# What informal communication about the energy transition tells us

*To what extent do professionals in the renewable energy sector act as change agents in this socio-technical process?*

---

Researcher: Maren Frister

Supervisor: Dr. S.R. Jansma

University of Twente

Faculty of Behavioural, Management and Social Sciences

Department of Communication Science

Date: 01.07.2022

## Abstract

**Purpose**

These days, the shift from fossil fuels to renewable energies gets increasingly important, especially considering the recent geopolitical development due to the Ukraine war. To succeed, the energy transition should be regarded as a socio-technical and communicative challenge that connects society and technology. Thereby, the perspectives of various societal members need to be aligned to master the communication of the energy transition throughout society. This study adds to the existing literature on how to facilitate such a socio-technical change process. It examines to what extent professionals in the renewable energy sector act as change agents of the energy transition by informal communication with their peer environment.

**Methods**

To answer the main question, semi-structured online interviews with 15 professionals in the renewable energy branch have been conducted, ranging between 25 and 50 minutes. Open questions were asked about professionals' knowledge and attitude regarding the energy transition, the conversations they hold with peers and why, and how their peer environment responded regarding the topic of interest.

**Results**

The main results indicate that participants regularly talked with their peers about the energy transition in informal situations and, thereby, took examples that were close to people's realities. The professionals aimed to inform their environment, raise awareness, or persuade their peers of their viewpoints regarding the energy transition through their expert knowledge in the socio, political, economic, or technical areas. The informal conversations were triggered by the professionals' job positions or the Ukraine war. The peers reacted either open-minded or not interested.

**Conclusion**

It can be concluded that professionals in the renewable energy branch act as change agents to a high extent through informal communication with their peer environment in different situations. Due to their specific knowledge and intentions to sustainably influence their peer environment regarding the topic of interest, the energy transition is facilitated, especially from a societal perspective. Hence, to further any change processes in society, it could be focused on professionals working in the specific domain. They could act as intermediaries between the highly complex backgrounds of a societal shift and members of society, especially by informal communication in a private setting.

*Keywords:* Informal communication, change agents, energy transition, socio-technical change

## Index

## 1. Introduction

Reaching climate neutrality and a sustainable energy supply is one of the most significant challenges of the current age. In European countries such as Germany or the Netherlands, the shift from fossil fuels to renewable energy resources such as wind energy, solar power, and biomass depicts an essential step toward reaching sustainability goals (Schwarz, 2020). To illustrate, in 2021, 41.1% of the electricity demand in Germany was provided by renewable energy sources, which is already a significant growth compared to 20 years ago. In 2000, only 6.3% of electricity was produced by renewable energies (*Erneuerbare Energien in Zahlen*, 2022). The transition from conventional energies toward alternative energy sources significantly reduces carbon dioxide emissions and air pollution (Chen et al., 2021; Sayed et al., 2021) and results in financial savings (Gryz & Kaczmarczyk, 2021). Additionally, it strengthens the energy independence of Europe (Ouariachi & Elving, 2020), which is even more critical in times when the war in Ukraine calls for cutting Russian gas imports. Hence, there is an increasing demand to replace conventional energy sources with renewable technologies these days.

Due to the technological age, society is embedded in, the energy shift involves multiple stakeholders. Consequently, different issues arise with various backgrounds, e.g., societal, technological, economic, or governmental, leading to a complex energy transition process. It requires that the high amount of "policies, strategies, action plans, and other documents", as Knez et al. (2022, p. 2) explain, are brokered down to facilitate the involvement of all societal parties to fulfill the aims of a sustainable energy change (Ouariachi & Elving, 2020). A key factor for a successful energy shift is the social acceptance that can be supported by organizing and negotiating with the concerned parties (Bayulgen, 2020). The energy transition is described as a "long-term, multidimensional and fundamental transformation process through which socio-technical systems shift towards more sustainable modes of production and consumption" (Markard et al., 2012, p. 956). In other words, this change regards not solely the introduction and implementation of renewable energies like solar or wind power systems but also structural changes in society as various governmental, economic, and societal stakeholders are concerned and need to support the shift to achieve success. It is essential to find ways to reach society and all concerned parties by integrating them into this socio-technical change (Jorgenson et al., 2019). Still, the goals of becoming a sustainable society are not reached yet, as Gryz and Kaczmarczyk (2021) emphasize. Ways that help reach all stakeholders should be developed to address the energy transition's complexity consisting of more than just technological developments.

Society and technology need to be connected during the energy shift. It is a socio-technical challenge and a communicative process (Cozen et al., 2018). Biresselioglu et al. (2020) have multiple approaches to tackle the need for effective communication of the energy transition, particularly referring to the impact of "dissemination and communication of information to citizens" (p. 7) and the

"reputation of information source" (p. 7) which significantly affects the public acceptance of the renewable energy change. The authors claim that the impact of communication on meaning and evoking dialogue between different parties should not be missed. Thereby, strategic communication throughout society is a crucial factor in reaching all the actors and parties. More specifically, the renewable energy suppliers, policymakers, and the government could focus on communication more extensively, not only by financing communication campaigns that are public and informative but also by concentrating on professionals in the renewable energy branch who informally communicate about the energy transition with their environment. Gryz and Kaczmarczyk (2021) emphasize the importance of a "narrative" approach to create a "low-carbon society and green economy" (p. 15). That could be the stories and conversations of professionals in the renewable energy sector that are told to family and friends at private events or during casual situations and make a real difference concerning the successful communication of the energy transition throughout society.

Many opinions and perspectives will come together in communicating about the energy shift. To connect disrupted parts of society that hold various assumptions about the energy transition, persons who can reach these groups could serve as supporters for an effective mediation between parties. Schwarz (2020) refers to a variety of such actors with different functions and skills who are seen as "change agents" (Mey & Diesendorf, 2018). Change agents are "actors that play a significant role in initiating, managing or implementing change" and "facilitators of learning processes" (van Poeck et al., 2017, p. 1). They are highly demanded to convince society regarding the value of renewable energy because this requires knowledge and learning (van Poeck et al., 2017). Change agents can be anyone acting in a specific field who is somehow connected to particular processes that are currently on the societal agenda. Often, professionals can be seen as change agents (Gugerell & Penker, 2020) whose impact grows further by interacting with their environment, also in a private setting (Kiesnere & Baumgartner, 2019). They forward the learning in sustainability-related change processes (Kiesnere & Baumgartner, 2019) and depict a forceful power to influence the public that needs to be made aware and educated on the importance of implementing innovations, such as renewable energy sources (Bayulgen, 2020). The communication between change agents and their environment can support the fulfillment of the previously mentioned goals and, ultimately, help establish a green society. Uncovering the potential of professionals and experts in the renewable energy branch who might operate as change agents – intentionally or without even being aware of their impact – is an important starting point. Through their knowledge and connection with their peers, professionals can have a special position in the social environment, which in turn might also influence the professionals' communication about the energy transition. Based on this, the following research question and sub-questions will be addressed in this paper:

- "*To what extent do professionals in the renewable energy sector act as change agents in the process of the energy transition in society?*"
    - "*How do the professionals reflect their knowledge in the communication about the energy transition with their peer environment?*"
    - "*Which communicative styles do they use?*"
    - "*How does the social environment impact the professionals' informal communication about the energy transition?*"

This paper's focus on the extent of professionals' change agency in the energy transition process provides a perspective that adds to the previously mentioned common research on the public perception of the energy shift and on studies that analyzed involved actors in such changes. Previous papers discussed the possibilities of citizens and other actors to support reducing emissions in the energy transition (Olson et al., 2021) or how various change agents like NGOs, academics, or energy suppliers can guide the energy transition process (Sorman et al., 2020). Other research was conducted on the role of trust in the decision-making of change agents in the energy transition (de Wilde, 2019) and how digital technology can facilitate the energy turnaround process (van Summeren et al., 2021). Referring more to the communicative side of the energy change, studies analyzed, for example, effective strategies to communicate the energy transition to various stakeholders (Cozen et al., 2018; Ludvig et al., 2013). As professionals often take on the position of change agents (Gugerell & Penker, 2020), this study focuses specifically on employees and researchers in the renewable energy branch. Complementing this, the impact of the professionals' informal communication will be central, specifically, how they reflect their knowledge in the communicative exchange with their peer environment and how the social environment of the professionals might have an impact on their communication with peers.

Finally, attention will be paid to the communicative styles professionals apply, for instance, conversations and embedded storylines occurring in private exchange about the energy transition. As this is a subjective and individual topic that aims to find out about human processes, applying the method of semi-structured interviews provides the best opportunity to get meaningful outcomes. Thereby, 15 professionals and experts in the renewable energy sector will participate in this qualitative study to speak openly about their personal experiences.

To answer the research (sub-)questions, relevant concepts will be explained in the theoretical framework below. Based on this, the methodological approach of semi-structured interviews will be addressed to get insights into the highly complex and individual context of this research. Finally, the interview results will be elaborated to merge the outcomes of this in-depth research into a discussion of the main findings, theoretical implications, limitations, and recommendations for further research.

## 2. Theoretical Framework

### 2.1 Energy transition as a socio-technical and communicative change process

The change from fossil fuels to alternative power resources is not solely a matter of technology but involves society at least as much. The energy transition is a sustainability challenge that demands a "deep transformation intended to change socio-technical systems of production and consumption into greener and more inclusive ones" (Ramos-Mejía & Balanzo, 2018, p. 1). It is a process that entails various socio-technical facets (Kamp, 2008) and is, thus, highly complex due to the involvement of multiple actors and stakeholders. Markard et al. (2012) specify this complexity in trade, economy, production, politics, and policy. Building on this, Ruotsalainen et al. (2017) highlight the social-cultural aspect of this change process stating that the energy transition also carries a social complexity determined by the scope of citizens' energy usage, or in other words, by how much energy people need and consume. As there is a worldwide growing demand for energy in society (Biresselioglu et al., 2020), managing the energy transition not solely technically versed but also by focusing on the societal side is a clear challenge in present and future times.

Getting back to the past, society would not have developed as far as it is today without the increasing share of renewable energies. Renewable energies can be categorized as general-purpose technologies that impact the economy, society, and culture thoroughly (Ruotsalainen et al., 2017), for instance, by sustainable changes in industrial production. Implementing renewable energies is a daunting task, as traditional forms of energy supply such as nuclear power, coal, and gas, coined the energy branch already. So-called niches are demanded, which are "protected spaces of specific markets" (Markard et al., 2012, p. 957), where innovations like renewable energy technologies can be safely normalized and introduced into the socio-technical landscape without needing to compete with the traditional resources (Markard et al., 2012). However, it is challenging to strengthen the renewable energy sector to the extent that it can vie with the naturalized use of fossil fuels (Ouariachi & Elving, 2020). To reach the complete normalization of renewable energies addressing all the involved societal stakeholders is one of the most crucial aspects.

Alignment between the multiple parties involved in the energy transition could prevent difficulties in the implementation process of renewables in society. Bayulgen (2020) defines three groups of society that lack harmony to reach common ground. That is, on the one hand, advocates of renewable energies and, on the other hand, advocates of fossil fuels. The third group is situated in between to a certain extent. Most of that third group's members are convinced of the need for energy transition but do not want to have such sustainable innovations installed in their backyards (Bayulgen, 2020). Put differently, shifting to renewable energies is a matter of multi-facet exchange, interactions,

circles of connections, doubts due to lack of knowledge, and differing values and norms (van Poeck et al., 2017). Therefore, as the previous authors claim, it is hard to control such a socio-technical process, which cannot even be simplified by using scientific methods or applying expertise. Approaches that do not solely provide information or calls to environmental action are needed that facilitate this socio-technical change, particularly the communication between all involved parties and stakeholders.

Communicating the implementation of renewable energies is crucial to reaching success in furthering the energy transition from a societal and technological perspective. On a very basic assumption, communication is the connector between science and society. It is built on constructions of meaning in a broad context, such as socio-technical changes that need to succeed (Leeuwis & Aarts, 2011). Therefore, the explicit field of energy communication was studied to tackle the complexity of communication in change processes and to show how important it is to account for the communicating landscape in energy transition research (Cozen et al., 2018). Because communication is not solely a powerful tool to address problems but can also be used to raise disputes (Leeuwis & Aarts, 2011), the deployment of communication needs to be well figured out by scholars. This guarantees a positive influence of communication on the complex energy change process.

