

# Vision assessment

An orientation framework for the practice of  
technology assessment

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# Preface

This working paper presents an orientation framework to conduct vision assessment projects. The orientation framework has been developed in the course of the longstanding theoretical and methodological research on Vision Assessment at the Institute for Technology Assessment and Systems Analysis (ITAS) and was finalized during the focus project „Socio-technical futures as socio-epistemic practices. An analytical matrix for technology assessment“ (2020–2022: [https://www.itas.kit.edu/english/projects\\_loes20\\_sozteczuk.php](https://www.itas.kit.edu/english/projects_loes20_sozteczuk.php)).

The initial and leading author is Dr. Christoph Schneider (until May 2022 scientific researcher at ITAS). The orientation framework was finalized in November 2022 in collaboration with the project team members listed as authors. It depicts a condensate of the conceptual and methodological work on Vision Assessment. The framework is intended as an orientation guide for interested researchers in the field of technology assessment and beyond to conduct their own vision assessment studies. Special thanks to the student assistant Mariana Leshkovych for the graphic design of the paper.

Karlsruhe, May 2023

PD Dr. Andreas Lösch

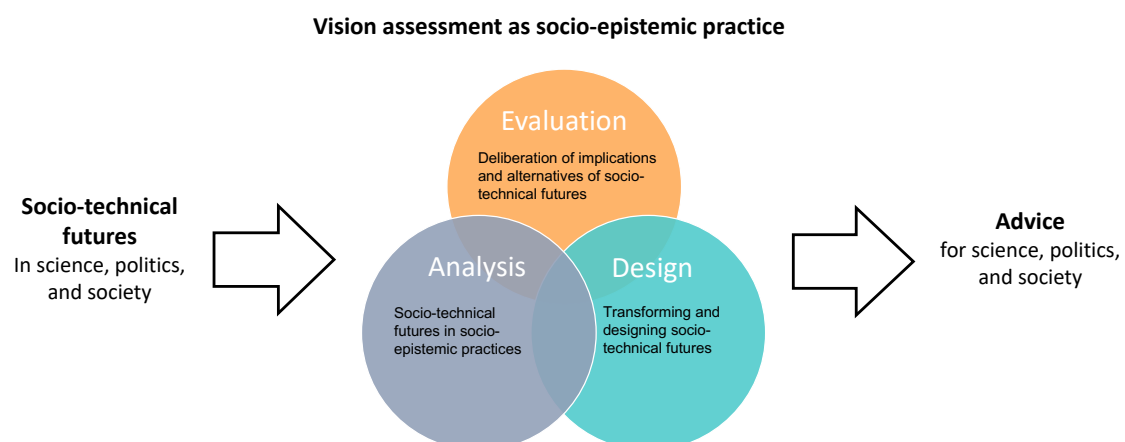
Head of the project and of the ITAS Research Group „Socio-Technical Futures and Policies“

# Introduction

Vision assessment is a research approach in technology assessment that investigates the importance and influence of visions of futures on innovation and transformation processes. It supports science, politics, and society in decision-making and contributes to their action orientation. It does not aim at predicting futures, nor at merely critiquing the content of certain future narratives, but at researching the effects and impacts of future visions in the present. Visions are socio-epistemic practices with specific functions. They fulfill a *translation function* as interfaces between present, past, and the future, a *communicative function* to enable future-oriented discourses, a *coordinative function* to allow for collective action, and an *activation function* that implements normative force and guides interpretations and motivations (for a more detailed discussion of these functions, see, e.g., Lösch 2022).

Vision assessment studies do not follow a standardized scheme. Their design depends on the research interest, the research object, as well as the available knowledge, and the possibility of including the researchers in the research context (for different designs in research practice, see, e.g., Lösch, Roßmann, and Schneider 2021).

The guiding questions, methods, and procedures for analyzing, evaluating, and designing visions outlined below are established tools for gathering and interpreting the practical functions of visions in an empirical and conceptual way. They can be varied, combined, and complemented. Depending on the research interest, analysis, evaluation, and design are of different importance: If you want to assess the way of dealing with visions of the future, their prior analysis is essential. If you want to intervene in a designing way, both an analysis and an evaluation should have taken place. An analysis can also be performed without evaluation or design.



# Analysis

**Translation function:** How are present and future translated into and interrelated with each other by visions? What is the narrative of the vision, what problems to solve are described? What is the proposed solution for the future? What are the primary means for this?

**Communicative function:** Does a discourse take place about these visions – or are there only individual statements? How and who agrees on the visions and their desirability, realization, prevention, undesirability, etc.? What are the different discourse positions, where do they meet, how and in what way do they differ? Who participates in communication, who does not? What can all those involved agree on? Do visions change the communication on a societal subject? What controversies are initiated by visions?

