Bundesministerium
für Wirtschaft
und Klimaschutz

Fraunhofer
ISI

Scenarios of a desirable and fair energy transition

Authors:
Ewa Dönitz, Barbara Breitschopf, Uta Burghard

No. S03/2023

Imprint

Scenarios of a desirable and fair energy transition

Authors

Ewa Dönitz, ewa.doenitz@isi.fraunhofer.de;
Fraunhofer Institute for Systems and Innovation Research ISI

Barbara Breitschopf, barbara.breitschopf@isi.fraunhofer.de;
Fraunhofer Institute for Systems and Innovation Research ISI

Uta Burghard, uta.burghard@isi.fraunhofer.de;
Fraunhofer Institute for Systems and Innovation Research ISI

Picture credits

Cover page: Shutterstock.com/TechSolution

Recommended citation

Dönitz, Ewa; Breitschopf, Barbara; Burghard, Uta (2023): Scenarios of a desirable and fair energy transition. Working Paper Sustainability and Innovation No. S 03/2023. Karlsruhe: Fraunhofer ISI.
https://doi.org/10.24406/publica-1173

Published

April 2023

Digital Object Identifier (DOI)

doi 10.24406/publica-1173

Contact

Fraunhofer Institute for Systems und Innovation Research ISI

Breslauer Strasse 48, 76139 Karlsruhe, Germany
Ewa Dönitz, ewa.doenitz@isi.fraunhofer.de

Abstract

The paper was created in the context of the project Akzept and focuses on the description of the scenario process and its results in the form of three scenarios for a desirable energy transition.

The project aimed at analysing the influence of participation, communication, and selected socio-economic criteria on the acceptance of the energy transition. The impact of self-supply of electricity and membership in a citizen energy initiative on the acceptance of the energy transition by those who did not participate in this way was also studied. The team conducted two scenario workshops to describe future designs of the energy transition as well as the needs and preferences of society in the form of various future scenarios. One workshop included persons who participated in the form of self-supply or membership in energy initiatives, while the other workshop aimed at so-called non-participants with a general interest in the topic of energy. The workshops comprised a combination of different activities, brainstorming, and discussions in small groups, and contributed to ensure engagement of participants with very different backgrounds throughout the scenario development. The scope for the scenario process was formed by important topics related to the energy transition that can be divided into three groups: individual engagement and decisions, energy transition in the broader context, and involvement as well as decisions in general.

The energy transition can be achieved along three different paths, so-called scenarios: bottom-up, acceleration, and passive. The bottom-up scenario emphasises decentralised energy production with transparency and fairness, allowing for genuine participation and co-determination of citizens. It involves many small plants for energy production and allows for self-consumption, with low barriers for citizens to participate. The acceleration scenario prioritises rapid implementation and focuses on becoming independent from energy imports. It places a strong emphasis on regulations, and companies that emit high levels of CO_2 have to pay a high price for their emissions. The passive scenario is characterised by a low level of interest from citizens, who display weak acceptance towards the energy transition. Information and transparency are not important, and the government is responsible for deciding on how to achieve the energy transition. The transition occurs at low cost, and energy utilities provide renewable energy at low prices.

Keywords: foresight, scenarios, participation, energy transition, acceptance

Contents

1 Introduction

1.1 Background - Why desirable scenario(s)?

The project Akzept focuses on understanding the effects of self-supply of electricity and membership in citizen energy societies on social inequality and their impact on the social acceptance of the energy transition. Further, it strives to understand what the preferred designs of the energy transition of citizens are. The energy transition is a crucial step to-wards a low-carbon energy system and sustainable society. However, it is important to ensure that the transition is socially inclusive and equitable (Bouzarovski et al. 2020). That is why we are examining the perceptions of different population groups in Germany regarding the perceived effects, both financial and non-financial, and the desired designs of the energy transition. This includes studying the experiences and ideas of those who participate through self-supply or membership in an energy society and those who do not.

Climate change is one of the most pressing challenges today calling for a transition towards a decarbonised society to mitigate potentially devastating consequences (IPCC, 2018). Against this background, the German government declared the so-called 'Energiewende' (energy transition), which aims to enhance energy efficiency and switch the country's energy supply to renewables in the long-term (Federal Foreign Office, 2016; Radtke and Canzler, 2019). This fuel switch includes a transition of the electricity, heat and mobility sector towards renewable energy sources (Radtke and Canzler, 2019). Energy transition can be designed in different ways - described by different scenarios.

Socially acceptable scenarios involve a just and inclusive energy transition that leaves no one behind, regardless of their background or socio-economic status (Bouzarovski et al. 2020). To achieve a widespread social acceptance, financial participation is crucial (see Breitschopf et al. 2022) for creation of a sense of ownership and involvement in the transition (Langer et al. 2018). Newer studies also show a higher willingness to pay for energy when participation and involvement are possible (Knoefel et al. 2018). Finally, socially acceptable scenarios help to better understand the perceived impacts of the energy transition on different societal groups and address potentially negative consequences, which in turn enables to identify relevant aspects of the energy transition from the perspective of citizens.

1.2 Objective

Our project aims to analyse the influence of participation, communication, and selected socio-economic criteria on the acceptance as well as preferred design elements of the energy transition. As part of the project, this study aims at elaborating desirable scenarios of the energy transition. To do this, we will identify:

- Positive and negative effects perceived by citizens
- Citizens' needs and perceived aims or dimensions regarding the energy transition
- Potentially preferred design elements of the energy transition

Previous studies have shown that participation in the form of co-determination, involvement, social justice, and gender aspects can affect the acceptance of the energy transition (Ruddat 2022; Ruddat und Sonnberger 2019; Langer et al. 2018). However, the impact of self-supply and membership in an energy initiative on the acceptance of the energy transition by those who do not participate in this way, has not yet been studied. The re-search question in the scenario study was: Is the perception of the participants in the scenario study about the desired, fair energy transition

dependent on whether they participate in form of self-supply or membership in energy initiatives or not? Thus the research question is: Does the acceptance of the "non-participating" part of the population increase or decrease if self-supply and membership in a citizen energy initiative is possible for one part of the population, but not for another part due to various circumstances? Unlike other energy related assessment impact analyses, e.g. energy efficiency evaluations (Breitschopf et al. 2018), a control group or before-after comparisons are not applicable to a group of citizens who do not participate. Therefore, we approach this question through the desirable design of energy transition scenarios. Thus, the scenario process for the future design of the energy transition and the needs as well as preferences of society in the form of various desirable scenarios are a key building block to answer this question. The following questions were the focus: Which future needs and preferences should the energy transition take into account? What would an individually desirable (just) energy transition look like? How could we design it together?

2 Research approach and results

The scenario building methodology is one of the most widely used foresight methods in the field (Schwartz 1991; Spaniol und Rowland 2019; Ringland 1998; Cairns und Wright 2018; van der Heijden 1997; Gabriel et al. 2016). This method places a strong emphasis on engagement and interaction with relevant stakeholders to actively engage and prepare for the future. Stakeholder have the opportunity to express their ideas, understandings and needs with respect to the energy transition without being given any predefined answers. The goal is to inspire citizens to think of actions, goals, or elements of the energy transition that they desire and could shape their future. Incorporating multiple perspectives are central to the scenario process design, ensuring a broad and comprehensive look into the future as well as the questioning assumptions and breaking biases (Schirrmeister et al. 2020). The out-come of our scenario workshops were energy transition scenarios, revealing potential futures of the energy transition while accounting for needs and preferences of society. The first workshop involved representatives from energy initiatives and the second workshop has been open to individuals who were not participating in these initiatives but had a general interest in the energy topic.

2.1 Foresight and scenario methodology in general

Foresight

Foresight is a structured dialogue on future possibilities among key stakeholders in a given field of change (Da Costa et al. 2008; Warnke, Heimeriks 2008). It recognises the uncertainty of the future and supports the examination of different possible outcomes. Foresight dialogues yield both, a product and process benefit; they generate distributed anticipatory intelligence such as information on possible threats and opportunities and options for action that underpin a more future-oriented and robust decision-making. At the same time, however, the interactive dialogue is strengthening the capacity of the system to evolve in a phase with a changing environment and to better unlock the potential of the present as it forms linkages and a shared understanding among diverse actors and domains. Accordingly, foresight activities are a key element for capacity building in the context of mobilisation and mutual learning platforms.

There is no "one-size-fits-all" foresight approach. Rather foresight needs to be tailored to the specific context, subject and objective at hand (Schoen et al. 2008). Different foresight methods structure different types of dialogues, ranging from vision building for creating a shared understanding of a desired future, up to roadmapping approaches that enable the generation of concrete pathways towards this future.

Foresight is a dialogue on long-term futures with the following key characteristics (Rosa et al. 2021):

- Participatory: in a foresight dialogue, relevant stakeholder groups actively participate, making foresight a combination of desk research and direct dialogue among key actors and experts, often through workshops, interactive surveys, or online methods.
- Non-predictive: foresight acknowledges the unpredictability of the future and therefore explores various futures, using current trends and forecasts as a basis for discussion.
- Structured: foresight methods structure the futures dialogue, leading to collective intelligence that incorporates diverse perspectives and looks beyond current pathways to adopt a long-term outlook.
- Systemic: when examining future pathways, foresight focuses on changes brought by the interplay of factors from various domains such as society, economy, policy, science, and

technology, and therefore brings together diverse expertise and backgrounds to form collective intelligence.

In this project, we applied the scenario methodology, which is one of the most established and widely used foresight methods. Scenarios are consistent and plausible images of the future (Schirrmeister, Warnke 2013; Schwartz 1991; van der Heijden 1997 and 2005). They are mental models of different possible futures that enable us to reflect on upcoming opportunities and risks and underpin robust strategy building and decision making today.