The complexity of communication is shaped by its various forms that can be used in different contexts. One context might be strategic communication to influence the public perception regarding the energy transition through planned campaigns (Patrick et al., 2019), whereas another perspective on communication enables connections between human beings who are involved in such a process. The latter context might also motivate people to become advocates of the energy transition (Biresselioglu et al., 2020). For successful communication, the information source and way of information dissemination are essential when it is aimed at reaching society. Cozen et al. (2018) state that the energy transition "entails shifting human modes of thinking and habits" (p. 4) and is, thus, a change process consisting of interactions and discourse. Building on that, Leeuwis and Aarts (2011) highlighted the importance of certain ways of communication during innovation processes. Specifically, the authors talk about a constructive approach when people construct meaning to technological developments, such as the energy transition, whereas the other perspective relates to more linear ways of communicating from a sender to a receiver that information is disseminated. However, communication can have two sides, as Leeuwis and Aarts (2011) underline, either serving as a support for a societal issue to be solved or being the cause for problems occurring in innovation processes (Leeuwis & Aarts, 2011). That members of society have different assumptions about energy-related issues makes it even harder to avoid negative communication outcomes during a change. Therefore, one common ground of society should be reached (Ruotsalainen et al., 2017), for instance, by focusing on the informal communication of stakeholders in everyday situations, as Leeuwis and

Aarts (2011) suggest. By this, the alignment of the various involved parties in the energy transition can be achieved more successfully and positive outcomes of different ways of communication are guaranteed.

### 2.2 Change agents in socio-technical change processes

The complexity of the energy transition is, amongst others, caused by the many actors involved. If a societal actor decides about an issue, this actor can directly impact the system and its peers (Nava Guerrero et al., 2019). The challenge in a change process is to bring multiple actors with different intentions and ambitions to one common ground to reach harmonization. Here, the influence of professionals in the specific industry, communication scholars, or engaged citizens involved in the process (Heiskanen, Thidell, & Rodhe, 2016) can be used as support. They help the process to be managed and implemented (Gugerell & Penker, 2020), especially in changes that regard sustainability issues (Kiesnere & Baumgartner, 2019). For instance, according to Heiskanen, Thidell, and Rodhe (2016), professionals in the renewable energy sector can take the initiative and engage people to impact this change sustainably and positively by action-taking. People who support the harmonization and successful implementation of new socio-technical structures can be called change agents.

Change agents are not just people or an organization. They can have multiple characteristics and traits that facilitate a complex societal change, such as the energy transition. Alagoz et al. (2018) define change agents as “opinion leaders who, through endorsement, promote change implicitly” (p. 1). Lunenburg (2010) underlines the change agents’ ability to provide various perspectives to a given situation. Change agents are nobody else than societal actors who have the characteristics to “create shared identities” (Mey & Diesendorf, 2018, p. 109). Often, people get inspired and motivated by these actors due to their empathy and ability to cope and manage the uncertainty of their counterparts (Kiesnere & Baumgartner, 2019). Thus, they are called “facilitators” animating and engaging the society, as explained by Kiesnere and Baumgartner (2019), Siebenhüner and Arnold (2007) or by van Poeck et al. (2017). Change agents can have managing positions but can also be multiple people in one group with one commonality. They animate peers to positively implement a change process under one goal (Ramos-Mejía & Balanzo, 2018). Hence, there is a variety of people and groups in different positions that coin society regarding changes.

Change agents obtain a certain agency, as the name implies. This agency supports the process of a specific object to change until its normalization in society is done (Vervoort et al., 2012). During such a transition phase, change agents face divided social groups and differing opinions of various actors in their environment (Veervoort et al., 2012). Therefore, they need to be adaptable to change processes that consist of multiple phases and structures (Veervoort et al., 2012). “During their change agency, people inspire and empower peers being expected to mobilize support and inculcate an attitude of confidence and cooperation” in their social environment (Schulenkorf, 2010, p. 119).

Correspondingly, a change agent is usually not perceived as someone that urges the environment to think, do or act in a certain way but is instead appreciated as a facilitator in terms of developing and maintaining relationships with networks (Schulenkorf, 2010). Change agents are often responsible for society to a certain extent (Schulenkorf, 2010) and support the change process to be adapted to the dynamic and complex social environment (Leeuwis & Aarts, 2011). In other words, if a change regards the introduction of innovations like renewable energy resources, but the socio-technical environment is still coined of technologies such as fossil fuels, the change agent initiates the implementation of such a change in a more effective way. Thereby, the innovation can survive in the vigorous socio-technical setting (Leeuwis & Aarts, 2011). Petersen (2021) describes change agents as people that "facilitate or even catalyze change, i.e., change in the shape of innovations and transitions" (p. 797). In summary, change agents help a change to be introduced and developed until it is fully implemented by utilizing networking, empathy, and calls to action – that is agency.

Another important part of a change process is social learning. Various researchers underlined that change agents can enhance societal learning processes (Leeuwis & Aarts, 2011; Siebenhüner & Arnold, 2007; van Poeck et al., 2017). Social learning is generally defined as a "core element in successful innovation processes" (Rohracher, 2008, p. 157). In this learning process, multiple networked individuals and social systems are involved that are currently facing uncertainty and need to find solutions (van Poeck et al., 2017). At this point, change agents come into play since they are, without necessarily knowing that consciously, facilitating (nonformal) learning, according to Siebenhüner and Arnold (2007) and Rohracher (2008). They often "take over leading roles in the collective learning process" (Siebenhüner & Arnold, 2007, p. 348), which also occurs in organizational contexts. Bögel et al. (2019) describe change agents as "boundary spanners" (p. 361), meaning that those people entail knowledge in many areas of interest. Therefore, change agents are not only positively affecting the change to be implemented but also shape the people's learning in the specific context the change is embedded. As Heiskanen et al. (2016) highlight, to guarantee success in the process of change agency, the "quality of informal networks" (p. 218) is decisive. Particularly, acting as a bridge between parties and striving to keep relations with people who have different points of view are crucial aspects. However, the personal background of the change agents needs to be considered, as it plays a role in communicating with the informal network to support the specific socio-technical change process.

### 2.3 Knowledge

Knowledge is a forceful aspect when there is an exchange of information taking place regarding a specific topic. Mosaferi et al. (2022) see knowledge as "the capacity to acquire, retain, and use information" (p. 56) that is based on peoples' gained experiences, skills, and facts (Ho et al., 2017). It impacts proper decision-making and the right behavioral choice in each situation and is, therefore,

subjective (Ho et al., 2017). As a pre-state of action, knowledge needs to be communicated in a certain way to achieve this impact (Rampedi & Ifegbesan, 2022). Thus, it is not enough to simply spread information and impart knowledge to members of society if it is aimed at changing actual behavior (Rampedi & Ifegbesan, 2022). Rather, the individual processes behind peoples' acquisitions of knowledge should be considered and adapted to societal change initiatives.

During socio-technical challenges such as the energy transition, multiple stakeholders with differing aims and attitudes are involved. Here, knowledge develops during their interactions about the given theme of interest (Rikkonen et al., 2021). Such interactions occur within social networks, which help knowledge be conveyed and transmitted effectively and, therefore, depict the key to further a sustainable change (Moore & Westley, 2011). For example, if multiple actors like professionals or experts communicate within social networks during change transitions, meaningful exchange of information can take place that enables peers to learn and acquire new knowledge of the topic of interest (Kamaşak & Bulutlar, 2010). Kamasak and Bulutlar (2010) underline the further potential of knowledge to support solving problems, e.g., how to best communicate the energy transition in society. Thereby, professionals in the renewable energy sector, for instance, can obtain different kinds of knowledge, e.g., contextual, technical, expert, or scientific (Ramos-Mejía & Balanzo, 2018). Specifically, somebody with technical expertise in a certain area needs to understand the context it is embedded, or, put differently, can see the bigger picture, which is referred to as contextual knowledge (Aspers, 2006). People with expert knowledge, in turn, could provide specialist information on specific topics in the energy transition. Because people like professionals hold a broader knowledge of a certain topic and can inspire their environment, they can act as facilitators of a change process (Kiesnere & Baumgartner, 2019) and support the spread of new knowledge as change agents (Siebenhüner, 2007). Briefly summarized, knowledge can be multiplied by people who mutually interact in social networks.

The acquisition and transfer of knowledge about subjects to change clearly influence how the change proceeds in society, especially regarding a change that deals with sustainability issues such as the energy transition. Because the individual knowledge level and education impact the environmental behavior of people clearly (Ao et al., 2022; Rampedi & Ifegbesan, 2022), transferring knowledge can also be regarded as education on change that takes place to raise societal awareness (Zwolińska et al., 2022). Thus, knowledge influences the whole situation around the energy transition to a high extent, as Rampedi and Ifegbesan (2022) state: "Individuals with an improved knowledge about climate change are likely to make better decisions, thus reflecting positive attitudes and dispositions to engage in the desired pro-environmental behavior" (p. 2). In other words, if professionals with knowledge about the energy transition communicate and disseminate that knowledge to their social environment, their peers might be more likely to advocate renewable energies, for instance, than if they had not

been informed by the professionals. In short, knowledge is an essential aspect of the energy transition process that needs to be transmitted to people in social networks to bring new approaches and perspectives to their minds.

### 2.4 Informal communication and storytelling

People are directly affected by the energy transition as their lifestyles are dependent on energy. Like a circle phenomenon, peoples' everyday life is intertwined with energy, and economies, social and technical landscapes, as well as current political states are highly coined by the energy supply system (Ruotsalainen et al., 2017). Therefore, the whole society engages in the energy transition to a certain extent. People either work professionally in that field or show engagement as citizens and might act as change agents. Thereby, the contexts differ from private organizations to communities (van Poeck et al., 2017). Communication between the various actors can be an approach to support the development of the involved social networks that help the innovation process of implementing renewable energies to flourish (Leeuwis & Aarts, 2011).

As previously stated, there are differences in kinds of communication, also when referring to the effectiveness of communicating change. Specifically, there are formal and informal communication processes. Here, Biresselioglu et al. (2020) claim that if people generally do not understand the energy shift, a formal way of communication will not achieve social support for the transition process. Leeuwis and Aarts (2011) clearly emphasize informal communication explaining that informal interactions in society obtain more value for furthering change than professional communication. People generally shape their views about events like energy shifts or other change processes by communicating and speaking regularly with their environment (Rafferty & Restubog, 2010). Therefore, the drivers of informal discussions and communication need to be trustful to the peer environment to realistically facilitate the change process and enable social learning (Leeuwis & Aarts, 2011). It should be questioned if the usual focus should further lie on formal communication effecting change, as it was already researched (e.g., Bouckenooghe, 2012; Tsai & Compeau, 2021; Allen, 2016), or on the informal communication. Latter does not solely forward the change, it also shapes the process (Leeuwis & Aarts, 2011) by allowing the involved stakeholders to give their own opinion and, during a conversation, provide feedback to the opposite person (Kraut et al., 2002).

Furthermore, as people need to individually make sense of changes and create meaning to processes such as the energy transition, which is also called sensemaking (Thurlow & Helms Mills, 2009), they are challenged to expand on their perceptions to cope with the conversation partner's opinion and to better deal with possible misunderstandings (Kraut et al., 2002). By this, situations of uncertainty such as a socio-technical change can be organized and structured (Kraut et al., 2002). Hence, informal communication is of utmost importance to individually make sense of a situation and mutually communicate with the peer environment to shape a change process.

To create meaning and make sense of complex societal innovation processes, informal communication can consist of stories. In general, stories are useful because they give insights and frame events in a way that provides rich, though subjective, information to a subject, which is not possible to be explained by scientific reports, for example (Moezzi et al., 2017). Since stories catch people, not solely the storyteller counts, but also the way they are constructed and how the involved actors' discourse is shaped by the development of storylines (Leeuwis & Aarts, 2011). Inspiring messages need to be created that can be used as drivers of change for society, also referred to as storytelling (Biresselioglu et al., 2020). Biresselioglu et al. (2020) explain that "storytelling can be utilized to initiate change and motivate individuals and society towards energy targets by increasing involvement with, and interest in the message" (p. 7). Therefore, it is a tool to relate various societal actors with one another to communicate in a more casual way about peoples' feelings, thoughts, or actions than by applying formal jargon (Moezzi et al., 2017). Thus, if professionals in the renewable energy sector, for example, talk about their views packed in stories, their peer environment might feel more encouraged to think about the energy transition or behave in a certain way than if they are just confronted with jargon or numbers and facts. Mourik et al. (2021) link storytelling to sustainability issues as being a support in bringing societal members with different backgrounds of knowledge or education to one ground to tackle topics such as the energy transition. Alongside, storytelling not only evokes relations between different stakeholders but also helps knowledge and learning to happen about a given issue in society (Benites-Lazaro et al., 2017). Hence, storytelling directly affects the change communication of processes such as the energy shift by catching the people that are in exchange about it.