**Coordinative function:** Do activities or actor networks emerge as a result of the communication about visions? Do visions lead to collective action, so that different actors perform actions that are oriented along the lines of visions? What consequences do these actions have on arrangements, funding, research projects, etc.?

**Activation function:** How is the urgency of visionary problem-solving justified? Which actor groups are invited to participate, which are held accountable? Which norms and values are strengthened or weakened?

Subject of analysis	Guiding questions and <i>methods/procedures</i>
Discourses	<ul style="list-style-type: none"> <li>- How do visionary statements by different actors allocate meaning to a technology?</li> <li>- Who speaks up and how?</li> <li>- Which discourse positions do the actors take in the discourse?</li> <li>- Which means and media are used to conduct the discourse (scientific journals, mass media, social media, scientific press, political debates, etc.)?</li> <li>- What constellations of visions emerge in the discourse? How do different visions complement each other? Which visions are dominant in a field, which are marginal?</li> </ul> <p style="text-align: center;"><i>Discourse and media analyses (scientific, political, economic, civil society discourses; media analyzed: books, films, digital media, events, etc.); interviews (e.g., proponents of the vision, critics of the vision, researchers); research literature (technology sciences, TA, etc.), science policy documents (research),...</i></p>

Subject of analysis	Guiding questions and <i>methods/procedures</i>
Narratives	<ul style="list-style-type: none"> <li>- What is narrated in the visions? How is a (new) technology linked to social values? What time frames are assumed for realizing the vision? Which type of change is being promoted? What problems are assessed for which the new technology is supposed to be a solution?</li> <li>- Which discursive elements are combined into narratives and how? With what elements from other discourses do the narratives connect the future vision?</li> <li>- What are the relations between the respective technologies and societal structures and the specific fears and hopes that are associated with them (e.g., the way the health care system or the labor market are organized)?</li> </ul> <p><i>Analyses of narratives: Analysis of the constellations of different discursive elements and (re-)presentation techniques; comparative analysis of narratives of certain organizations and institutions; differentiation of various political and cultural narratives; analysis of the different ways of framing problems in different narratives;...</i></p>
Actors	<ul style="list-style-type: none"> <li>- Which actors comment on the vision?</li> <li>- Which actors are addressed by the vision (e.g., who should use, design, develop the future technology)?</li> <li>- What is the structure of positions of power (e.g., what influence can the actors have based on their political or economic position)?</li> <li>- What actions result from addressing the vision?</li> <li>- What does the everyday life of the “visionaries” look like?</li> <li>- Which roles are supported by future visions, and which new roles are constructed?</li> </ul> <p><i>Mapping of actors and their constellations, organizations, products, and companies: research, interviews, discourse analyses on the role of actors that the vision requires; analysis and reconstruction of actor interactions and their networks; ...</i></p>
Socio-technical constellations	<ul style="list-style-type: none"> <li>- Which technologies, societal institutions, or structures, as well as which societal problems does the vision link to?</li> <li>- How do new, visionary, not-yet-existing technology and existing socio-technical constellations connect?</li> <li>- Are there (already) artifacts that materialize the vision, or through which it can be problematized?</li> <li>- What economic power relations play a role in the constellations?</li> </ul> <p><i>Socio-material description (e.g., actor-network theory), analyses of systems and constellations, ethnographic observation, artifact analyses, interviews (how is the socio-technical reality described?),...</i></p>

Subject of analysis	Guiding questions and <i>methods/procedures</i>
Socio-technical processes	<ul style="list-style-type: none"> <li>- How does/did the relevant socio-technical constellation change over time?</li> <li>- What are the precursors of the visionary technology?</li> <li>- In what contexts has the visionary technology already been discussed?</li> <li>- Does the vision enable the continuity or discontinuity of existing processes?</li> <li>- Is there specific research funding? Investments in the capital market? Political promises? Civil society protest?</li> <li>- Which structures support the realization of the vision or prevent it?</li> </ul> <p><i>Document analysis, research literature, interviews; process analyses, historical research, hype-cycle analyses, connecting analyses at the micro, meso, and macro levels (multi-level perspective),...</i></p>

# Evaluation

**Translation function:** How one-sided, plausible, ethically justified, etc. is the visions' problem description and solution? Do the visions provide relevant solutions for societal problems?

**Communicative function:** Do visions allow for a democratic future discourse? How justified is the inclusion/exclusion of certain actors? Are discourses dominated by problematic power asymmetries?