Scenario methodology

Scenario method concerns the interaction with the relevant actors. The focus is on active preparation for the long-term future by inspiring futures thinking and supporting action to-wards shaping the future. For this purpose, new approaches are constantly being developed or known ones are further advanced. A system perspective is always at the heart of the scenario process design. Hence, the look into the future needs to be broad and comprehensive, including multiple perspectives. In addition, the scenario method is open to different pathways into the future and to discussing alternative developments. For decisions to be taken today, a future has to be selected, to prepare for it or to make it real. One option may also be a business-as-usual scenario for the future. It is important to clarify which future is being analysed: A possible future (What can happen?), a probable future (Which options do we have?), a desirable future or a vision (Where do we want to go?).

Scenario methodology complements and extends conventional methods of forecasting. As a planning tool, it is particularly useful when strategic decisions need to be made within the context of specific societal, economic or political framework conditions and when developments in these areas cannot be foreseen over a longer period of time. Even though it is not possible to predict the future precisely, scenario methodology can be used to develop plausible pictures of the future, commonly referred to as scenarios. A scenario postulates a possible future situation, for example, potential circumstances in which a company will be operating, and describes the framework conditions for that in order to identify and test the range of options (O´Brien and Meadows 2013, p. 645).

A range of various approaches has been refined over the years to systematically develop scenarios, thus scenarios have been increasingly applied to different questions. These methods differ from each other mainly in their own specific definition of the individual steps or phases, as well as the depth of their treatment. Specific tasks are assigned to the respective steps, so that the originally defined problem can be dealt with systematically. A short overview of the different scenario approaches is given by Kosow et al (2008, p. 18-19), Postma, Liebl (2005, p. 162-166 and Amer 2013, p. 26-27), a comprehensive one by Herzhof (2005, p. 19-29), Götze (1993, p. 71-141) and Dönitz (2009, p. 24-25). A large number of different approaches is based on three main steps: (i) Step 1: Identification and selection of the key factors; (ii) Step 2: Development of future assumptions for the select-ed factors and (iii) Step 3: Bundling the future assumptions to different and consistent scenarios.

The establishment of assumptions for key factors in the future is a crucial component in each scenario process, setting it apart from other forms of future research. These assumptions can be identified by using various methods, such as quantitative and qualitative analysis of existing literature or expert workshops. The workshop approach, proven effective in practice and favoured over other methods, facilitates the integration of expert opinions and supports involvement from diverse interest groups in participative future research.

Participative methods stress the shared responsibility and opportunity to shape the future, as advocated by Jungk, Boulding, Ziglar, and Macy (Tiberius 2011, p. 74). The goal is to coordinate and harmonize activities, anticipate and communicate future developments, with open communication among all levels of management and staff being a key factor for successful results (Alsan 2008, p. 49). Coordination also plays a crucial role in considering both external and internal factors that may be influenced by participants. In scenario processes, experts are involved in creating external scenarios that depict the surrounding environment and help structure complex problems, while internal scenarios (strategy scenarios) benefit from stakeholder involvement, leading to increased legitimacy and accountability (Quist et al. 2011, p. 886).

Foresight dialogues can take many formats. Both, the dialogue methodology and the nature of participation must be carefully tailored to the objectives and context at hand (Da Costa et al 2008). Foresight processes range from large futures conferences with hundreds of participants to focus groups with a small number of key stakeholders. The type of the dialogue may be normative i.e. deliberating around desired futures (visioning) (van der Helm 2014) or exploratory i.e. generating plausible images of different futures (scenario development, Wright et al 2013, Durance and Godet 2010).

The scenario workshops in our project aimed at the creation of desirable futures in a dialogue format. A workshop in this format usually includes the following elements:

- Introduction, joint problem description and reflecting on the current situation, drivers, and frameworks (state of the art phase);
- Open collection of ideas to develop the desired horizon - identifying personal and shared values, describing individual and shared desirable futures (imagination phase).

In contrast to a classic visioning approach, the goal of our scenario workshops was not to find a consensus among all participants, but rather to consider the diversity of values, wishes, and ideas and to identify common elements. Through these workshops, we focused on these two steps, considering the current state and developing desirable futures. It was a unique and effective approach promoting collaboration, open communication, and a shared sense of purpose among all participants.

2.2 Scenario approach in this study

Workshop method

The aim of the scenario workshops was to describe future designs of the energy transition and needs or preferences of society in the form of various future scenarios. The discussions were focused on two leading questions: What would be a desirable (fair) energy transition from the individual point of view? What would the energy transition look like if we could shape it together?

We recruited two groups of participants:

1) The participants of the first workshop were representatives that participated as self-supply or membership in an energy initiative. They were approached through an energy initiative. In addition, other interested citizens could also participate.
2) For the second workshop we recruited citizens through a regional market research institute. Key aspects of the selection were that the citizens had not participated in the energy transition as outlined before, but revealed a generally interest in the topic energy.

This two-group approach was chosen in order to support active participation and an open dialogue with persons of different interests, engagement and participation. The discussions focused on different desirable future developments in a particular area based upon the participants' own

experiences. The workshop process was a combination of different moderated activities, brainstorming as well as discussions in small groups. The workshops were an important step to ensure engagement of participants with very different backgrounds throughout the scenario development.

A total number of 32 participants attended the scenario workshops, 12 in the first workshop as an online format, to enable the participation of people from different locations, and 20 in the face-to-face-event. The choice of workshop format for the first workshop was partly conditioned by pandemic-related restrictions. The second event involved people who do not usually participate in such processes. Therefore, it was important to enable a face-to-face event, while respecting the established regulations.

The relevant aspects for the energy transition were divided into three groups: Individual engagement and decisions; Energy transition in the broader context; Involvement and decisions in general.

Workshop implementation and data preparation

The first workshop was conducted online via Miro board. The workshop started by introducing the project context and the workshop approach, followed by the presentation and prioritisation of topics with great significance in the context of the energy transition, both today and in the future (see the workshop agenda in appendix). These topics were identified through previous project work (see table below). At the beginning, the participants were asked to add aspects that, in their view had not yet been taken into account, followed by the prioritisation the topics for the discussion in the workshop (see appendix), which helped in reaching a common understanding.

The workshop then delved into the desirable development of the selected topics, from the individual perspectives of the participating individuals. Participants were encouraged to express their own desires for the energy transition in relation to these topics through joint discussions as well as through the written input directly on the Miro board.

The final stage of the workshop involved a joint discussion of the contributions and concluded with a summary of the findings. The focus on personal desires and the collaborative discussion allowed for a comprehensive exploration of the desired energy transition and its various aspects. The workshop concluded with a round-up of the discussions and the next steps that were to be taken within the project.

The second workshop was organised using the same approach, but was held as a face-to-face event in Karlsruhe. The topics were addressed in four small groups, mixed with participants from different professions and family situation (e.g. in partnership or single, with or without children), education level (secondary school, high school and studies), ages (from 23 to 69), incomes (from 600€ to 4500€), and gender.

Based on previous workshops that had taken place in the framework of the project (see Burghard et al. 2021), we have identified the following topics as a basis for scenario developments in both workshops:

Relevant areas (identified through previous project work)	Sub-area (identified through previous project work)
1) Individual participation and decision-making	• Financial benefits such as cost savings or revenues from renewable energy and my own investments, e.g. technical modernisation, vs. additional financial burden • Electricity and heating supply at home (dependent vs. independent) • Compromises or limitations from energy-saving measures in my mobility and heating • Administrative effort, planning, and construction work for the energy transition • Complexity of the technologies used • Choice of technologies (self-determination vs. mandatory) • Freedom in deciding how and when I use clean energy and contribute to the energy transition
2) Participation and decision-making in general	• Financial involvement, including investment in small and large facilities such as wind farms, and community projects • Membership in energy cooperatives • Participation of citizens, politicians, civil society, and public institutions in decision-making processes (spatial, financial, and organisational questions) • Participation of citizens in decision-making processes (including general locations of renewable energy sources, local locations of large facilities, and goal-setting at the national or regional level)
3) Energy transition in a larger context	• Distribution of the profits and burdens of the energy transition among all citizens, investors, and other consumers including industry, commerce, and municipalities • Understanding and consideration of different social groups (including marginalised groups, intergenerational fairness, and gender equality) • (Dependency on) energy imports from abroad • Community initiatives and coexistence • Conservation of biodiversity and other environmental aspects

In the imagination phase, participants were asked to answer the question of the desirable (fair) energy transition from their individual perspectives. They were also asked to discuss how the energy transition should be designed if they could shape it together. The answers were documented according to the following format (an example):

Aspect of the Energy Transition	Desired development A	Desired development B	Desired development C
Participation of citizens in decision-making processes	No personal participation at higher levels (national, European),	Participation in legally prescribed formal consultation and participation procedures.	Participation in informal procedures of the administrations, through opinion-

Aspect of the Energy Transition	Desired development A	Desired development B	Desired development C
	but through trusted representatives; bundled	Participation at all levels (small, large facilities, regional, national). Transparency about ongoing decision-making processes is desired.	forming or concrete proposals for a project. Participation primarily at the regional level.