### 2.5 Social environment

When focusing on mutually interacting informal networks, the societal background needs to be considered concisely because individual experiences and attitudes that merge during change processes are antecedents of the outcome. Particularly, Routsalainen et al. (2017) underline the impact of cultural values as well as individuals' and communities' perspectives shaping socio-technological changes to a high extent. Following the social information processing theory, "individuals adapt attitudes, behavior, and beliefs to their social context and to the reality of their own past and present behavior and situation" (Salancik & Pfeffer, 1978, p. 226). Therefore, considering the peer environment when trying to find out about a person's intentions and behavior is an insightful starting point also regarding the analysis of change processes and how these are influenced by concerned actors (Salancik & Pfeffer, 1978). According to Ajzen's theory of planned behavior (1991), intentions are dependent on the social pressures people feel regarding potential action-taking, also referred to as subjective norms. In other words, the opinion and (dis)approval of peers, such as change agents, is

considered important by people (Read et al., 2013). Therefore, subjective norms can predict peoples' behavior to a certain extent (Kashif et al., 2018), and referring this to sustainability changes, they can also be the drivers of environmental actions, e.g., supporting or rejecting wind farms (Davis et al., 2015). In sum, it can be argued that the social environment, and especially the social pressure that is caused by subjective norms, affect societal members' communication, their intentions, and, ultimately, their behavior regarding a certain change.

### 2.6 Relating the concepts

The communication throughout society that is needed for the energy transition to be successful demands people that act as bridges between stakeholders, such as change agents. Due to their various kinds of knowledge, their ways of communicating with peers, and the influence of their personal environment, change agents shape peoples' views and actions, especially by means of informal conversation touching people more. Here, the senders of a message need to be considered when aiming to implement change. Their words are influenced by their specific knowledge and peer environment in terms of social pressures and subjective norms. The main concepts of this paper, energy transition as a socio-technical and communicative change process, change agents, knowledge, informal communication, and the social environment, adds up to the still existing literature gap in studying the societal side of the energy transition (Ruotsalainen et al., 2017). It is focused on change agents, as senders, who talk about the energy transition in their peer environment, finding out about their specific agency in their peer environment regarding the energy transition and how this might affect the change process.

## 3. Method

### 3.1 Design

A qualitative research design was chosen to answer the main question: "*To what extent do professionals in the renewable energy sector act as change agents in the process of the energy transition in society?*" and the sub-questions: "*How do the professionals reflect their knowledge in communicating about the energy transition with their peer environment?*", "*Which communicative styles do they use?*" and "*How does the social environment impact the professionals' informal communication about the energy transition?*"

A qualitative approach was considered most appropriate for this study as it enabled the gathering of deeper insights about individual interactions and informal communication of people with their peer environment (Chamlee-Wright, 2010). More specifically, semi-structured interviews were chosen since these are shaped by open questions that allow participants to talk about their perceptions and opinions and, thus, guarantee a rich data collection (Baumbusch, 2010). According to Schwarz (2020), qualitative interviews are the best way to help participants depict their opinions and viewpoints. Hence, meaningful conclusions could be drawn regarding the professionals' change agency in their social environment when discussing the energy transition.

### 3.2 Instrument

During the semi-structured interviews, participants were allowed to answer the questions openly so that they were better interpreted by the researcher. Eventually, this supported the richness of insights that would not have been possible if quantitative methods such as statistical analysis were used (Chamlee-Wright, 2010). In this study, in total, 15 online interviews were executed with people who were either hired in the renewable energy branch or had academic expertise in that field. The interview sessions took place during the first two weeks of May 2022 and started after the research request was approved by the ethics committee of the University of Twente. Each interview was held on the platform Microsoft Teams and ranged between 25 and 50 minutes.

Each interview started with a short introduction to the thematic field and the insurance that the collected data would remain confidential and deleted after the end of the study. After the participant confirmed that the recording of the interview was allowed, the researcher started with the questions. First, the researcher asked the participants to generally introduce themselves, specifically referring to their job position and how the interviewee was connected to the energy transition. Afterwards, the questions were divided into specific interview parts according to the previous theoretical framework. The first part was about knowledge and perception regarding the energy transition. Here, the participants were asked about their general knowledge and expertise related to skills and how they think about the energy transition. Following this, the third part referred to the

professionals' social environment and how it influenced their communication and conversation about the energy transition. For example, it was asked in what context professionals talked with peers about this socio-technical change. During the fourth part of the interview, it was dived deeper into the topic of communicative styles. Specifically, if the participant rather spoke about real-life events that were strongly connected to the energy transition or if the conversations about the topic of interest consisted of theoretical arguments or numbers. Finally, the researcher wanted to gather insights if the interviewees had a certain influence on their peers regarding the energy transition. Particularly stated questions referred to if the participant felt responsible for affecting the social environment or what difference they could make regarding the issue of interest. In Table 1, there is an overview of the interview parts and belonging questions. For the complete interview scheme, see Appendix 2.

**Table 1**

*Example questions for the interview categories*

| Interview parts | Example questions |
|---|---|
| Introduction | "Could you please tell us something about your job position and how you are connected to the energy transition?" |
| Knowledge and perception of the energy transition | "What do you think about the energy transition in Germany/the Netherlands?" |
| Social environment of the professional | "How do you communicate about the energy transition with your peer environment?" |
| Professional's communication style regarding the energy transition | "Can you give a specific example in which you communicate about the energy transition with your peers?" |
| Professional's influence on the social environment | "Do you think that you have a certain responsibility to influence the peer environment and why (not)?" |

### 3.3 Participants

The core criterium for the selection of the interviewees was that they were professionally active in the renewable energy branch or had expertise in that field due to academic interest. Most of the participants were sales and project managers for renewable energy technologies (RETs) or communication professionals in a renewable energy company writing press reports about renewable energy topics daily. Three participants were researchers at a university in the environmental and energy field that was strongly connected to the energy transition. One interviewee was a technician

for the installation of wind farms. Another worked as an energy manager who was responsible for the introduction of renewable energy technologies in a municipality (see Table 2).

Initially, 18 potential interviewees were contacted about four weeks before the sessions started. Three people did not answer at all. The study was based on non-probability sampling, which is a very common strategy in qualitative research (Berndt, 2020). The researcher selected most participants from the personal environment according to specific criteria. Some of these participants, in turn, contacted other potential interviewees to support the increase of this study's sample size.

**Table 2**

*Professional background of the participants*

| Job position | N | Key areas |
|---|---|---|
| Communication professional | 4 | Internal communications for a renewable energy company |
| | | Press work for a renewable energy company |
| Researcher | 4 | Energy management and smart grids |
| | | Public policies for change processes (i.e., the energy transition) |
| | | Electrical engineering (i.e., for RETs) |
| RET Technician | 1 | Mechatronic engineering for wind parks |
| Other employee in the RE sector | 6 | Financial controlling for wind parks |
| | | Business consultancy for a RET software company |
| | | Energy management for a municipality |
| | | Sales management for PV and solar energy |

## 3.4 Analysis

### 3.4.1 Codebook

All interviews were recorded and transcribed. Based on the transcripts, a coding scheme was developed following an inductive approach. The final codebook (see Appendix 3) consisted of the following 14 main themes: *job position and experience*, *type of knowledge*, *level of knowledge*, *attitude towards energy transition*, *opinion holder in the conversation*, *triggers*, *expectation of the energy transition*, *context conversations are embedded in*, *content of the conversations about the energy transition*, *way of talking about the energy transition*, *intention of the stories told*, *frequency of conversations about the energy transition*, *points of criticism*, and *feedback/response of the social environment*. In total, 48 fitting codes were distributed to each main category. A table with the main categories and belonging codes can be seen below (Table 3).

**Table 3**

*Main categories and codes*

| Main category | Code |
|---|---|
| Job position/job experience | COM professional |
| | Other employee in the renewable energy sector |
| | Researcher |
| | RET technician |
| Type of knowledge | Technical knowledge |
| | Socio, political, or economical |
| Level of knowledge | Expert |
| | Layman |
| Attitude towards energy transition | Ambiguous |
| | Positive |
| | Negative |
| | Neutral |
| Opinion holder in the conversation | Professional |
| | Direct environment |
| | General public (+media) |
| Triggers | Ukraine war |
| | Gas prices |
| | RE 'in the backyard' |
| | Media headlines in general |
| | Job position of the professional |
| Expectation of the energy transition | Realistic |
| | Idealistic |
| Context conversations are embedded in | Family sit-together |
| | Coincidental meeting |

*Table 3 (continued)*

| | |
|---|---|
| | Presentations |
| | Social events |
| | Workplace |
| Content of the conversation | Energy transition in general (without referring to specific areas of interest) |
| | Type of energy sources |
| | Other/miscellaneous (e.g., less meat) |
| Way of talking about the energy transition | In real-life events |
| | Facts and numbers |
| | Jargon |
| Intention of the stories told | To raise awareness |
| | To persuade |
| | To inform |
| Frequency of conversations about the energy transition | Often |
| | Regularly |
| | Occasionally |
| | Never |
| Points of criticism | |
| Feedback/response of the social environment | Open to input |
| | Not interested |
| | Rejecting input completely |

### 3.4.2 Intercoder Reliability

To assess the reliability of the research, the Cohen's kappa was calculated. This was based on 10% of the transcripts that were coded by the researcher and a second coder using the coding software Atlas.ti. The so-called intercoder reliability is an indicator of the researchers' coding agreement with each other. The more it goes towards threshold one, the more sufficient it is (MacPhail et al., 2016). Table 4 shows the Cohen's kappa values for each coded category. After the first round of coding, one of the main categories (*feedback/response of the environment*) showed an insufficient Cohen's Kappa (0.55). After another round of discussing the coding scheme with the second coder, the score for this category increased to 0.66, which was rated sufficient by both coders.

**Table 4**

*Cohen's Kappa values of the 10%*

| Main category | Cohen's Kappa |
|---|---|
| Job position and experience | 0.99 |
| Type of knowledge | 0.73 |
| Level of knowledge | 0.73 |
| Attitude towards energy transition | 0.94 |
| Opinion holder in the conversation | 0.76 |
| Triggers | 0.78 |
| Expectation of the energy transition | 0.94 |
| Context conversations are embedded in | 0.87 |
| Content of the conversation | 0.87 |
| Way of talking about the energy transition | 0.81 |
| Intention of the stories told | 0.93 |
| Frequency of conversations about energy transition | 0.77 |
| Points of criticism regarding energy transition | 0.93 |
| Feedback/response of the social environment | 0.65 |

## 4. Results

In Table 5 below, there is a detailed overview of the results per participant regarding the most important categories, including attitude regarding the energy transition, knowledge type, the content of conversations about the energy transition and its context, the communicative objective, and the response of the peer environment.