**Coordinative function:** Does vision orientation guide democratic collective action? How should coordination effects be evaluated? Do desirable cooperations emerge? Do problematic path dependencies arise? Who should be integrated or motivated to participate? Who should have less influence on the vision and its coordinative effects? Do the visions contribute to transformation processes, for example in the sense of sustainable development?

**Activation function:** Is the vision's normative positioning and call to action justified? Under what conditions is the pressure on actors to participate justified? Are there alternatives? Do all relevant actors get involved to design the vision?

Evaluation-criterion	Guiding questions and <i>methods/procedures</i>
Sustainability	<ul style="list-style-type: none"> <li>- Do actions oriented along the vision contribute to sustainable development?</li> <li>- In what ways is sustainable development relevant in visionary discourse?</li> </ul> <p><i>Systems analyses, life cycle assessments, sustainability assessments, scenario workshops, dialogues, analyses of the correlation with guiding principles of sustainable development,...</i></p>
Democracy	<ul style="list-style-type: none"> <li>- Does the vision correspond to democratically legitimized goals of the receptive society?</li> <li>- Does the vision enable a democratic process of negotiation, or does it prevent it?</li> </ul> <p><i>Discourse analyses, political-theoretical interpretations, policy analyses, analysis of power constellations,...</i></p>
Plurality	<ul style="list-style-type: none"> <li>- Does the vision contribute to thinking in diverse alternatives?</li> <li>- Are different actors (diversity: regions, groups, cultures, etc.) involved in the interpretation of the vision?</li> </ul> <p><i>Plurality assessments, conflict analyses (e.g., considering resistance in organizational practices as important aspects in the process of promoting societal change),...</i></p>



Evaluation-criterium	Guiding questions and <i>methods/procedures</i>
Plausibility	<ul style="list-style-type: none"> <li>- Can evidence be found for the goals discussed in the vision as well as for the societal and technical means that are required for their implementation?</li> <li>- Is the vision considered plausible by various actors?</li> </ul> <p><i>Narrative analyses, argument analyses (incl. topos analyses), discourse analyses,...</i></p>
Presence	<ul style="list-style-type: none"> <li>- Can the visions be related to the present? In what way are they connectable? Are the visions a niche phenomenon, or do they have broader effects?</li> <li>- Does the space of possibilities expand as a result of visionary communication?</li> </ul> <p><i>Delphi, literature review, expert interviews, workshop procedures,...</i></p>

# Design

**Translation function:** Which alternative visionary narratives are possible as translations between and as interrelations of the present and future problem-solving? How can societal problems and goals be made visible? How can visions be used to better identify problems of contemporary society and their solutions? How can alternative future orientations be explored?

**Communicative function:** Who should participate in the communication process? How can we moderate the process of understanding and enable democratic understanding? How can we use visions to reflect on desirable futures? How does a vision have to be designed in order to promote complex and diversely balanced reflection processes?

**Coordinative function:** What forms of cooperation and coordination have to be created and promoted to design and realize a desirable vision?

**Activation function:** What changes can be initiated with a vision? How should a vision be transformed or designed to motivate decisions and actions in favor of responsible research and development (in the sense of responsible research and innovation, in short: RRI)? How can the relevant actors be motivated to make appropriate changes in their actions?

Design practice	Guiding questions and <i>methods/procedures</i>
Identification of alternatives	<ul style="list-style-type: none"> <li>- How can the space of what is imagined be expanded (e.g., visionary breaking up of current self-evident facts)?</li> <li>- How can marginalized actors be supported to actively engage in discourses about the future?</li> </ul> <p><i>Scenario methods for questioning anticipatory assumptions, vision comparisons, stakeholder workshops, future workshops,...</i></p>
Vision construction	<ul style="list-style-type: none"> <li>- How can visions be created and assessed in a participatory and co-creative way?</li> <li>- What reflections should take place in the design process? For example: Which changes are desirable? What do we want to have achieved in 10 or 20 years? What should the world of the future be like? Which utopian potentials are inherent in our practice?</li> </ul> <p><i>Participatory processes, future workshops, citizen jury, artistic practice, utopian literature, co-creative scenario processes,...</i></p>

Design practice	Guiding questions and <i>methods/procedures</i>
Process transformation	<ul style="list-style-type: none"> <li>- How can current innovation processes be better reflected and altered towards desired futures using the designed visions?</li> <li>- How can discourses and actors be influenced in advisory processes in order to improve their visionary orientation?</li> <li>- How can actors be advised using the designed visions to prevent them from orienting their decisions (e.g., funding decisions) along problematic or under-complex visions?</li> </ul> <p><i>Action and real-world lab research, reflection workshops, interactive methods (e.g., STIR method), public relations for alternative visions, science communication informed by technology assessment, active engagement in public discourse and dialogue with decision-makers,...</i></p>

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