Workshop results

In total, 17 different sub-areas from the three main areas (individual participation and decision-making, participation and decision-making in general, energy transition in a larger context) were discussed in both workshops, distributed in more than 40 different aspects:

1) Individual participation and decision-making	
Sub-areas (identified through previous project work) - see table above	**Aspects discussed in both workshops - chosen by the workshop participants**
Financial benefits such as cost savings or revenue from renewable energy and my own investments vs. additional financial burden	• Role of the state • Involve and relieve the burden on citizens
Electricity and heating supply at home (dependent vs. independent)	• Battery aspects
Compromises or limitations from energy-saving measures in my mobility and heating	• Create alternatives and legal regulations • Criticism of price mechanisms • Distribute obligations
Administrative effort, planning, and construction work for the energy transition	• Transparent and un-bureaucratic procedures • Financial support • Expanding the range of stakeholders
Choice of technologies (self-determination vs. mandate)	• Requirements by the state and science • Tenant co-determination
Complexity of the technologies used	• Provide independent information • Future thoughts
How do I get to the vacation? (Car with combustion engine, car with e-motor, plane, plane with CO_2 compensation, train, home)	• Make air traffic more accountable • Establish price reasonability
E-mobility, synthetic fuels, hydrogen or combustion engines	• Environmental transparency • Urban-rural divide
Organisation in everyday life	• E-mobility (range)

2) Participation and decision-making in general	
Sub-areas (identified through previous project work) - see table above	**Aspects discussed in both workshops - chosen by the workshop participants**
Financial involvement, including in small and large facilities such as wind farms, and community projects	• Enabling simple and rewarding investments • Government support • Involvement of citizens • Transparency and voluntariness • Enable broad participation
Participation of citizens in decision-making processes (including general locations of renewable energy sources, local locations of large facilities, and goal setting at the national or regional level)	• Direct participation • Political participation • Transparency and lobbying
Freedom to decide how and when I use clean energy or contribute to the energy transition	• Obligate companies to be sustainable • Restrict the scope for citizens to take legal action

Energy transition in a larger context	
Sub-areas (identified through previous project work) - see table above	**Aspects discussed in both workshops - chosen by the workshop participants**
Distribution of the profits and burdens of the energy transition among all citizens, investors, and other consumers including industry, commerce, and municipalities	• Cost internalisation of industry/economy • Transparency and information flow • Distribution patterns and citizen participation • Social aspects and hurdles
Conservation of biodiversity and other environmental aspects	• Public, comprehensive debate • Transparency • Recommendations for action
Understanding and consideration of different social groups (including marginalised groups, intergenerational fairness, and gender equality	• Burden sharing according to the polluter pays principle and income aspects • Enabling access to renewable energies for all
(Dependency on) energy imports from abroad	• Reduce dependencies • Political relevance of independence • Secure independence for the time being through nuclear power
Maintaining the reliability of the energy supply	• Sustainability in the private sector more important than reliability • Ensuring reliability in every area • Focus on different energy sources

For each aspect discussed in the workshop, different statements regarding the desirable design of the energy transition were made, written down and discussed. Over 100 different statements were made in total. An example of statements in the area "Participation and decision-making in general", subarea "Participation of citizens in decision-making processes (including general locations of renewable energy sources, local locations of large facilities, and goal setting at the national or regional level)" is shown in the following table:

2) Participation and decision-making in general (identified through previous project work) - see table above		
Sub-area (identified through previous project work) - see table above	Aspects discussed in both workshops, chosen by the workshop participants - see table above	• Statements regarding the desirable design of the energy transition made by the workshop participants
Participation of citizens in decision-making processes (including general locations of renewable energy sources, local locations of large facilities, and goal setting at the national or regional level)	Direct participation	• Involve local citizens in the energy transition and empower them to generate, produce, harvest in their own environment
	Political participation	• Participation in the structure of the energy system: Decentralised and citizen-based instead of centralism supported by politics and profit-oriented lobbying. This would also be in the spirit of the Aarhus Convention. • Abandonment of pseudo-dialogue events. • It needs finally the possibility for open discussions of politicians with citizens.
	Transparency and lobbying	• Transparency is a precondition for decisions in grid design and regulation that enable independent participation in the energy transition. • Political decision-makers must disclose in what form they are dependent on the industry and influence on legislative procedures must be visible • Federal agencies should not receive financial support from companies, e.g. for studies on health aspects of power grid expansion.

Scenario building

In the context of scenario building, it is common practice to use different assumptions or statements as a starting point for formulating the scenarios because they represent different possible futures. These statements serve as the foundation for scenario building, which involves creating plausible narratives or storylines that describe how will the future look like, based on these different statements. Scenarios should differ from each other because they represent alternative futures, in this study, the desirable futures of the energy transition. Additionally, the diversity of scenarios helps decision-makers and politicians to better understand the complex and dynamic environment in which they face uncertainty.

In this study, all statements on the desirable development of the individual aspects from both workshops formed the basis for the development of the different scenarios. We selected the most frequently mentioned and opposed statements and grouped the remaining statements around them according to their fit to the first statements. Based on this grouping, we derived three desirable energy transition scenarios: bottom-up, acceleration, and passive.

3 Scenarios on a desirable and fair energy transition

An important finding in relation to our research question is that both groups equally supported the "bottom-up" and "acceleration" scenarios. Whereas the "passive" scenario was developed only in the group where the participants show a general interest in energy topics but are not involved in any energy initiatives (group 2 / workshop 2).

One scenario – bottom-up scenario draws the idea of a decentralized energy transition with a high level of transparency, fairness and opportunities for participation and co-determination. That is, a bottom-up approach with many small plants for energy production as well as possibilities to use the energy directly on site. This is accompanied by "genuine participation", i.e. decision-making instead of information or consultation only. This also includes activities at higher levels such as discussing and settings of goals, strategies, and instruments. The result is a high level of transparency for all citizens in the implementation of the energy transition. The prerequisite for this is that lobbying activities on the political side must be fully disclosed.

Justice is an important issue: Financial participation in the energy transition is possible for broad sections of the population. Even small financial contributions are worthwhile and are not associated with additional burdens. This is ensured by low-threshold information, financial support from the government and few bureaucratic hurdles. At the same time, participation must remain voluntary.

The dependence on energy imports from abroad is low under the bottom-up energy transition.

Such a scenario entails a high share of individual or collective self-generation, energy ac-tive citizens and communities calling for simple procedures regarding the installation and generation of renewable energy, financing of investments, and sharing of energy services. Energy policies should empower citizens to easily participate at any level in the energy transition, provide incentives to achieve regional networks and self-supply. Preferably, investments are taken by citizens and communities and the government should ensure ac-cess to low-cost capital.

Another scenario – acceleration scenario places greater emphasis on rapid implementation of the energy transition due to the high pressure to act and the aim to become independent from abroad energy supply. Part of this scenario is (a strong) regulation of companies regarding the emission of carbon dioxide and limiting the ability of citizens to resist renewable energy projects and, thus, slow down the energy transition. Here, the goal of saving as much CO_2 as possible as quickly as possible is the top priority. This also includes accepting higher burdens on consumers such as additional expenditures for energy efficiency or renewable energy projects. Companies that emit a lot of emissions are also charged more. Fairness and transparency are issues, but of less priority than in the bot-tom-up scenario.

This scenario implies a stronger state-engagement. The role of the government is that of a planner of the energy transition who also controls the implementation of the transition. The preferred approach are regulations, such as standards for buildings, automobiles and industries. Private investors and engagement is feasible and financial supports to achieve high dynamics is an accepted instrument as well.

In this scenario, an openness towards different technologies for energy production is observable, which does not necessarily exclude nuclear power either.

A third scenario – passive scenario is characterised by a low level of interest of citizens in the deployment of renewable energies, improvements of energy efficiency and climate change. They display a weak acceptance or indifference towards the energy transition, and do not desire any engagement or participation in the energy transition. Reasons might be a high perceived

complexity of the topic, fear of changes or a lack of time in daily life, e.g. because daily life concerns are more important than the energy transition. Thus, in-formation and transparency is not important, as long as they face no additional burdens through the energy transition. The government should decide on how to achieve the energy transition, which actors are involved and which technologies are installed and implemented. The transition should occur at low cost, and it is the state's responsibility to financially support energy poors. A secure and reliable energy supply is desired, but whether and how this is ensured, lies in the responsibility of the government as well. Therefore, the energy transition could be achieved through high investments of national or international utilities that provide renewable energy at low and stable prices while any engagement or investment of citizens or communities in the energy transition leading to higher energy prices are no option.

4 Discussion and Conclusion

Summary and discussion on scenarios

The scenario process is an important tool in understanding the different perspectives and desires surrounding the energy transition. By taking into account the different interests and needs of individuals and society as a whole, a more comprehensive and effective approach towards the energy transition can be developed. We aimed to present different desirable views on the energy transition and how these views or desires can be implemented best in the design of the energy transition. The scenarios show clear differences in terms of the desires and expectations of individuals, but also commonalities in terms of regulation or involvement.

One of the key aspects highlighted in the scenarios is the desire for participation in the relevant processes, potentially even the right to have a say in the decisions to be taken. This highlights the importance placed on the ability for individuals to be involved in shaping the energy transition.

Another common thread among the scenarios is the desire for regulation by the relevant authorities. This reflects the need for clear guidelines and structures in place for all citizens to ensure the smooth implementation of the energy transition.

A financial aspect is also present in the scenarios, with the desire for individuals to have a say with respect to the costs of the energy transition, and not to be overburdened financially. This highlights the importance of ensuring that the transition is accessible and inclusive for all.

Reliability of energy supply is also a key concern in the scenarios, with the need for a secure and stable source of energy being an important priority for many individuals.

Discussion on methodology

Scenario method is a tool used to analyse complex systems and to imagine potential futures. This approach helps to identify the main drivers of change, the different paths that a system could follow, and the consequences of each of these paths. The scenario method can be used to analyse a variety of complex systems, including energy systems, economic systems, and political systems, among others. In this paper we focused on the analysing the energy transition in the form of workshops. In the workshops, participants were asked to imagine different desirable futures for the energy transition, based on their understanding of the current system and their expectations for the future.