**Table 5**

*Results per professional*

| Participant | Attitude | Knowledge | Content | Context | Objective | Reaction |
|---|---|---|---|---|---|---|
| 1 | Positive | Socio, political, and economic | Types of sources | Social events | To inform | Open to input or not interested |
| 2 | Ambiguous | Socio, political, and economic | ET in general or type of sources | Social events | To inform, to raise awareness | Open to input or not interested |
| 3 | Positive | Socio, political, economic, and technical | ET in general or types of sources | Family sit-togethers | To raise awareness, to persuade | Rejecting input or not interested |
| 4 | Ambiguous | Socio, political, economic, and technical | ET in general or types of sources | Family sit-togethers | To raise awareness, to persuade, to inform | Open to input |
| 5 | Ambiguous | Technical, socio, and political | Types of sources | Family sit-togethers or workplace | To inform, to raise awareness | Open to input or not interested |
| 6 | Ambiguous | Socio, political and economic | ET in general or types of sources | Social events | To inform, to raise awareness | Open to input or not interested |
| 7 | Positive | Socio, political, economic, and technical | ET in general or types of sources | Family sit-togethers, presentations, social events, or coincidental meetings | To persuade, to raise awareness | Open to input or not interested |

*Table 5 (continued)*

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | Ambiguous | Socio and political | ET in general, types of sources, or other/miscellaneous | Family sit-togethers or workplace | To inform, to raise awareness, to persuade | Open to input |
| 9 | Positive | Technical, socio, political and economic | ET in general or types of sources | Social events, presentations, or workplace | To inform, to raise awareness, to persuade | Open to input |
| 10 | Positive | Technical, socio, and political | Types of sources | Family sit-togethers, or presentations | To inform, to raise awareness | Open to input |
| 11 | Positive | Socio, political, and economic | ET in general | Social events or family sit-togethers | To inform, to raise awareness | Open to input |
| 12 | Positive | Technical | ET in general or types of sources | Workplace | To inform | Open to input |
| 13 | Positive | Socio, political, economic, and technical | ET in general, types of sources or other/miscellaneous | Family sit-togethers, social events, presentations, or workplace | To persuade, to raise awareness | Open to input or not interested |
| 14 | Ambiguous | Economic | ET in general | Family sit-togethers | To inform | Open to input |
| 15 | Positive | Socio, political, economic, and technical | ET in general or types of sources | Coincidental meetings or presentations | To raise awareness, to persuade | Open to input or not interested |

## 4.1 Main Categories

### 4.1.1 The sender

The professionals' attitude regarding the energy transition was either ambiguous or positive. Professionals who described having a rather ambiguous attitude towards the energy transition clarified that they were really convinced of the energy transition but underlined that it needed to be done with caution and patience. Participant 2 underlined: "Of course, renewable energies are to be

preferred. But it is very important that it is a process that does not happen overnight and that conventional energies also have a right to exist due to the security of supply." Other interviewees had a completely positive attitude towards the energy transition. Participants 3 and 4 reported being proud to be part of this energy transition as professionals in the branch and perceived the energy transition as extremely important, even more, due to the Ukraine war. None of the 15 professionals had a negative or neutral attitude towards the energy turnaround.

Regarding the type and level of knowledge, most of the professionals held socio, political, or economic knowledge (see Table 5). This type of knowledge was described as being able to grasp the different contexts of the energy transition in terms of regulations, policies, politics, societal issues, and the energy economy. Participant 9 explained that he could create a global context: "I also see two different energy transitions in the Netherlands and Germany. You cooperate with Poland and Denmark, etc., so you also see completely different practical examples. So, you also get a broader insight into this area." Most of the participants classified their socio, political, or economic knowledge as being rather on an expert than on a layman level, but solely in specific areas of interest. Participant 3 noted: "Overall, I have so much overview in all areas, for me, that is a big coherent picture. And I think technically, not the expert knowledge, but good, and expert knowledge in the energy industry, I would say."

Advanced technical knowledge was only held by a few participants and was referred to as being able to explain the detailed technical backgrounds of specific renewable energy technologies. Such knowledge was kept by participant 5, a RET technician for windmills, participants 9, 10, and 12, who were researchers in the energy field at a university, and participants 7 and 15, managers for photovoltaic and solar energy. Latter ones explained to have a niched technical knowledge in a specific area, e.g., in the field of smaller solar and PV systems concerning solar energy in general. The technician in a wind energy company stated about his knowledge:

It is very technically versed because due to my studies, from scratch I could explain a wind turbine to the smallest detail, what which component does and by reading up you can judge a bit what is going on in the world.

It was also mentioned by a participant that the level of knowledge depended on the social environment: "When I am in my private environment, I would call myself an expert. When talking to friends, I have deep professional knowledge and am one of the first contacts." One researcher, participant 10, underlined the mixture of both advanced levels of socio-political and technical knowledge due to experience in technology, business, engagement of governments, and civil society

with regards to the energy transition and added:" I do not only have knowledge but also experience with other stakeholders and other disciplines."

In sum, most interviewees were positively minded regarding the energy transition or ambiguous, saying that this change is needed but also requires time and caution. Thereby, many participants explained to have socio, political, or economic knowledge on an expert level in particular domains like the energy industry, for instance. The professionals who worked as technicians underlined their technical expertise in specific fields such as windmills. Some participants additionally had a basic knowledge in areas of the energy transition that did not belong to their specific field of interest due to some touchpoints at the workplace, for example, by exchanging information with colleagues regularly.

### 4.1.2 Conversations and stories that were told

Participants mentioned a variety of stories they told to their peer environment in multiple contexts with different types of content and specific intentions. Referring to the context, many conversations about the energy transition took place with their families at the dinner table, according to the participants (see Table 5). Participants 9 and 10, who worked as researchers at a university, mentioned occasionally giving presentations to a broader audience, for example, in high schools or at clubs, trying to bring the energy transition closer to the social environment by this. Specific areas of interest were mostly related to, for instance, particular types of renewable energy sources, e.g., wind parks and electromobility, as participant 8 mentioned: "So with my family, I talk most often about the energy transition with the topic of electric cars or mobility and CO2 price." Alongside, taking examples of the sustainability of wind farms and their recycling or the modernization of windmills was often interesting to refer to in conversations, as participants 4 and 8 noted. Besides, professionals explained to speak about the energy transition on a more general basis when sitting together with peers casually. Interviewee 12 explained:

I try to explain first a bit that it is quite complicated, that we have sun and wind which we cannot control and what my research is then about, and what we need to aim for. That we are moving with the energy transition towards more renewable energy, but we control more what we consume, so it is turning around a bit, and I explain how my work contributes to that if they want to know about that.

However, respondent 2 remarked that speaking about the energy turnaround with friends on social events like birthday parties got less due to the corona pandemic. By talking about the energy transition with their peer environment, most professionals said to not solely aim at informing their friends and family but also raising awareness and persuading them to a certain extent (see Table 5). Interviewee 6 reported regularly answering questions of their direct environment about anything

regarding the energy transition or renewable energies: “In my other environment, then it runs on an explanatory basis because they ask a lot of questions.” Many professionals did not only want to clarify this socio-technological issue by providing meaningful information but also by repeating certain arguments from time to time, as a participant 3 explained:

The more often I bring my arguments, the more I repeat that, at some point, it's buzzing around in the back of my mind the next time the conversation partners come into contact with the topic of energy transition in everyday life.

Persuading their peers is something many participants wished for, as they claimed, but which was not always successful. Participant 7 said that it always depended on the opposite person’s own thinking and attitude if one can be influenced by the professional’s constant talking about the energy transition: “It's not easy to persuade many people to take steps towards the energy transition themselves. There is still a big hurdle to overcome that people see the whole thing as their own problem.” Nevertheless, some interviewees reported success in persuading or influencing their surroundings to at least a certain extent. Participant 3 emphasized:

Whether consciously or unconsciously and not necessarily fact-based, but also by life examples, one's own attitudes. Without a strategy or that one has set oneself the goal of influencing someone. I assume that the social environment is also influenced by communication and interaction with professionals.

The conversation did not develop on its own. Most of the time, conversations about the energy transition started with a certain trigger, according to the participants. In most cases, these were the current job position of the professional that provoked the environment to start talking about the topic of interest. Participant 4 highlighted:

Especially because they know that I work for an energy company that wants to drive the energy transition. That's why it's my daily bread, even if I'm not the technician. You are taken more seriously than someone who has read about it through the media. The fact that I work there also helps in arguments. Also, in terms of trust.

Alongside, the recent global developments, such as the Ukraine war, triggered discussions, according to many respondents. Other activators of conversations about the energy transition were related to headlines in the media, as mentioned occasionally. Here, interviewee 3 pointed out that

family members, for instance, sometimes read a big heading and thus, came to the participant to discuss it. Also, the currently high gas prices were from time to time referred to as activators for discussions about the energy transition, as participant 8 explained.

Professionals used certain ways of talking with their peers about the energy transition. Most of the interviewees reported preferring to take an example about the energy transition that was close to peoples' realities and daily life to make a difference. Interviewees 3, 5, and 9 explained that they wanted to make the topic of energy transition easier to understand by laymen in their social environment. Therefore, they began the conversations with "How to proceed now" or "What if", as interviewee 5 declared, to avoid too many facts and numbers. Participant 2 highlighted: "Basically, I always try to give an example that is close to the one it concerns, otherwise, it is difficult for him to understand it." However, facts and numbers were also referred to occasionally, e.g., by participant 3: "So I try to argue with data and facts, I try to pick out some that are easy to understand, that also kind of invalidate the most important fears and criticism." Jargon, against this, was not applied that often by professionals, as they revealed, only if the conversation partner was on the same level as the professional, according to interviewee 1: "I only use technical language if I know the technical level of my counterpart." Participants 7, 12, and 15 reported that listeners were quickly disinterested when talking in jargon.

In brief, the conversations and embedded stories of the professionals with their peer environment took place at the dinner table with the family, as indicated most often, talking about topics such as the different types of renewable energy sources (e.g., wind energy, electromobility). Thereby, professionals intended to inform their peers, e.g., by answering questions from friends and family members, and to raise awareness of their social surroundings. Many tried to persuade their peers but not always reported success depending on the opposite person's own attitude. Generally, conversations were triggered by either the job position of the professional or the Ukraine war. During the conversations and the stories which were told by professionals, the participants used examples to make the topic easily understandable for their environment, especially by avoiding jargon.

### 4.1.3 Peer environment

Regarding the attitude towards the energy transition from the standpoint of the peer environment, interviewees annotated that many people were already aware of the importance of the energy transition in general. Even though it was claimed that many peers were positively minded about the energy transition, some would not accept comfort restrictions for it. Referring to this, participant 12 complained: "Most people do not realize basically how the energy system works, they really want renewables, but they do not want change." Only in a few cases the peers of a professional were critical of the energy transition. To refer to examples, participant 6 mentioned the green attitude of many peers and that it was not necessary to convince them about the energy transition at all. Against this,

participant 4 took the family-in-law as an example, who did not completely reject the energy turnaround but was rather sceptical about it. Another interviewee, participant 5, referred to peers who were strictly against RET and very convinced of nuclear resources. Next to these few critical minds that the interviewees had to face seldomly, participants reported that some peer members had a neutral attitude and did not show any interest. If so, according to participants 2, 7, and 9, it was mostly due to the absence of any touchpoints with their personal life.

The responses of the peers towards conversations about the energy transition differed (see Table 5). There were reports about an open-minded environment that really wanted to talk about this socio-technological issue which even led to a factual exchange of information if the conversation partner was interested and educated, as interviewee 3 underlined. Sometimes, the social environment was not interested, as respondent 7 explained, especially regarding theoretical input: “As soon as you go deep into it, you lose people.” Furthermore, it poked out that peers who rejected input completely were rather unusual, according to many professionals. Participant 7 explained that this was only the case if a friend, for instance, was not accessible at all when professionals tried to start a conversation about the energy transition.

A significant difference was identified in the expectations regarding the energy transition of the professionals and their peer environment. Whereas over half of the interviewed professionals looked at the energy transition from a more realistic perspective, as interviewees explained themselves, with a deeper understanding of the complexity of the energy turnaround and why it needs much time, the peer environment of friends and family thought about it from a clearly idealistic point of view and wanted the energy transition faster than realistically possible, as participants 2, 5, and 8 described. Respondent 6 underlined:

Some in my environment wish that faster than it is actually close to reality. Many don't understand why to invest in gas and why this is now considered a green investment Europe-wide, so this, that it should be taxed differently, investments in gas should be considered green and why and so, others have a different understanding again or want too much too fast.

Participants indicated that they saw things differently with regards to the energy transition due to their professional background knowledge. Participant 2 stated: “Through my work, I also know both sides, fossil fuels, and renewable energies, and I no longer see everything so very black and white.” Peers often did not have such a viewpoint, as the professional explained.

Some main points of criticism the peer environment highlighted during conversations were touched upon by the professionals. The core points that were described related to the pace of expansion of the RETs, particularly that it was not fast enough, according to participant 5. Alongside,

financial fears were mentioned by participant 14, which led to scepticism towards energy transition. In other words, many peers had anxiety that electricity gets too expensive with RETs instead of conventional resources, as the professional said. Participant 9 referred to some problems regarding electromobility: “Often only financially strong families can afford something like that, that shapes my environment, but it is already the case that it is not affordable for many.” Another aspect that was addressed by the social environment was the volume of windmills that are standing near living areas, i.e., reported by interviewees 5 and 8. They claimed that it was too high disturbing their daily life. However, a generally pessimistic attitude by peers towards the energy transition was not considered as being a problem by the participants.

