradbury H, (eds.) (2008). The Sage Handbook of Action Research: Participative Inquiry and Practice (2nd ed.). Los Angeles, Calif.: SAGE; Chevalier, J.M. and Buckles, D.J. (eds.) (2008) A Guide to Collaborative Inquiry and Social Engagement. Sage India and IDRC, Ottawa and New Delhi; McIntyre, A. (2008) Participatory Action Research. Sage, CA. ISBN 978-1412953665.
[44] See, for instance, Katrin Vohland (ed.) (2021). The Science of Citizen Science. Cham, Switzerland: Springer. See also the Journal Citizen Science: Theory and Practice, published by the Citizen Science Association.
[45] See discussion in Boaz, Annette, Huw Davies, Alec Fraser, and Sandra Nutley. 2019. WHAT WORKS NOW? : Evidence-Based Policy and Practice Revisited. Policy Press.