The process was divided into two workshops, and in each workshop participants were asked to develop a different statement for the energy transition. In a second step, the scenarios were then discussed and formulated to short scenario stories within the project team. This step could not be performed with the participants in one further workshop due to the limitations of the study.

Despite the limitations of the study, such as small sample sizes and the lack of information about the shares of people supporting each scenario in the population, the workshops al-lowed us to consider the views of different groups, including participants who were members of energy initiatives, and those who were not but had a general interest in the energy transition. Thus, the diversity of the citizens who participated in the workshops with regards to their affiliation with energy initiatives was taken into account. By considering different opinions on the desirable energy transition, the participants were able to challenge their own assumptions and biases, and to explore new ideas.

The developed scenarios are different from each other and ensure a comprehensive exploration of possible futures; however, they also have common elements and strike a balance between being too extreme and too similar to each other. If scenarios are too extreme, one may dismiss them as

unlikely, and if they are too similar, they do not contribute any new insights to the understanding of the future. Therefore, it is important that scenarios depict a range of possible futures that are both challenging and plausible but not unrealistic.

Outlook to further research and conclusion

In this study, the latest developments could not be taken into account, such as the gas crisis, since the discussions in workshops as well as the preparatory surveys took place be-fore the Ukraine conflict. This means an acceleration of the energy transition on the one hand, but partly also a strengthening of fears as well as a shift towards fossil energies (e.g. LNG terminals) and lifetime extensions for nuclear power plants on the other.

Firstly, high energy prices are accelerating the shift away from fossil fuels. Secondly, the war in Ukraine is leading European countries in particular to seek independence from Russian oil and gas. Initially, this may even be a good signal for the acceleration of the energy turnaround - because the incentive to switch to green energies particularly increases with the prices for conventional energy sources. Here, it would be useful to investigate whether, in view of the effects of the Ukraine war on energy supply in Germany, citizens think that the energy transition needs to be accelerated. The question also arises as to whether the energy crisis will lead to a greater shift towards self-generation in society, i.e. the bottom-up scenario.

On the other hand, fears about security of supply (e.g. power cuts) also play a role. Citizens are seriously concerned about their future in general because of high energy costs, since renewable electricity has also become more expensive. There are fears, for example, that the municipalities will resort to austerity measures because of the energy crisis, which could burden them personally, such as restrictions on consumption spending, postponement of major investments such as house building, or financial constraints in general. This could mean a future strengthening of the passive scenario. Also in this case an analysis of existing studies would be beneficial.

On this background, some of the topics discussed in the workshops would possibly be discussed differently from today's perspective, including the dependence on energy imports from abroad, the distribution of the benefits and burdens of the energy transition among all citizens, investors and other consumers including industry, commerce and municipalities. Overall, it can be said that the energy crisis has raised public awareness of the issues of energy, energy production and energy consumption, including sufficiency.

Furthermore, organisation in daily life, understanding and consideration of different social groups - including marginalised groups, intergenerational justice, and gender equality - could increase in importance. In addition, restrictions due to energy savings in mobility and heating to maintain the reliability of energy supply should be discussed in light of the latest developments.

5 Bibliography

Alsan, Alper: Corporate foresight in emerging markets (2008): Action research at a multination-al company in Turkey, Futures, Vol. 40, p. 47-55.

Amer, Muhammad; Daim, T.U.; Jetter, Antonie (2012: A review of scenario planning, Futures, Elsevier GmbH, München.

Bouzarovski, S.; Thomson, H.; Cornelis, M.; et al. (2020): Towards an inclusive energy transition in the European Union : confronting energy poverty amidst a global crisis. European Commission, DG Ener. Online verfügbar unter https://data.europa.eu/doi/10.2833/103649.

Breitschopf, Barbara; Schlomann, Barbara; Voswinkel, Fabian; Broc, Jean-Sébastien (2018): Identifying current knowledg, suggestions and conclusions from existing literature. EPATEE, WP 3; European Union's Horizon 2020 Research and innovation programme under grant agreement No 746265. Online verfügbar unter https://epatee.eu/system/tdf/epatee_report_on_the_knowledge_base.pdf?file=1&type=node&id=29&force=1.

Burghard, Uta; Breitschopf, Barbara; Wohlfarth, Katharina; Keil, Julia; Müller, Fabian (2021): Perception of monetary and non-monetary effects on the energy transition: Results of a mixed method approach. Fraunhofer Institut für System- und Innovationsforschung (Fraunhofer ISI). Karlsruhe (Working Paper Sustainability and Innovation, S04/2021). Online verfügbar un-ter https://publica-rest.fraunhofer.de/server/api/core/bitstreams/8766dae6-d7fc-4868-8cca-12ae6c27337b/content, zuletzt geprüft am 31.01.2023.

Cairns, George; Wright, George (2018): Scenario Thinking. 2. Aufl.: Palgrave Macmillan.

Da Costa, O.; Warnke, P.; Cagnin, C.; Scapolo, F. (2008): The impact of foresight on policy-making: insights from the FORLEARN mutual learning process. In: Technology Analysis & Strategic Management, 20 (3), pp. 369-387.

Dönitz, Ewa,J.: Effizientere Szenariotechnik durch teilautomatische Generierung von Konsistenzmatrizen, Forschungs-/Entwicklungs-/Innovations- Management, Gabler GWV Fachverlage GmbH, Wiesbaden, 2009.

Durance, Philippe; Godet, Michael: Scenario building: Use and abuses, Technological Forecasting & Social Change, 2010, Elsevier GmbH, München.

Federal Foreign Office, 2016. The German Energiewende: Transforming Germany's energy system. https://www.auswaertiges-amt.de/blob/610620/5d9bfec0ab35695b9db548d10c94e57d/the-german-energiewende-data.pdf (accessed 30.03.23).

Gabriel, Johannes; Warnke, Philine; Schirrmeister, Elna; Dönitz, Ewa (2016): Qualitative Szenarien als Tool des organisationalen Lernens. In: Maria Schnurr und Holger Glockner (Hg.): Strategische Vorausschau in der Politikberatung. Beiträge und Diskussionsergebnisse eines UBA-Fachgesprächs. Dessau-Roßlau: Umweltbundesamt (UBA-Texte, 49/2016), S. 13–19.

Götze, Uwe: Szenario-Technik in der strategischen Unternehmensplanung, 2., aktualisierte Auflage. Wiesbaden: Deutscher Universitäts-Verlag 1993.

Herzhof, Marc: Szenario-Technik in der chemischen Industrie: Untersuchung von Software-Tools am Beispiel einer Studie zum Markt für Flammschutzmittel im Jahr 2010 und der praktischen Bedeutung der Szenario-Technik, 1. Auflage. Berlin: Pro Business 2005.

IPCC, 2018. Global Warming of 1.5 °C. Special Report. https://www.ipcc.ch/sr15/.

Jungk, Boulding, Ziglar, and Macy (Tiberius 2011, p. 74).

Knoefel, Jan, Sagebiel, Julian, Yildiz, Özgür, Müller, Jakob R., Rommel, Jens, 2018. A Consumer Perspective on Corporate Governance in the Energy Transition: Evidence from a Discrete Choice Experiment in Germany. Energy Econ. 75 (September), 440–448. https://doi.org/10.1016/j.eneco.2018.08.025

Kosow, Hannah; Gaßner, Robert, Erdmann, Lorenz; Luber, B.J.: Methoden der Zukunfts- und Szenarioanalyse Überblick, bewertung und Auswahlkriterien, WerkstattBericht Nr. 103, Institut für Zukunftsstudien und Technologiebewertung, 2008, IZT, Berlin.

Langer, Katharina; Decker, Thomas; Roosen, Jutta; Menrad, Klaus (2018): Factors influencing citizens' acceptance and non-acceptance of wind energy in Germany. In: Journal of Cleaner Production 175, S. 133–144. DOI: 10.1016/j.jclepro.2017.11.221.

O'Brien, Frances A.; Meadows, Maureen: Scenario orientation and use to support strategy development, Technological Forecasting & Social Change, 2012, Elsevier GmbH, München.

Postma, Theo J. B. M.; Liebl, Franz: How to improve scenario analysis as a strategic management tool, Technological Forecasting and Social Change, 2005, Vol. 72, S. 161-173.

Radtke, J., Canzler, W. (Eds.), 2019. Energiewende: Eine sozialwissenschaftliche Einführung. Springer Fachmedien Wiesbaden GmbH.

Ringland, G. (1998): Scenario Planning: Managing for the Future. Chichester: John Wiley.

Rosa, A.B., Kimpeler, S., Schirrmeister, E. et al. Participatory foresight and reflexive innovation: setting policy goals and developing strategies in a bottom-up, mission-oriented, sustainable way. Eur J Futures Res 9, 2 (2021).

Ruddat, Michael (2022): Public acceptance of wind energy – concepts, empirical drivers and some open questions. In: Wind Energ. Sci. 7 (4), S. 1679–1691. DOI: 10.5194/wes-7-1679-2022.

Ruddat, Michael; Sonnberger, Marco (2019): Von Protest bis Unterstützung – eine empirische Ana-lyse lokaler Akzeptanz von Energietechnologien im Rahmen der Energiewende in Deutsch-land. In: Köln Z Soziol 71 (3), S. 437–455. DOI: 10.1007/s11577-019-00628-4.

Quist, Jaco; Thissen, Will; Vergragt Philip J.: The impact and spin-off of participatory backcasting: From vision to niche, Technological Forecasting and Social Change, 2011, Vol. 78, p. 883-897.