In conclusion, the professionals’ peer environment had a generally positive attitude towards the energy transition but often refused to accept comfort restrictions for it. This was also in line with the expectations of the peer environment regarding the energy change that were reported as being idealistic, whereas the participants themselves rather held a realistic expectation due to their knowledge. The responses of the peers to starting conversations about the topic of interest ranged from open-minded to not interested at all. Main critical points of the peers regarding the energy transition related to the pace of renewable energy expansion, which was too slow for friends and family, as participants highlighted. Additionally, financial fears from the sides of the peers were addressed by the professionals.

### 4.2 Narratives of change agency in informal networks

Several times participants referred to specific incidents where peers or family members pro-actively came to them asking about a particular topic regarding the energy transition, or where they started a conversation with someone and used specific examples about the energy transition. Below there are instances of occurrences the professionals experienced once and described during the interview sessions.

#### 4.2.1 Coincidental meeting

The context of this example was rather random, participant 15, a sales manager for PV technologies, met a peer at the supermarket. Many people belonging to the social environment of the interviewee knew that he obtained expertise in the field of renewable energies, as the professional said. He described his knowledge as rather specified: “The technical knowledge is decent in the field of smaller solar and PV systems, as far as solar energy is concerned.” Additionally, the professional underlined that he dealt with the energy transition and renewable energy topics daily, which enhanced his broad socio-political knowledge. The following example was taken by him:

So quite funny, I met an acquaintance of mine three weeks ago while shopping in front of a supermarket and he told me just this topic of energy prices as they develop and that everything would be crazy and the policy. Then I have just taken up this theme and said that our policy is first not responsible for the fact that Russia invades Ukraine, that is a war, from which these dependencies and from the rise in prices. Since I have also explained to him again that our energy is not more expensive, but that it has been much too cheap for decades and have told him what I just meant, also again in half an hour conversation between door and corner at the REWE. And not interestingly enough, he met a friend of mine yesterday, who then told me that you met him and him three weeks ago and talked to him, and he found it totally interesting that he gets an insight into the issues concerning energy and that even if it was only for a short time, he was totally interested and would now have a different view on it.

Clearly, he was the opinion holder in the conversation about energy prices. The trigger was related to the Ukraine war and its consequently high energy prices. In the end, the participant got confirmed by another friend that the peer was significantly influenced by what the professional said.

### 4.2.2 Regular Discussions

Participant 3 had high expertise in economics regarding renewable energies, expert knowledge in the socio-political area, and due to his studies, basic technical knowledge, describing it as follows: “With the technical knowledge I am quite good and have in almost all areas an overview or a big picture.” He explained that he liked talking about the energy transition and that he was confronted with this issue daily, not solely due to his job at a small software company for renewable energies. In conversations with his family, e.g., at the dinner table, he often discussed high energy prices or electromobility: “With my family, I talk most often about the energy transition with the topic of electric cars or mobility and CO2 prices.” There, he tried to avoid only arguing with numbers, as he emphasized, because the listener gets out of the conversation very fast with too many numbers, as he defined: “At the latest after the second number, almost every listener gets out.” He took the following example of a recent case where he discussed the energy transition with his parents who were, according to him, not easy to persuade:

I package the whole thing, e.g., "Tesla has analyzed many vehicles from customers and found out that the batteries last a long time.” These are the most important arguments. And if there are questions, then you can actually go deeper in this direction. But most of the time, the point is accepted, and then we move on to the next point of criticism. So that's often the case when you have expert knowledge in the field, and the other side has a ready-made opinion, has read headlines that strengthen the opinion and now wants to discuss and tries to run from point to point, and as soon as

the awareness is there that you cannot win the point, then I just go to the next point. That is until I reach a point where I don't know of any corresponding study where I can't disprove it. That is then the endpoint and then ends in a draw for the person without expert knowledge because you could not refuse the point.

Even though he did not report that much success, the professional added that he did not get tired of talking about the energy transition with the aim to apply his knowledge reasonably: “Above all I want to use the knowledge, somehow, to turn to the good what I think what is good.” This shows that the professional clearly aimed at raising awareness and persuading the peers about the energy transition even though the opposite persons were not fully convinced yet and were hard to reach.

### 4.2.3 Arguing for renewables

One of the communication professionals, participant 4, who had expert knowledge in several fields related to the energy transition, explained that he often tried to raise awareness of the sustainability of renewable energies such as wind farms or the possibilities for enhancing sustainability when people are sceptical about electric scrap. This was regularly the case, as he mentioned when sitting together with his family-in-law, who always criticized whether the energy turnaround was as environmentally friendly as it was claimed. According to the professional, he would always use the following two arguments if a critical mind confronted him with the following aspects:

I often give an example of recycled wind farms, for example, that parts of wind turbines can still be reused. Sustainability does not only exist in the sense of renewable energy but also sustainability up to the supply chain. This is socially acceptable but politically not yet so far arrived, and with the average fiver, haha, not yet so there, that is something that one can and also should lead in any case, to meet just a critical spirit. The same applies to car batteries. There I also always had a similar example that is reused, second life so to speak. That is an argument that can be used to counter the criticism of electronic waste.

In this case, the peer environment proactively came to the professional to discuss, triggered by his job position in a renewable energy company. The professional clearly tried to convince the family-in-law of the energy transition by arguing with specific facts and examples. This underlines the professional’s status in the peer environment and shows how the participant tried to use this position to strongly advocate for the energy transition after he was approached by the family.

### 4.2.4 Taking away fears of renewables

Interviewee 9 made an example of regular conversations with his social environment about the introduction of e-mobility into their daily life. First, the participant explained that many people came to him asking specific questions. When it was about electromobility, the professional already had a strategy to convince the social environment to change something. Due to his position as a researcher in the smart grid and energy management field, he described himself as having expert knowledge in both areas, technical, specifically referred to renewable energy at home, as well as socio-political knowledge. He described such conversations about introducing e-mobility as follows:

I also try very clearly from a tactical point of view, as I have done myself, to take away people's fear of renewable energies, of this change. With electromobility, the fear is always there, for example, that it will break down. That you also try to explain that they can already feel safe and why. That you try to take away people's fear, many changes are in the head, this change management is always very difficult to adapt, that you also try to take away people's fear for the changeover. These are things that you must try to explain not from a theoretical point of view but from a very practical one. How the car itself supports you, e.g.," go for a drive, look at it, and you'll notice how well you're supported by the car", for example, etc. That you help people there, that also already leads to the fact that I have people who now wanted to change themselves. That they come up to me through my background and want me to tell them something, people also come to me when they are only acquaintances.

He added to regularly asking questions during the conversations about renewable energies related to the peers' own life on a more descriptive basis. Additionally, he tried to address problems, e.g., which specific challenges regarding e-mobility they must expect. By this, the participant explained, people in the social environment got the feeling of what energy transition means as a first step and that this communication on a tangible level was very important. Hence, he aimed to persuade and raise awareness in the social environment regarding the energy transition.

### 4.2.5 Presentations

Participant 7 worked as a sales manager for solar energy and PV. He had rather specific knowledge, as he explained, mostly in technical niches related to the solar energy field. Though, he was in touch with the energy transition daily due to his job and obtained higher knowledge than the average citizen, as he described. Therefore, he likes to give presentations on different occasions, often for people in the direct environment that are interested in installing solar technology in their own houses, for instance. The professional said:

I have also held many presentations. Only interested people came, but as a professional who is passionate about the topic of the energy transition and approaches people more personally, it also works that you address people directly and relate it to their everyday lives.

The professional actively took the initiative on such events presenting specific topics about the energy transition rather informally. His aim was to take this direct environment with him, as being passionate about this topic himself and, due to his job position, picking them up, as he said. In this case, the professional held the opinion to inform the people around him with the final aim of convincing them of the issue's importance.

## 5. Discussion

First, the main findings of this research will be reflected, followed by theoretical implications that can be drawn from these results. After this, it will be focused on the limitations of this study and, finally, on recommendations for further research as well as for practice.

### 5.1 Main findings

This study aimed to answer the question of the extent to which professionals in the renewable energy sector act as change agents for the energy transition in the social environment and what factors might influence this, such as their knowledge, informal communication, or their peer surrounding. The research showed that the assumption of professionals acting as change agents to a high extent could be confirmed based on the following aspects.

First, professionals have a certain level of knowledge that they shared with their peer environment. This often took place through informal communication in terms of conversations between the social environment and the professional or through stories professionals told about something that is related to their expertise in the renewable energy field. In these situations of informally communicating with their peers, the participants adapted their professional input to be easier to understand by their counterparts. This facilitation of a complex process of change is the main task of change agents (Kiesnere & Baumgartner, 2019; Siebenhüner & Arnold, 2007; van Poeck et al., 2017), and implicates that the professionals hold a high level of change agency regarding the energy transition.

Second, the professionals applied a few strategies when talking with their peers. These relate to taking over the role of mediators between the highly complex backgrounds of the energy transition, which are hard to grasp without being a professional, and the societal members that are often laymen with regards to the topic of interest. Results indicated that professionals tried to bring their peers to one common ground regarding knowledge and attitude towards the energy transition, which is perceived as an important part of change agency (Ramos-Mejia & Balanzo, 2018).

Third, specifically referring to the informal communication itself, the professionals' conversations and embedded stories about the energy transition were mostly driven by their job position, which makes them stand out in the peer environment. During situations of informal communication such as a family sit-together at the dinner table or at coincidental meetings at the supermarket, professionals regularly answered questions and tried to raise awareness or even persuade their peers to think about the energy transition because they felt a certain level of responsibility to support the change. By being in an informal exchange with the professionals, their peers could be driven to keep arguments in their mind, which was already emphasized as an important indicator of people's change agency by Lunenburg (2010).

The aforementioned three main aspects show that the participants act both consciously and subconsciously as change agents for the energy transition, as they were not always able to estimate if they had an influence on the social environment. The sharing and facilitating of knowledge by adapting the way of talking about the energy transition to the opposite person and the mediating role between the formal and informal side of the energy change to move something in the social environment make professionals change agents for the energy transition to a high extent, especially during casual situations with their friends and family.

### 5.2 Theoretical implications

This research confirmed the assumption that professionals in the renewable energy sector act as change agents for the energy transition in their informal environment. Previous research already focused on different aspects that might facilitate the energy transition, such as digital technologies (van Summeren et al., 2021) or communicative strategies for stakeholder involvement (Cozen et al., 2018; Ludvig et al., 2013). Hence, this paper's approach that refers to the professionals of the renewables branch operating as change agents is rather new. It shows that employees or researchers in the renewable energy field can facilitate the change process of the energy transition in society by communicating informally with their peers and by sharing their expert knowledge in easily understandable ways. This is in line with the research of Leeuwis and Aarts (2011), which highlights the impact of everyday communication between stakeholders on an innovation process. The authors also emphasized the importance of social actors who facilitate a change by applying certain intermediating strategies. This paper builds on this displaying that professionals' knowledge, communicative styles, and objectives in casual conversations are the drivers of their change agency in informal networks.

By using semi-structured interviews, a meaningful picture of the professionals' change agency could be drawn, especially due to the main concepts that have been introduced in this research based on previous theoretical aspects: sender (knowledge), stories (informal communication), and peer environment (influences of the social environment). Gryz and Kaczmarczyk (2011) already indicated that stories are a key factor in raising awareness in society regarding the shift towards sustainability. This study complemented other papers that considered in detail the influence of informal communication, referring to how stories are constructed and what that means for the stakeholders involved (Leeuwis & Aarts, 2011). The research connects stories, their construction, and involved stakeholders by analyzing renewable energy professionals' communication with peers and their consequent change agency. Furthermore, findings revealed that change agency is not something that happens on an explicit level always because some participants mentioned being insecure if they influenced the peer environment of the energy transition sustainably. This subliminal type of change agency was also mentioned by Alagoz et al. (2018). Nevertheless, that professionals operate

proactively as change agents, as the study of Siebenhüner (2007) already stated, is also indicated by this research. Specifically, by spreading knowledge consciously and intending to raise awareness or to persuade, for example, when discussing the energy transition. Alongside, the informality of communication during family sit-togethers, coincidental meetings, or other casual moments with peers that were highlighted in this paper was already considered decisive for a successful change by previous research (Heiskanen et al., 2016). In sum, this paper clearly emphasizes that such private connections and interactions bring forward change processes that need to be communicated throughout society.