Schirrmeister, E., & Warnke, P. (2013). Envisioning structural transformation—Lessons from a foresight project on the future of innovation. Technological Forecasting and Social Change, 80(3), 453–466. https://doi.org/10.1016/j.techfore.2012.10.008.

Schirrmeister, Elna; Göhring, Anne-Louise; Warnke, Philine (2020): Psychological biases and heuristics in the context of foresight and scenario processes. In: Futures & Foresight Science 2 (2), S. 13. DOI: 10.1002/ffo2.31.

Schoen, A.; Könnölä, T.; Warnke, P.; Barre, R.; Kuhlmann, S. (2008): Tailoring Foresight to field specifities, Seville.

Schwartz, P. (1991): The art of the long view. Planning for the future in an uncertain world, New York: Currency and Doubleday.

Spaniol, Matthew J.; Rowland, Nicholas J. (2019): Defining scenario. In: Futures & Foresight Science 1 (1), e3. DOI: 10.1002/ffo2.3.

van der Heijden, K. (1997): Scenarios. The art of strategic conversation, Chichester: Wiley.

van der Heijden, K., 2005. Scenarios: The Art of Strategic Conversation. 2nd. ed. John Wiley & Sons.

Warnke, P., & Heimeriks, G. (2008). Technology Foresight as Innovation Policy Instrument: Learning from Science and Technology Studies. In C. Cagnin, M. Keenan, R. Johnston, F. Scapolo, & R. Barré (Eds.), Future-Oriented Technology Analysis (pp. 71–87). Springer Ber-lin Heidelberg.

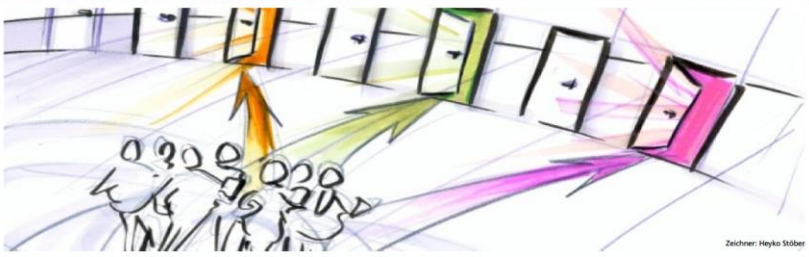
Wright, G., Cairns, G., & Bradfield, R. (2013). Scenario methodology: New developments in theory and practice: Introduction to the Special Issue.

6 Appendix

Introduction and approach in workshop 1

SZENARIO-WORKSHOP
WÜNSCHENSWERTE ENERGIEWENDE

Fraunhofer-Institut für System- und Innovationsforschung
Ewa Dönitz, Uta Burghard, Katharina Habersbrunner 21.06.2021



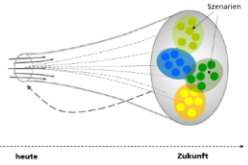
Zeichner: Heyko Stöber

© Fraunhofer

Fraunhofer ISI

FRAGESTELLUNG FÜR DEN HEUTIGEN WORKSHOP IM KONTEXT DES PROJEKTS

- **Was wäre für mich eine wünschenswerte (gerechte) Energiewende? Wie sähe diese aus wenn wir sie gemeinsam gestalten könnten?**
- → **Ziel:** Zukünftige Ausgestaltungen der Energiewende und Bedürfnisse bzw. Präferenzen der Gesellschaft in Form verschiedener Zukunftsszenarien beschreiben.
- **Hintergrund:**
  - **Unser Projekt**: Wirkungen von Eigenversorgung und Mitgliedschaft in Bürgerenergiegesellschaften auf soziale Ungleichheit und deren Beitrag zur gesellschaftlichen Akzeptanz der Energiewende (**Akzept**)
  - Positiven und negativen, finanziellen und nicht-finanziellen **Wirkungen der Energiewende**, die verschiedene Bevölkerungsgruppen wahrnehmen.
  - Fokus auf **Gruppen, die** durch Eigenversorgung oder Mitgliedschaft in einer Energiegesellschaft **partizipieren** und solchen, die **nicht partizipieren**.



© Fraunhofer
Seite 2

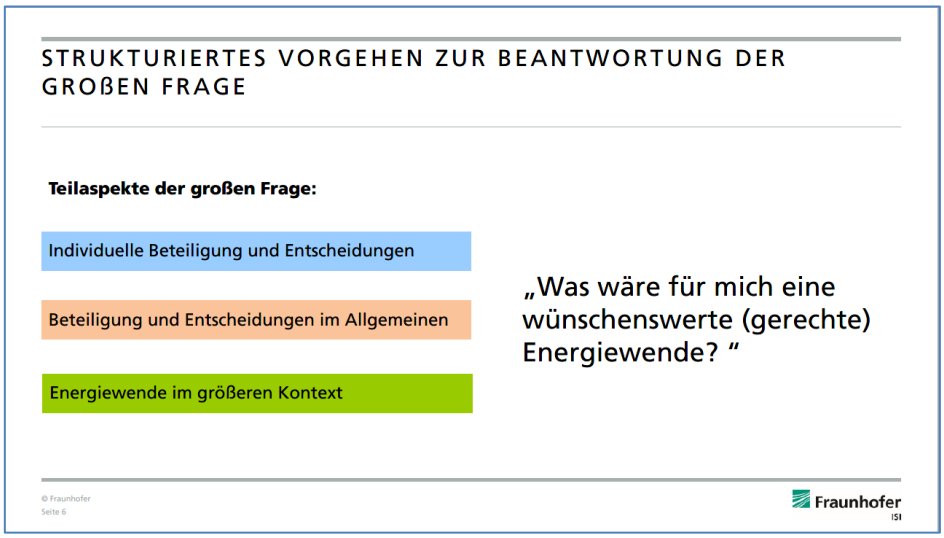
Fraunhofer ISI

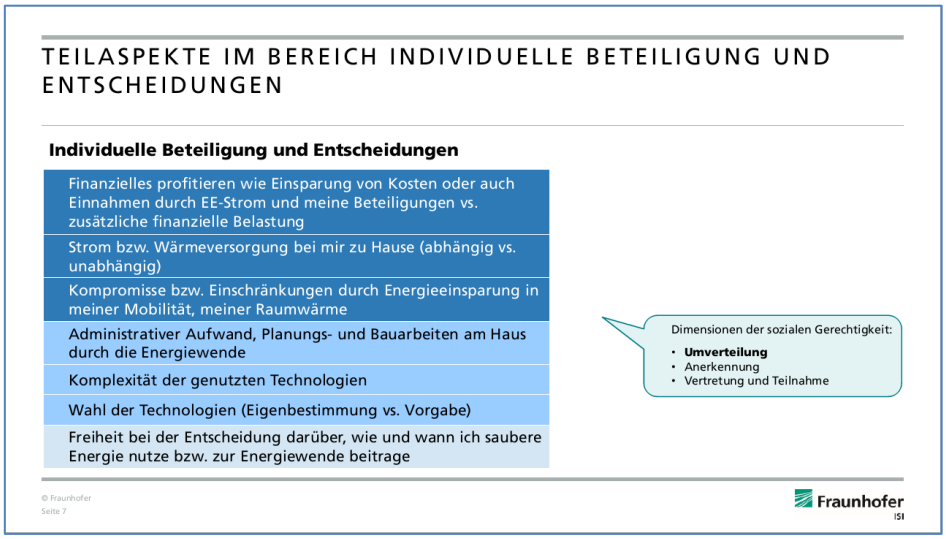
AGENDA

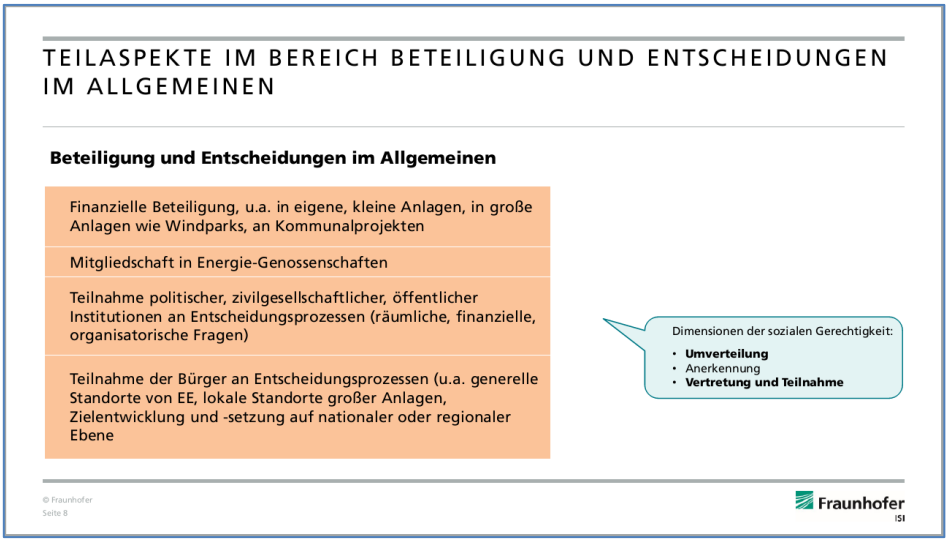
Wann?	Was?
15:00 – 15:15	**Willkommen** und Vorstellungsrunde
15:15 – 15:30	Projektkontext und Workshopvorgehen
15:30 – 16:00	Präsentation und Auswahl **für Energiewende wichtiger Aspekte**
16:00 – 16:50	Diskussion **der wünschenswerten Ausgestaltung** ausgewählter Aspekte
16:50 – 17:00	**Abschluss** des Workshops

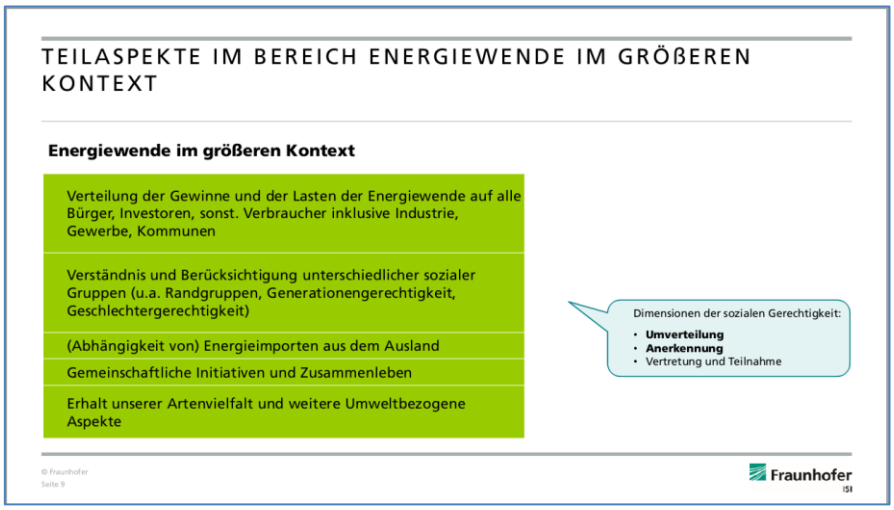
© Fraunhofer
Seite 5

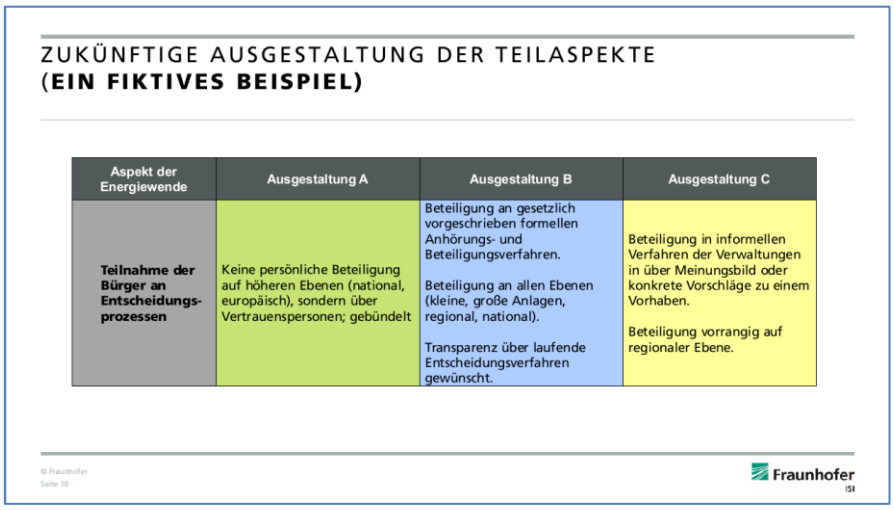
Fraunhofer ISI


STRUKTURIERTES VORGEHEN ZUR BEANTWORTUNG DER GROßEN FRAGE
Teilaspekte der großen Frage:
Individuelle Beteiligung und Entscheidungen
Beteiligung und Entscheidungen im Allgemeinen
Energiewende im größeren Kontext
„Was wäre für mich eine wünschenswerte (gerechte) Energiewende? “
© Fraunhofer
Seite 6
Fraunhofer ISI

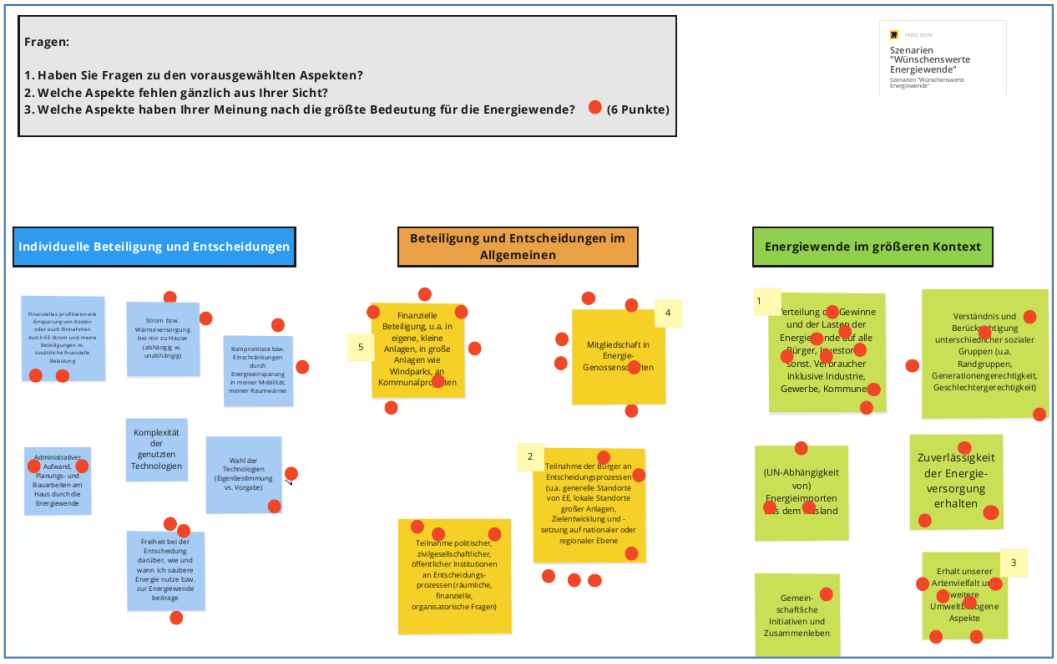

TEILASPEKTE IM BEREICH INDIVIDUELLE BETEILIGUNG UND ENTSCHEIDUNGEN
Individuelle Beteiligung und Entscheidungen
Finanzielles profitieren wie Einsparung von Kosten oder auch Einnahmen durch EE-Strom und meine Beteiligungen vs. zusätzliche finanzielle Belastung
Strom bzw. Wärmeversorgung bei mir zu Hause (abhängig vs. unabhängig)
Kompromisse bzw. Einschränkungen durch Energieeinsparung in meiner Mobilität, meiner Raumwärme
Administrativer Aufwand, Planungs- und Bauarbeiten am Haus durch die Energiewende
Komplexität der genutzten Technologien
Wahl der Technologien (Eigenbestimmung vs. Vorgabe)
Freiheit bei der Entscheidung darüber, wie und wann ich saubere Energie nutze bzw. zur Energiewende beitrage
Dimensionen der sozialen Gerechtigkeit:
• Umverteilung
• Anerkennung
• Vertretung und Teilnahme
© Fraunhofer
Seite 7
Fraunhofer ISI


TEILASPEKTE IM BEREICH BETEILIGUNG UND ENTSCHEIDUNGEN IM ALLGEMEINEN
Beteiligung und Entscheidungen im Allgemeinen
Finanzielle Beteiligung, u.a. in eigene, kleine Anlagen, in große Anlagen wie Windparks, an Kommunalprojekten
Mitgliedschaft in Energie-Genossenschaften
Teilnahme politischer, zivilgesellschaftlicher, öffentlicher Institutionen an Entscheidungsprozessen (räumliche, finanzielle, organisatorische Fragen)
Teilnahme der Bürger an Entscheidungsprozessen (u.a. generelle Standorte von EE, lokale Standorte großer Anlagen, Zielentwicklung und -setzung auf nationaler oder regionaler Ebene
Dimensionen der sozialen Gerechtigkeit:
• Umverteilung
• Anerkennung
• Vertretung und Teilnahme
© Fraunhofer
Seite 8
Fraunhofer ISI





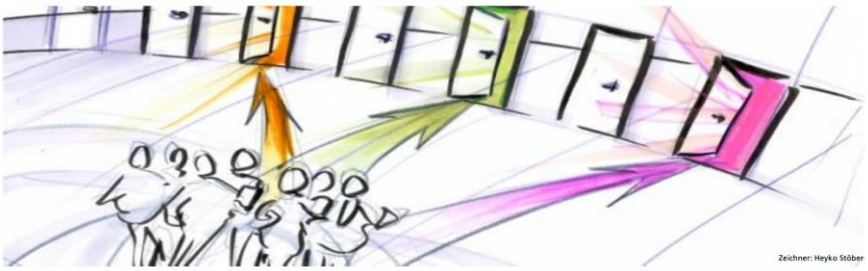
Selection of topics in workshop 1



Introduction and approach in workshop 2

SZENARIO-WORKSHOP WÜNSCHENSWERTE ENERGIEWENDE

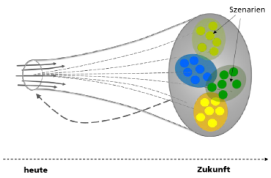
Fraunhofer-Institut für System- und Innovationsforschung
Ewa Dönitz, Barbara Breitschopf, Petra Sandker
15.10.2021



Fraunhofer ISI

FRAGESTELLUNG FÜR DEN HEUTIGEN WORKSHOP IM KONTEXT DES PROJEKTS

- **Was wäre für mich eine wünschenswerte (gerechte) Energiewende? Wie sähe diese aus wenn wir sie gemeinsam gestalten könnten?**
- → **Ziel:** Zukünftige Ausgestaltungen der Energiewende und Bedürfnisse bzw. Präferenzen der Gesellschaft in Form verschiedener Zukunftsszenarien beschreiben.
- **Hintergrund:**
  - **Unser Projekt**: Wirkungen von Eigenversorgung und Mitgliedschaft in Bürgerenergiegesellschaften auf soziale Ungleichheit und deren Beitrag zur gesellschaftlichen Akzeptanz der Energiewende (**Akzept**)
  - Positive und negative, finanzielle und nicht-finanzielle **Wirkungen der Energiewende**, die verschiedene Bevölkerungsgruppen wahrnehmen.
  - Fokus auf **Gruppen, die** durch Eigenversorgung oder Mitgliedschaft in einer Energiegesellschaft **partizipieren** und solche, die **nicht partizipieren**.