### 5.3 Limitations and recommendations for further research

There are some limitations that this research possessed. First of all, the study itself depended on highly individual perceptions and opinions because human beings were the focus. To get a more reliable and valid picture of professionals' change agency regarding the energy transition, much more participants could be interviewed. A greater sample of professionals stemming from a variety of sectors would have enhanced the possibilities for comparing responses and drawing meaningful conclusions about the topic of interest (Kitto et al., 2008). However, even though this research was limited to 15 participants, a variety of professionals were part of this study, such as communication professionals, managers, and researchers in the energy area. The method of semi-structured interviews strengthened the gathering of meaningful results. Though, there might have been some selection bias due to the researcher's non-probability sampling, which could have had a negative impact on the representativeness of this study (Berndt, 2020).

To ensure a certain level of reliability for the interviews, the interview scheme was approved by a second coder, but it did not allow for many swingouts by the participants that could have provided additional important content with regards to answering the research question. Most of the topics that were touched upon by the interviewees have already been addressed in the theoretical part of this paper. However, concepts such as subjective norms or social pressures, the influence of the professionals' employers, or their working experience were not pointed out, which could have been an interesting addition to other findings.

Reflecting on these limitations, future research could be conducted with a bigger sample consisting of more professionals in the renewable energy sector, leading to a larger variety of professional backgrounds, as previously mentioned already. Furthermore, emphasis could be laid on the same topics that were addressed in this study, but with more room for the participants to explain themselves, for example, by conducting longer interviews which last more than 45 minutes on average. Another approach could be to research focus groups and let the professionals exchange each other about their experiences with informal communication about the energy transition. Thereby, other perspectives on change agency could be revealed that refer to previously mentioned important

aspects such as the influence of employers or work experience of professionals when talking with their peer environment about a change. It would also have been interesting to study the extent to which each professional realized that they hold such an influence because the actual perceptions of the interviewees regarding their change agency were not studied in this paper.

### 5.4 Conclusion

In this study, professionals in the renewable energy sector were interviewed on the following aspects. The sender itself, including the professionals' knowledge and attitude on the energy transition, the stories that were told with attention to the content, context, triggers, and the professionals' intentions of telling these, and, finally, the peer environment, including their attitudes and expectations regarding the energy transition as well as their responses on the professionals' input. The research shows that professionals hold a high level of change agency due to the level and types of knowledge they want to share with their peers intending to inform or persuade them or to raise awareness about the energy turnaround. Furthermore, their rather realistic expectations about the energy transition differentiated from their peers' idealistic perceptions. The main topics of conversations regarded the energy transition in general or the type of energy sources and the main points of criticism were the pace of expansion of renewables and financial fears. Due to the professionals' job position, participants started talking about the topic of interest, or the peers proactively initiated a conversation. This trigger aspect was complemented by another activator for conversations, particularly the recent global development due to the Ukraine war. As the professionals wanted to influence their peers to a certain extent regarding the energy shift, it can be confirmed that they act as change agents for this socio-technical challenge to a high extent, especially during casual sit-togethers with the family.

Referring to some practical implications, professionals of any sector could use their specific knowledge to share it in easily understandable ways facilitating a specific socio-technical change, for instance by taking real-life examples that are close to peoples' realities and avoiding jargon if the conversation partner is not on the same level as the professional. Specifically relating this to the energy transition, to enhance the involvement of all stakeholder groups in this process and to further the communication of the energy transition in society, attention could be paid more to people who work in the renewable energy industry due to their high levels of change agency they can apply during informal conversations with their social environment. This is an important new approach to bring forward the introduction, and especially normalization of renewable energy usage in society.

## 6. References

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Processes, 50*, 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Alagoz, E., Chih, M. Y., Hitchcock, M., Brown, R., & Quanbeck, A. (2018). The use of external change agents to promote quality improvement and organizational change in healthcare organizations: A systematic review. *BMC Health Services Research, 18*(1). https://doi.org/10.1186/s12913-018-2856-9

Ao, Y., Zhu, H., Wang, Y., Zhang, J., & Chang, Y. (2022). Identifying the driving factors of rural residents' household waste classification behavior: Evidence from Sichuan, China. *Resources, Conservation and Recycling*, *180*. https://doi.org/10.1016/j.resconrec.2022.106159

Aspers, P. (2006). Contextual knowledge. *Current Sociology*, *54*(5), 745–763. https://doi.org/10.1177/0011392106066814

Baumbusch, J. (2010). Semi-structured interviewing in practice-close research. *Journal for Specialists in Pediatric Nursing*, *15*(3), 255–258. https://doi.org/10.1111/j.1744-6155.2010.00243.x

Bayulgen, O. (2020). Localizing the energy transition: Town-level political and socio-economic drivers of clean energy in the United States. *Energy Research and Social Science*, *62*. https://doi.org/10.1016/j.erss.2019.101376

Benites-Lazaro, L. L., Mello-Théry, N. A., & Lahsen, M. (2017). Business storytelling about energy and climate change: The case of Brazil's ethanol industry. *Energy Research and Social Science*, *31*, 77–85. https://doi.org/10.1016/j.erss.2017.06.008

Berndt, A. E. (2020). Sampling Methods. *Journal of Human Lactation*, *36*(2), 224–226. https://doi.org/10.1177/0890334420906850

Biresselioglu, M. E., Demir, M. H., Demirbag Kaplan, M., & Solak, B. (2020). Individuals, collectives, and energy transition: Analysing the motivators and barriers of European decarbonisation. *Energy Research and Social Science*, *66*. https://doi.org/10.1016/j.erss.2020.101493

Bögel, P., Pereverza, K., Upham, P., & Kordas, O. (2019). Linking socio-technical transition studies and organisational change management: Steps towards an integrative, multi-scale heuristic. *Journal of Cleaner Production*, *232*, 359–368. https://doi.org/10.1016/j.jclepro.2019.05.286

Bouckenooghe, D. (2012). The role of organizational politics, contextual resources, and formal communication on change recipients' commitment to change: A multilevel study. *European Journal of Work and Organizational Psychology*, *21*(4), 575–602. https://doi.org/10.1080/1359432X.2011.591573

Chamlee-Wright, E. (2010). Qualitative methods and the pursuit of economic understanding. *Review of Austrian Economics*, *23*(4), 321–331. https://doi.org/10.1007/s11138-010-0114-4

Chen, X., Yang, F., Zhang, S., Zakeri, B., Chen, X., Liu, C., & Hou, F. (2021). Regional emission pathways, energy transition paths and cost analysis under various effort-sharing approaches for meeting Paris Agreement goals. *Energy*, *232*. https://doi.org/10.1016/j.energy.2021.121024

Cozen, B., Endres, D., Peterson, T. R., Horton, C., & Barnett, J. T. (2018). Energy Communication: Theory and Praxis Towards a Sustainable Energy Future. *Environmental Communication*, *12*(3). https://doi.org/10.1080/17524032.2017.1398176

Davis, J. L., Le, B., Coy, A. E., Rickert, J., Regan, B., & Ridgeway, K. (2015). Commitment to the environment: The role of subjective norms in college and community samples. *Journal of Applied Social Psychology*, *45*(10), 568–583. https://doi.org/10.1111/jasp.12320

de Wilde, M. (2019). The sustainable housing question: On the role of interpersonal, impersonal and professional trust in low-carbon retrofit decisions by homeowners. *Energy Research and Social Science*, *51*. https://doi.org/10.1016/j.erss.2019.01.004

Gryz, J., & Kaczmarczyk, B. (2021). Toward low-carbon european union society: Young poles' perception of climate neutrality. *Energies*, *14*(16). https://doi.org/10.3390/en14165107

Gugerell, C., & Penker, M. (2020). Change agents' perspectives on spatial-relational proximities and urban food niches. *Sustainability (Switzerland)*, *12*(6). https://doi.org/10.3390/su12062333

Heiskanen, E., Thidell, Å., & Rodhe, H. (2016). Educating sustainability change agents: The importance of practical skills and experience. *Journal of Cleaner Production*, *123*, 218–226. https://doi.org/10.1016/j.jclepro.2015.11.063

Ho, S. M., Ocasio-Velázquez, M., & Booth, C. (2017). Trust or consequences? Causal effects of perceived risk and subjective norms on cloud technology adoption. *Computers and Security*, *70*, 581–595. https://doi.org/10.1016/j.cose.2017.08.004

Jorgenson, S. N., Stephens, J. C., & White, B. (2019). Environmental education in transition: A critical review of recent research on climate change and energy education. *Journal of Environmental Education*, *50*(3), 160–171. https://doi.org/10.1080/00958964.2019.1604478

Kamaşak, R., & Bulutlar, F. (2010). The influence of knowledge sharing on innovation. *European Business Review*, *22*(3), 306–317. https://doi.org/10.1108/09555341011040994

Kamp, L. M. (2008). Socio-technical analysis of the introduction of wind power in the Netherlands and Denmark. *International Journal of Environmental Technology and Management*, *9*(2–3), 276–293. https://doi.org/10.1504/IJETM.2008.019038

Kiesnere, A. L., & Baumgartner, R. J. (2019). Sustainability management in practice: Organizational change for sustainability in smaller large-sized companies in Austria. *Sustainability (Switzerland)*, *11*(3). https://doi.org/10.3390/su11030572

Kitto, S. C., Chesters, J., & Grbich, C. (2008). Quality in qualitative research. *Medical Journal of Australia*, *188*(4), 243–246. https://doi.org/10.5694/j.1326-5377.2008.tb01595.x

Knez, S., Šimić, G., Milovanović, A., Starikova, S., & Županič, F. Ž. (2022). Prices of conventional and renewable energy as determinants of sustainable and secure energy development: regression model analysis. *Energy, Sustainability and Society*, *12*(1). https://doi.org/10.1186/s13705-022-00333-9

Kraut, R. E., Fish, R. S., Root, R. W., & Chalfonte, B. L. (2002). *Informal Communication in Organizations: Form, Function, and Technology*. Retrieved from https://www.researchgate.net/publication/238738336

Leeuwis, C., & Aarts, N. (2011). Rethinking communication in innovation processes: Creating space for change in complex systems. *Journal of Agricultural Education and Extension*, *17*(1), 21–36. https://doi.org/10.1080/1389224X.2011.536344

Ludvig, K., Stenberg, A. C., & Gluch, P. (2013). The value of communicative skills for developing an energy strategy. *Building Research and Information*, *41*(6). https://doi.org/10.1080/09613218.2013.800735

Lunenburg, F. C. (2010). Managing Change: The Role of the Change Agent. *International Journal of Management, 13*(1). Retrieved from https://naaee.org/sites/default/files/lunenburg_fred_c._managing_change_the_role_of_change_agent_ijmba_v13_n1_2010.pdf

Markard, J., Raven, R., & Truffer, B. (2012). Sustainability transitions: An emerging field of research and its prospects. *Research Policy*, *41*(6), 955–967. https://doi.org/10.1016/j.respol.2012.02.013

Mey, F., & Diesendorf, M. (2018). Who owns an energy transition? Strategic action fields and community wind energy in Denmark. *Energy Research and Social Science*, *35*, 108–117. https://doi.org/10.1016/j.erss.2017.10.044

Moezzi, M., Janda, K. B., & Rotmann, S. (2017). Using stories, narratives, and storytelling in energy and climate change research. *Energy Research and Social Science*, *31*, 1–10. https://doi.org/10.1016/j.erss.2017.06.034

Moore, M.-L., & Westley, F. (2011). *Research, part of a Special Feature on Resilience Through Multi-scalar Collaboration Surmountable Chasms: Networks and Social Innovation for Resilient Systems*.