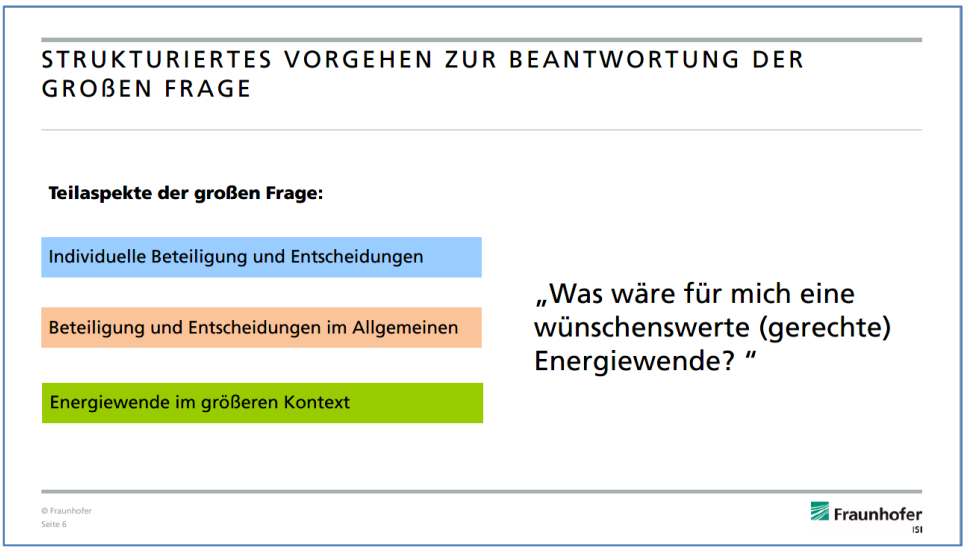


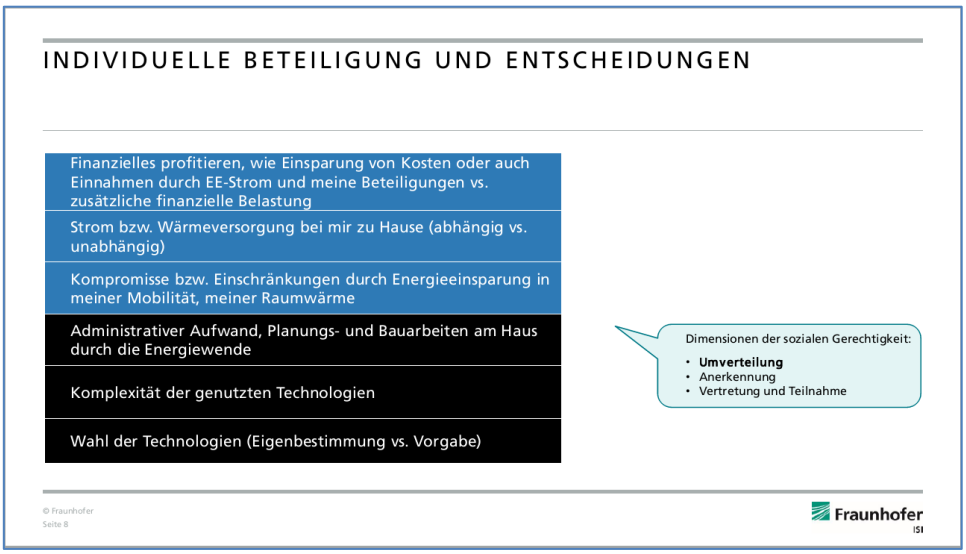
Seite 3
Fraunhofer ISI

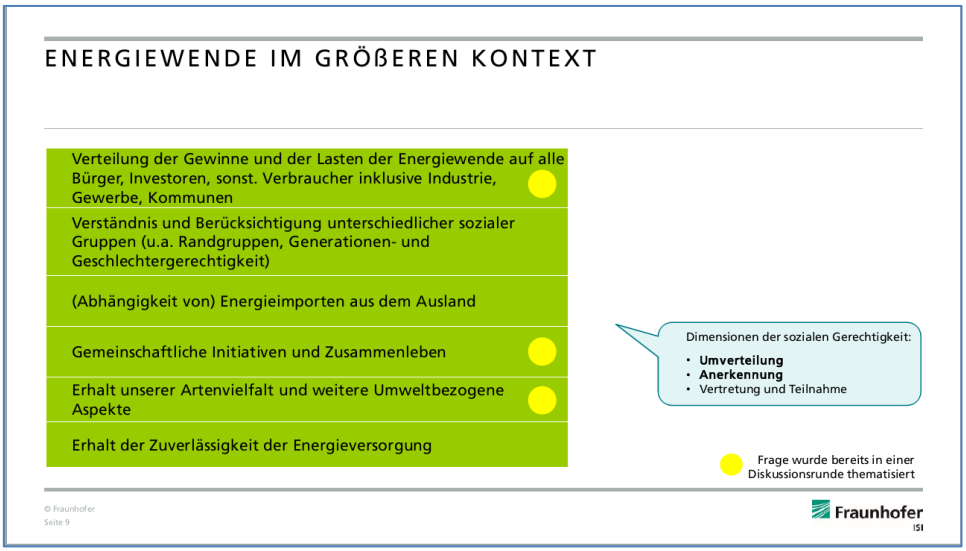
AGENDA

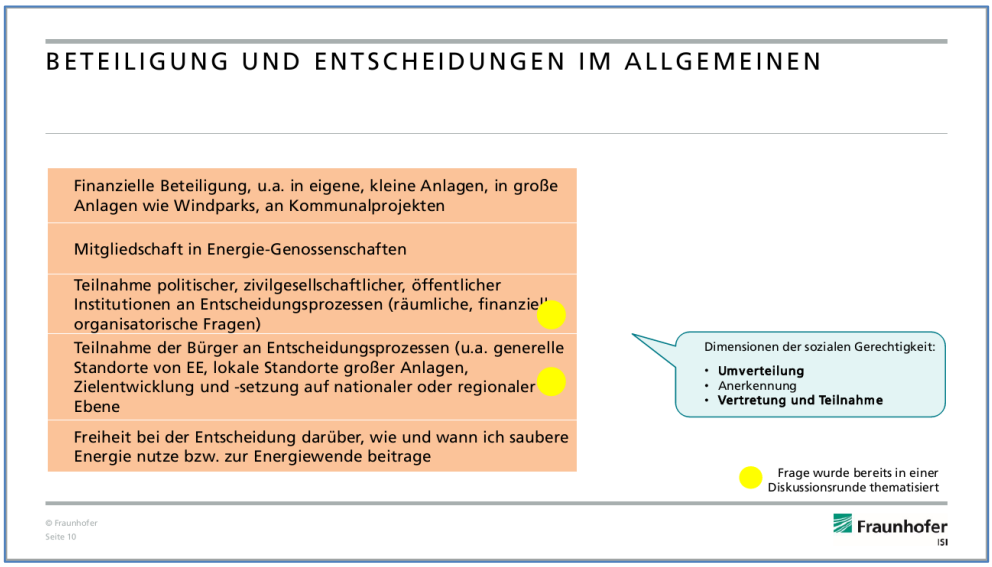
Wann?	Was?
17:00 – 17:15	**Willkommen und Vorstellungsrunde**
17:15 – 17:30	Projektkontext und Workshopvorgehen
17:30 – 18:15	Diskussion **der wünschenswerten Ausgestaltung** ausgewählter Themen
18:15 – 18:45	Präsentation und **Priorisierung der Themen**
18:45 – 19:00	**Abschluss des Workshops**