Mosaferi, M., Gilani, N., Delfi, S., Ahmadpour, R., & Chattu, V. K. (2022). Psychometric development and practical use of questionnaires designed to assess knowledge, attitude, and practice of women regarding the use of sanitizer at home to control coronavirus disease. *Environmental Health Engineering and Management*, *9*(1), 55–64. https://doi.org/10.34172/EHEM.2022.07

Mourik, R. M., Sonetti, G., & Robison, R. A. V. (2021). The same old story – or not? How storytelling can support inclusive local energy policy. *Energy Research and Social Science*, *73*. https://doi.org/10.1016/j.erss.2021.101940

Nava Guerrero, G. D. C., Korevaar, G., Hansen, H. H., & Lukszo, Z. (2019). Agent-based modeling of a thermal energy transition in the built environment. *Energies*, *12*(5). https://doi.org/10.3390/en12050856

Olson, P., Svane, Ö., & Gullström, C. (2021). Mind the gap! Backcasting local actors' climate transition in Hammarby Sjöstad, Stockholm. *Futures*, *128*. https://doi.org/10.1016/j.futures.2021.102703

Ouariachi, T., & Elving, W. (2020). Accelerating the energy transition through serious gaming: Testing effects on awareness, knowledge and efficacy beliefs. *Electronic Journal of E-Learning*, *18*(5), 410–420. https://doi.org/10.34190/JEL.18.5.004

Patrick, D., Okon, E., Enyia, J., & Ii, E. (2019). Corporate communication versus strategic communication: The perception of Public Relations practitioners in Cross River State. *Babcock Journal of Mass Communication, 4*(1). Retrieved from https://www.researchgate.net/publication/336128677_CORPORATE_COMMUNICATION_VERSUS_STRATEGIC_COMMUNICATION_THE_PERCEPTION_OF_PUBLIC_RELATIONS_PRACTITIONERS_IN_CROSS_RIVER_STATE

Rafferty, A. E., & Restubog, S. L. D. (2010). The impact of change process and context on change reactions and turnover during a merger. *Journal of Management*, *36*(5), 1309–1338. https://doi.org/10.1177/0149206309341480

Ramos-Mejía, M., & Balanzo, A. (2018). What it takes to lead sustainability transitions from the bottom-up: Strategic interactions of grassroots ecopreneurs. *Sustainability (Switzerland)*, *10*(7). https://doi.org/10.3390/su10072294

Rampedi, I. T., & Ifegbesan, A. P. (2022). Understanding the Determinants of Pro-Environmental Behavior among South Africans: Evidence from a Structural Equation Model. *Sustainability (Switzerland)*, *14*(6). https://doi.org/10.3390/su14063218

Read, D. L., Brown, R. F., Thorsteinsson, E. B., Morgan, M., & Price, I. (2013). The theory of planned behaviour as a model for predicting public opposition to wind farm developments. *Journal of Environmental Psychology*, *36*, 70–76. https://doi.org/10.1016/j.jenvp.2013.07.001

Rikkonen, P., Lauttamäki, V., Parkkinen, M., Varho, V., & Tapio, P. (2021). Five transition pathways to renewable energy futures—scenarios from a Delphi study on key drivers and policy options. *European Journal of Futures Research*, *9*(1). https://doi.org/10.1186/s40309-021-00185-0

Rohracher, H. (2008). Energy systems in transition: Contributions from social sciences. *International Journal of Environmental Technology and Management, 9*(2–3), 144–161. https://doi.org/10.1504/IJETM.2008.019026

Ruotsalainen, J., Karjalainen, J., Child, M., & Heinonen, S. (2017a). Culture, values, lifestyles, and power in energy futures: A critical peer-to-peer vision for renewable energy. *Energy Research and Social Science*, *34*. https://doi.org/10.1016/j.erss.2017.08.001

Ruotsalainen, J., Karjalainen, J., Child, M., & Heinonen, S. (2017b). Culture, values, lifestyles, and power in energy futures: A critical peer-to-peer vision for renewable energy. *Energy Research and Social Science*, *34*, 231–239. https://doi.org/10.1016/j.erss.2017.08.001

Salancik, G. R., & Pfeffer, J. (1978). A Social Information Processing Approach to Job Attitudes and Task Design. Quarterly, 23(2). Retrieved from https://www.jstor.org/stable/2392563

Sayed, E. T., Wilberforce, T., Elsaid, K., Rabaia, M. K. H., Abdelkareem, M. A., Chae, K. J., & Olabi, A. G. (2021). A critical review on environmental impacts of renewable energy systems and mitigation strategies: Wind, hydro, biomass and geothermal. *Science of the Total Environment*, *766*. https://doi.org/10.1016/j.scitotenv.2020.144505

Schulenkorf, N. (2010). The roles and responsibilities of a change agent in sport event development projects. *Sport Management Review*, *13*(2), 118–128. https://doi.org/10.1016/j.smr.2009.05.001

Schwarz, L. (2020). Empowered but powerless? Reassessing the citizens' power dynamics of the German energy transition. *Energy Research and Social Science*, *63*. https://doi.org/10.1016/j.erss.2019.101405

Siebenhüner, B., & Arnold, M. (2007). Organizational learning to manage sustainable development. *Business Strategy and the Environment*, *16*(5), 339–353. https://doi.org/10.1002/bse.579

Sorman, A. H., García-Muros, X., Pizarro-Irizar, C., & González-Eguino, M. (2020). Lost (and found) in Transition: Expert stakeholder insights on low-carbon energy transitions in Spain. *Energy Research and Social Science*, *64*. https://doi.org/10.1016/j.erss.2019.101414

Thurlow, A., & Helms Mills, J. (2009). Change, talk and sensemaking. *Journal of Organizational Change Management*, *22*(5), 459–479. https://doi.org/10.1108/09534810910983442

Tsai, H. P., & Compeau, D. R. (2021). Understanding and measuring formal communication quality for technology implementation: A test during the anticipation stage. *Journal of Strategic Information Systems*, *30*(3). https://doi.org/10.1016/j.jsis.2021.101669

van Poeck, K., Læssøe, J., & Block, T. (2017). An exploration of sustainability change agents as facilitators of nonformal learning: Mapping a moving and intertwined landscape. *Ecology and Society*, *22*(2). https://doi.org/10.5751/ES-09308-220233

van Summeren, L. F. M., Wieczorek, A. J., & Verbong, G. P. J. (2021). The merits of becoming smart: How Flemish and Dutch energy communities mobilise digital technology to enhance their agency in the energy transition. *Energy Research and Social Science*, *79*. https://doi.org/10.1016/j.erss.2021.102160

Vervoort, J. M., Rutting, L., Kok, K., Hermans, F. L. P., Veldkamp, T., Bregt, A. K., & van Lammeren, R. (2012). Exploring dimensions, scales, and cross-scale dynamics from the perspectives of change agents in social-ecological systems. *Ecology and Society*, *17*(4). https://doi.org/10.5751/ES-05098-170424

Zwolińska, K., Lorenc, S., & Pomykała, R. (2022). Sustainable Development in Education from Students' Perspective—Implementation of Sustainable Development in Curricula. *Sustainability (Switzerland)*, *14*(6). https://doi.org/10.3390/su14063398

# 7. Appendices

## Appendix 1: Literature search log

### Search Matrix

| Constructs | Related terms | Broader terms | Narrower terms |
|---|---|---|---|
| Energy transition | Renewable energy; Energiewende | Energy transformation | Energy communication; energy experts |
| Professionals | Employees; experts; workers | Corporates; employees; scholars | Renewable energy professionals |
| Change | Change agents | Change process; transformation | Energy change |

### Search String

| Date | Source | Search terms and strategies | Amount of (relevant) hits | Notes |
|---|---|---|---|---|
| 07/03 | FindUT | Energy transition AND communication | 87.000; some relevant sources found | After filtering it got more concise (selecting journals, specifically) |
| 08/03 | Mendeley | Energy transition AND change agents | 2.777, a few were relevant | Already more specific results due to a new key word |
| 08/03 | Mendeley | Energy communication | 112.000; some relevant sources | Interesting selection, but more filtering needed |
| 09/03 | Mendeley | Energy transition AND change agents AND professionals | 690 (1) | Found one really fitting paper |

| | | | | |
|---|---|---|---|---|
| 10/03 | Scholar | Advantages of renewable energy | 25.000 | After adjustment to „since 2021“, more up-to-date, just a few interesting sources |
| 11/03 | Scopus | Energy AND transition AND society | 1.260 | a few interesting sources, only with the date “from 2017” |
| 11/03 | Scopus | Society AND awareness AND Energy AND transition | 37 | About 5 results perfectly added up to my research |
| 11/03 | Scopus | Change agents | 150.000 (5.167) | A few interesting sources after I limited search to “only social sciences” |
| 12/03 | Scopus | Renewable AND energy AND costs | 53.000 | Added up to my introduction, gained a few interesting sources |
| 12/03 | Scholar | Change agents AND societal change (from 2018) | 16.000 | Many interesting sources, found about 10 |
| 12/03 | Scholar | Energy transition AND opinion leaders, from 2018 | 17.700 | Found about 10 very fitting articles |

## Appendix 2: Interview Scheme

**Researcher:** *First, I want to thank you very much for your participation in this interview. With this, you support me with my bachelor theses I am writing to finish my Communication Science study at the University of Twente in Enschede (NL).*
*To get more specific, my topic is about the role of professionals in the renewable energy sector in communicating the energy transition in society. Hence, I am looking forward to interviewing you as a professional/expert in the renewable energy sector. I will ask you some open questions about your job, your attitude regarding the energy transition, and how you communicate with your friends, family, etc. about this topic, if at all. Don't worry, there won't be any wrong answers, it is highly individual that you are free in your word choice! This also counts for the way you interpret my questions – just answer the way you think fits the best.*

---

***Do you agree that this interview will be recorded? I need this for my later transcription and analysis, but everything will stay anonymous and deleted after the study.***

---

As soon as the interviewee agreed to the recording, the interview procedure will start.

**Researcher:** ***Again, to have it recorded, I need to kindly ask you for your permission on recording this interview to transcribe and analyze it in the end. You can always stop the interview. Nothing will be published or shared with anyone, and it stays confidential and anonymous. Could you please confirm this?***

---

**Introduction**

- ***Could you please tell us something about your job position and how you are connected to the energy transition?***

**Topic 1: Knowledge and perception of the energy transition**

- ***How would you generally rate your knowledge of the energy transition on a scale from 1 to 10? Why this ratig?***
    - *Oh that's more than average, why? Or that is less than expected, why?*

  - *Do you think that you have more knowledge than an average person in Germany?*
  - *Do you have the feeling that you know more about the energy transition than your peer environment?*
  - *Why and what kind of knowledge?*
  - *Where did you get your knowledge from?*
  - *Do you consider yourself an expert in the energy transition?*
    - **Trigger Questions to let them explain**

- ***What do you think about the energy transition in Germany, the NL?***
  - *Do you think it is important that we switch to renewable energy resources?*
  - *What do you think of the policies here in Germany?*

**Topic 2: Social environment of the professional**

- **How do you communicate about the energy transition with your peer environment (friends and family)?**
  - *If not, why?*
  - *How do you think they perceive the energy transition? And how do you deal with people that are of different opinion than you?*

**Topic 3: Professional's communication style regarding the energy transition**

- **Can you give a specific example in which you communicate about the energy transition with your peers?**
  - Who was this person (family or friends) you talked with and did he or she shared your opinion or had a different opinion?
  - What was the story that you were telling? In which context did you tell the story, e.g., at a private event or at the workplace?
  - What was the response of the environment?
  - What kind of arguments did you use, what did you talk about and how did you talk about it?
  - Why did you choose this specific example? Is this how you would normally communicate about the energy transition?