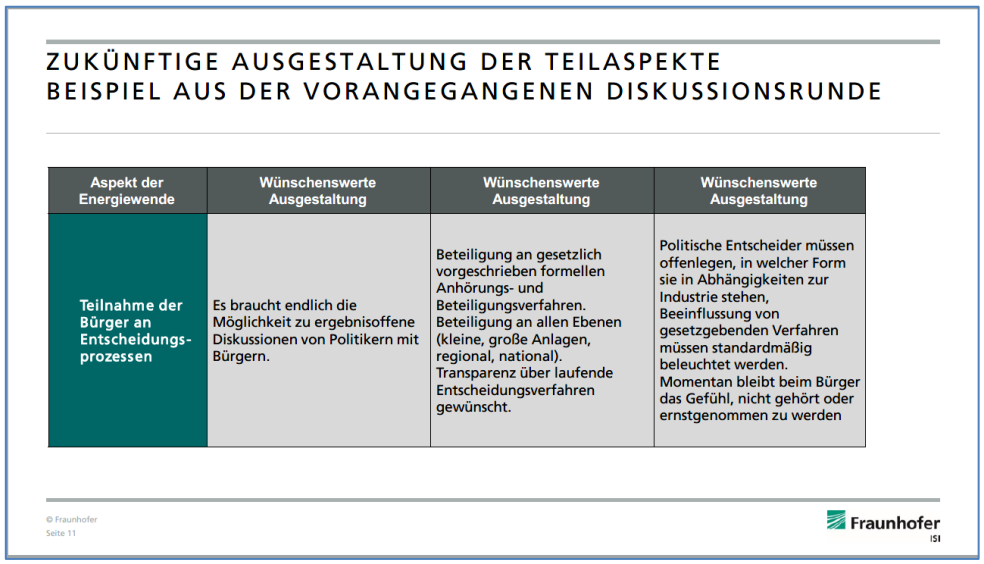
Seite 5
Fraunhofer ISI

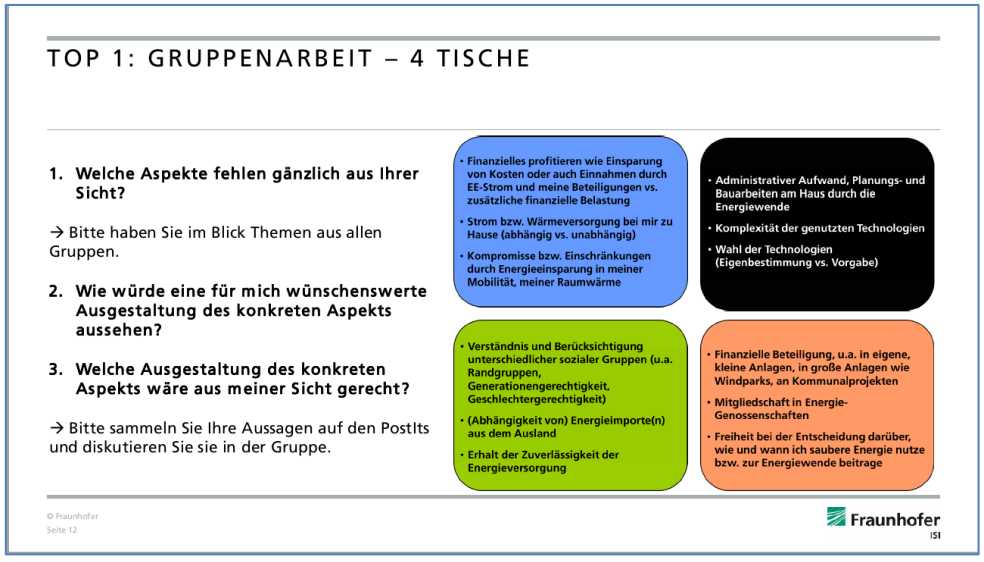

STRUKTURIERTES VORGEHEN ZUR BEANTWORTUNG DER GROßEN FRAGE
Teilaspekte der großen Frage:
Individuelle Beteiligung und Entscheidungen
Beteiligung und Entscheidungen im Allgemeinen
Energiewende im größeren Kontext
„Was wäre für mich eine wünschenswerte (gerechte) Energiewende? “
© Fraunhofer
Seite 6
Fraunhofer ISI


INDIVIDUELLE BETEILIGUNG UND ENTSCHEIDUNGEN
Finanzielles profitieren, wie Einsparung von Kosten oder auch Einnahmen durch EE-Strom und meine Beteiligungen vs. zusätzliche finanzielle Belastung
Strom bzw. Wärmeversorgung bei mir zu Hause (abhängig vs. unabhängig)
Kompromisse bzw. Einschränkungen durch Energieeinsparung in meiner Mobilität, meiner Raumwärme
Administrativer Aufwand, Planungs- und Bauarbeiten am Haus durch die Energiewende
Komplexität der genutzten Technologien
Wahl der Technologien (Eigenbestimmung vs. Vorgabe)
Dimensionen der sozialen Gerechtigkeit:
• Umverteilung
• Anerkennung
• Vertretung und Teilnahme
© Fraunhofer
Seite 8
Fraunhofer ISI


ENERGIEWENDE IM GRÖßEREN KONTEXT
Verteilung der Gewinne und der Lasten der Energiewende auf alle Bürger, Investoren, sonst. Verbraucher inklusive Industrie, Gewerbe, Kommunen
Verständnis und Berücksichtigung unterschiedlicher sozialer Gruppen (u.a. Randgruppen, Generationen- und Geschlechtergerechtigkeit)
(Abhängigkeit von) Energieimporten aus dem Ausland
Gemeinschaftliche Initiativen und Zusammenleben
Erhalt unserer Artenvielfalt und weitere Umweltbezogene Aspekte
Erhalt der Zuverlässigkeit der Energieversorgung
Dimensionen der sozialen Gerechtigkeit:
• Umverteilung
• Anerkennung
• Vertretung und Teilnahme
Frage wurde bereits in einer Diskussionsrunde thematisiert
© Fraunhofer
Seite 9
Fraunhofer ISI


BETEILIGUNG UND ENTSCHEIDUNGEN IM ALLGEMEINEN
Finanzielle Beteiligung, u.a. in eigene, kleine Anlagen, in große Anlagen wie Windparks, an Kommunalprojekten
Mitgliedschaft in Energie-Genossenschaften
Teilnahme politischer, zivilgesellschaftlicher, öffentlicher Institutionen an Entscheidungsprozessen (räumliche, finanzielle, organisatorische Fragen)
Teilnahme der Bürger an Entscheidungsprozessen (u.a. generelle Standorte von EE, lokale Standorte großer Anlagen, Zielentwicklung und -setzung auf nationaler oder regionaler Ebene
Freiheit bei der Entscheidung darüber, wie und wann ich saubere Energie nutze bzw. zur Energiewende beitrage
Dimensionen der sozialen Gerechtigkeit:
• Umverteilung
• Anerkennung
• Vertretung und Teilnahme
Frage wurde bereits in einer Diskussionsrunde thematisiert
© Fraunhofer
Seite 10
Fraunhofer ISI

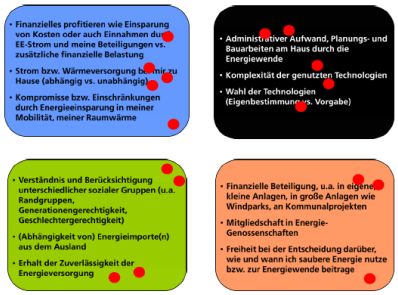

ZUKÜNFTIGE AUSGESTALTUNG DER TEILASPEKTE
BEISPIEL AUS DER VORANGEGANGENEN DISKUSSIONSRUNDE
Aspekt der Energiewende
Wünschenswerte Ausgestaltung
Wünschenswerte Ausgestaltung
Wünschenswerte Ausgestaltung
Teilnahme der Bürger an Entscheidungs-prozessen
Es braucht endlich die Möglichkeit zu ergebnisoffene Diskussionen von Politikern mit Bürgern.
Beteiligung an gesetzlich vorgeschrieben formellen Anhörungs- und Beteiligungsverfahren. Beteiligung an allen Ebenen (kleine, große Anlagen, regional, national). Transparenz über laufende Entscheidungsverfahren gewünscht.
Politische Entscheider müssen offenlegen, in welcher Form sie in Abhängigkeiten zur Industrie stehen, Beeinflussung von gesetzgebenden Verfahren müssen standardmäßig beleuchtet werden. Momentan bleibt beim Bürger das Gefühl, nicht gehört oder ernstgenommen zu werden
© Fraunhofer
Seite 11
Fraunhofer ISI


TOP 1: GRUPPENARBEIT – 4 TISCHE
1. Welche Aspekte fehlen gänzlich aus Ihrer Sicht?
→ Bitte haben Sie im Blick Themen aus allen Gruppen.
2. Wie würde eine für mich wünschenswerte Ausgestaltung des konkreten Aspekts aussehen?
3. Welche Ausgestaltung des konkreten Aspekts wäre aus meiner Sicht gerecht?
→ Bitte sammeln Sie Ihre Aussagen auf den PostIts und diskutieren Sie sie in der Gruppe.
• Finanzielles profitieren wie Einsparung von Kosten oder auch Einnahmen durch EE-Strom und meine Beteiligungen vs. zusätzliche finanzielle Belastung
• Strom bzw. Wärmeversorgung bei mir zu Hause (abhängig vs. unabhängig)
• Kompromisse bzw. Einschränkungen durch Energieeinsparung in meiner Mobilität, meiner Raumwärme
• Administrativer Aufwand, Planungs- und Bauarbeiten am Haus durch die Energiewende
• Komplexität der genutzten Technologien
• Wahl der Technologien (Eigenbestimmung vs. Vorgabe)
• Verständnis und Berücksichtigung unterschiedlicher sozialer Gruppen (u.a. Randgruppen, Generationengerechtigkeit, Geschlechtergerechtigkeit)
• (Abhängigkeit von) Energieimporte(n) aus dem Ausland
• Erhalt der Zuverlässigkeit der Energieversorgung
• Finanzielle Beteiligung, u.a. in eigene, kleine Anlagen, in große Anlagen wie Windparks, an Kommunalprojekten
• Mitgliedschaft in Energie-Genossenschaften
• Freiheit bei der Entscheidung darüber, wie und wann ich saubere Energie nutze bzw. zur Energiewende beitrage
© Fraunhofer
Seite 12
Fraunhofer ISI

TOP 2: PRÄSENTATION UND BEWERTUNG

Welche Themen haben Ihrer Meinung nach die größte Bedeutung für die Energiewende?

→ Bitte vergeben Sie insgesamt 4 Punkte, je ein Punkt auf unterschiedliche Themen



Seite 14

Fraunhofer ISI

7 Acknowledgements

This paper was prepared as part of the project "Akzept - Wirkungen von Eigenversorgung und Mitgliedschaft in Bürgerenergiegesellschaften auf soziale Ungleichheit und deren Beitrag zur gesellschaftlichen Akzeptanz der Energiewende (Akzept)", funded by the German Federal Ministry for Economic Affairs and Energy.

Contact: Dr. Ewa Dönitz

Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI)

Breslauer Strasse 48

76139 Karlsruhe

Germany

E-Mail: ewa.doenitz@isi.fraunhofer.de

www.isi.fraunhofer.de

Karlsruhe 2023