**Their influence on the social environment**

- ***What difference can you make on your peer environment when talking with them about the energy transition?***
    - *Do you think that you can make a difference at all and why? Or why not?*

- ***Do you think that you have a certain responsibility to influence the peer environment and why? Why not?***

- **Is there something I haven't touched upon which you would really like to explain?**

**GERMAN**

*Zunächst freue ich mich, dass Sie an diesem Interview teilnehmen und mir somit sehr bei meiner BA helfen! Ich studiere Kommunikationswissenschaften an der Uni Twente in Enschede und dies ist mein letzter Stepp vor dem Abschluss.*
*Bei meinem Thema geht es um die Rolle von Arbeitnehmern im Sektor der erneuerbaren Energien und wie Sie die Energiewende in der Gesellschaft kommunizieren. Deshalb sind Sie genau richtig hier in diesem Interview, da Sie in diesem Bereich tätig sind. Ich werde Ihnen ein paar offene Fragen bezüglich ihres Jobs, ihrer Einstellung gegenüber der Energiewende und wie Sie diese mit ihrem sozialen Umfeld (Familie, Freunde) kommunizieren. Es gibt keine richtigen oder falschen Antworten, da es natürlich alles sehr personenabhängig und subjektiv ist! Dies gilt auch für Ihre Interpretation meiner Fragen, beantworten Sie diese so, wie Sie sie verstehen.*

---

***Do you agree that this interview will be recorded? I need this for my later transcription and analysis, but everything will stay anonymous and deleted after the study.***
***Sind Sie damit einverstanden, dass dieses Interview aufgenommen wird? Ich bräuchte dies für die spätere Transkription und Analyse, jedoch wird alles anonym bleiben und nach der Beendigung der Studie gelöscht.***

---

**Um es auf Band zu haben, müsste ich Sie nochmal freundlich bitten, die Erlaubnis für das Recording dieses Interviews zu geben unter Einhaltung der Vertraulichkeit und Anonymität und der Zusage, dass danach alles gelöscht wird. Stimmen Sie zu?**

---

**Einleitung**

- ***Könnten Sie mit etwas über ihren Job erzählen und wie Sie mit der Energiewende in Verbindung stehen?***

**Thema 1: Wissen und Wahrnehmung der Energiewende**

- ***Wie würden Sie ihr Wissen bezüglich der Energiewende auf einer Skala von 1-10 einschätzen? Warum diese Zahl?***
    - *Das ist höher als der Durchschnitt, warum? Das ist weniger als gedacht, warum?*
    - *Glauben Sie, dass Sie mehr über die Energiewende wissen als eine durchschnittliche Person in Deutschland?*
    - *Haben Sie das Gefühl, dass Sie mehr über die Energiewende wissen als ihr soziales Umfeld?*
    - *Warum glauben Sie das? Welche Art von Wissen haben Sie?*
    - *Woher haben Sie dieses Wissen/ Wie haben Sie es sich angeeignet?*
    - *Nehmen Sie sich als Experten in der Energiewende wahr?*

- ***Was denken Sie über die Energiewende in Deutschland?***
    - *Glauben Sie, dass es wichtig ist, auf erneuerbare Energien umzusteigen?*
    - *Was denken Sie über die deutschen Gesetze bezüglich der Energiewende?*

**Thema 2: Soziales Umfeld vom Arbeitnehmer**

- **Wie kommunizieren Sie mit ihrem sozialen Umfeld (Freunde, Familie) über die Energiewende?**
    - *Wenn nicht, warum?*
    - *Wie glauben Sie nimmt ihr soziales Umfeld die Energiewende wahr? Und wie gehen Sie damit um, wenn ihre Gesprächspartner anderer Meinung sind als Sie?*

**Thema 3: Kommunikationsstil in Gesprächen über die Energiewende**

- **Können Sie ein bestimmtes Beispiel nennen, in dem Sie mit ihrem sozialen Umfeld über die Energiewende sprechen?**
    - Wer war ihr Gesprächspartner? (Freunde, Familie, Kollege) Und hat er ihre Meinung geteilt oder nicht?
    - Was haben Sie erzählt? In welchem Kontext haben Sie das erzählt, z.B. auf der Arbeit oder auf privaten Events?
    - Wie hat ihr Umfeld reagiert?
    - Welche Argumente haben Sie genutzt, worüber haben Sie genau gesprochen und wie haben Sie darüber gesprochen?
    - Warum haben Sie genau dieses Beispiel genannt? Weil dieses Beispiel darstellt, wie sie sonst auch über die Energiewende kommunizieren?

**Thema 4: Einfluss des Arbeitnehmers auf das soziale Umfeld**

- Wie können Sie ihr soziales Umfeld beeinflussen, wenn Sie mit ihnen über die Energiewende sprechen?
    - Erreichen Sie damit überhaupt eine Veränderung? Warum (nicht)?

- *Glauben Sie, dass Sie gewissermaßen verantwortlich dafür sind, Ihr soziales Umfeld zu beeinflussen und wenn ja, warum? Warum nicht?*

- **Gibt es noch etwas, dass ich vergessen habe zu erwähnen, was Sie gerne noch loswerden oder ansprechen wollen?**

## Appendix 3: Codebook

| Theme | Subtheme (Code) | Definition | Example | Units of Analysis |
|---|---|---|---|---|
| **Type of knowledge** | *Technical* | Person can explain the technical background, functioning and issues of renewable energy technology | "I could explain a wind turbine down to the smallest detail, what which component does." | (Paragraph and) sentence level |
| | *Socio-, political, or economical* | Person can grasp the global and national context of the energy transition as a challenge for society in terms of regulations, policies, politics, societal issues, and energy economy | "For example, the political-social dimension, i.e. which support mechanisms exist in Germany and other countries for renewable energies,...., but also current knowledge on how to promote renewable energies at the moment and how to prevent them." | |

| | | | | |
|---|---|---|---|---|
| **Level of knowledge** | *Expert* | Considers oneself as an expert in the ET or in a specific field | "I think I'm in the top 1-2% in terms of knowledge because we're in the research and practical area." | Sentence level |
| | *Layman* | Normally, the person is not in touch with the ET, might has some average knowledge (based on media or so) | "People who have only dealt with the energy transition very superficially then put forward some kind of thesis. But when you ask them why this is the case, they are at a loss." | |
| **Attitude towards energy transition** | *Positive* | Advocating the ET | "some say yes, I support it and it's all good, some are also very active in the direction of Fridays for future etc. In other words, they are very committed and try to get things moving in other ways." | Paragraph and sentence level |

| | | |
|---|---|---|
| *Negative* | Being critical/sceptical towards ET or even rejecting it | "Yes, I also have people with me who are clear advocates of nuclear because they find renewables too expensive, as the main issue." // "There is a certain stratum for whom this has arrived as early and second adapters, but very many are sceptical about it and do not yet see the topic as a current issue for themselves. There are many where you know it's still a long way off." |
| *Neutral* | Not interested, no opinion | "Most people do not want to spend a lot of time on the subject of the energy transition" // "I have the feeling that I don't have |

| | | | | |
|---|---|---|---|---|
| | | | to talk about it very often in my social environment, because my social environment is not a target group that I have to convince of the energy transition, most of them have no contact with it and it doesn't interest them." | |
| | *Ambiguous* | Basically, advocating ET but being sceptical about certain aspects, or the other way around | "Others would never say that the energy transition is bad, so they would support it ideologically in principle, but are not about to accept comfort restrictions, e.g. spending more money on fuel or more money on flying, or not flying at all." // "Most people do not realize | |

| | | | | |
|---|---|---|---|---|
| | | | basically how the energy system works, they really want renewables, but they do not want change"// "I find the people want the energy transition, that is a sort of cognitive dissonance.. the want to contribute to it, as much as they can. But I think that they are not coherent always, they want it, but as soon as they are touched by it personally, then it becomes harder for them to accept" | |
| **Expectation of the energy transition** | *Realistic* | Due to more background knowledge, one knows that ET is necessary and advocates it but can assess how complex and complicated it is to be done successfully. | "The energy transition was clearly necessary, and it makes sense, the problem is that action was taken too quickly. | Sentence and paragrap h level |

| | | | | |
|---|---|---|---|---|
| | | One has more understanding of the long process ET takes. | Everyone wanted to get away from nuclear power quickly, but renewables were only able to cover the resulting shortfall to a limited extent, and that will only come gradually. The expansion is sluggish. If I look at other countries, for example, it's happening much faster than here in Germany. Here, the regulations are much stricter. It is an extremely long process until individual plants can be built. In some countries, there is no such thing, it is not even debated.“ // | |

| | | | | |
|---|---|---|---|---|
| | | | "I have there rather still a more realistic relation to it (ET) than others. It's not that I wish for the turnaround and would like to have 100% renewable energy in Europe and be sovereign of gas and oil, etc. That's not it. That is not it. I try there rather again perhaps to explain, explaining is wrong, to make that comprehensible, why we cannot switch off now simply so everything which is not renewable or so." // "Of course, renewable energies are to be preferred. But it is very important that it | |

| | | | | |
|---|---|---|---|---|
| | | | is a process that does not happen overnight, that conventional energies also have a right to exist due to security of supply." | |
| | *Idealistic* | Wanting the ET as fast as possible, seeing it as something abstract that is easily to be done "by the others/politicians" | "I think some people in my social environment want it to be faster than it actually is in reality." // "It is not always fossil = evil and PV or wind turbine = top. This is the mainstream opinion, supported by the media and in principle correct against climate change." | |
| **Opinion holder in the conversation** | *Professional* | Person that works in the renewable energy branch/ knows more | "But I try to bring in the conversation | Sentence and |

| | | | | |
|---|---|---|---|---|
| | | about the ET than the average person starting the conversation | about it rather tendentially subliminally and possibly also unconsciously with examples. Without being instructive, but only by reporting from one's own life, for example, that I'm talking about solar systems on the house. These are also topics that affect everyone, which you can always bring in subliminally."//<br><br>"I also give lectures, e.g. for the Lions Club in Münster, also in the technical area... for a broad audience, where they also try to explain the energy transition in a different way. I have to explain something to | paragrap h level |

| | | | | |
|---|---|---|---|---|
| | | | people more broadly. To explain what energy transition means in one's own life, to give people a feeling for it, also with examples, to make the barrel more tangible, what it means to energy transition and if you want to switch to renewable, to make the challenges clear." // | |
| | | | "I'm more persistent (In talking about the ET) when it comes to family members. However, it is important that you do not push so on it and annoy and go to the matter with a lot of patience and let the issue | |

| | | | | |
|---|---|---|---|---|
| | | | stand so. The next time you raise again, do not criticize, but constructive suggestions, to alternatives, a lot of patience in communication and the second tip, do not say what you do wrong, but discreetly suggest alternatives, also refer to me, as I do it eg. Give the ideas without the person has the feeling that something is prescribed to him." | |
| | *Direct environment of the professional/peers* | Family/friends/colleagues of the professional = direct environment starting the conversation | "With the family it is a topic, but now not so proactive. I usually react when my wife has questions" // "But in my other environment, then it runs on an | |

| | | | | |
|---|---|---|---|---|
| | | | explanatory basis, because they ask a lot of questions. That they want to inform themselves a lot." // "When I go shopping, I meet people who tell me how expensive it's become and that it's all madness, and I try to make them understand that yes, but you have to be prepared for it" | |
| | *General public (also the media)* | General public: society and media as driver of the conversation | "How this usually works... The starting point is usually either the current fuel price or a headline about electromobility that my parents have picked up somewhere." | |
| **Way of talking about energy transition** | *Real-life events* | Taking examples that are close to peoples' realities and everyday life. | So with my family I talk most often about the energy transition with the topic of | Paragrap h level |

| | | | | |
|---|---|---|---|---|
| | | | electric cars or mobility and Co2 price." // "Basically, I always try to give an example that is close to the one it concerns, otherwise it is difficult for him to understand it."// "For example, how I try to explain things to people... is always e-mobility. I often ask them questions from their own everyday life, something more descriptive. Then, when they've thought about it and said an answer, I explain why it's right or not right. I also address problems. But examples I try to explain to people, what is | |

| | | | | |
|---|---|---|---|---|
| | | | the challenge of e-mobility, for example. We take very practical examples. Where you try to give people the feeling, through concrete examples, what energy transition means in the first place. These things, this communication on a tangible level is very important." // But with other friends, not so much with facts, but more with examples and "How should it go on now" or "What if"." | |
| | *Facts and numbers* | Theoretically based arguments about the ET or RETs | "So I try to argue with data and facts, there I try to pick out some that are easy to understand, | |

| | | | |
|---|---|---|---|
| | | | which also invalidate the most important fears and criticisms to some extent.” // “Now, when I communicate with my fellow technical students, it's more fact-based, because they're very interested in it. Because they also deal with it in their studies.” //“I would now rather just take out the most important statements of the study and not always come completely with numbers, but also with qualitative statements, because after the second number at the latest, almost every listener drops out” |

| | | | | |
|---|---|---|---|---|
| | *Jargon* | Speaking on an expert level | ” I do not use technical terms or jargon, to be honest, my girlfriend is also in science and when she talks in jargon, I don't understand a single word, so I am quite sure that if I do the same, the message is not received by the friends and family.” // “With my father I talk about the developments and what could still come in the future, but rather technically versed, because my father knows better.” | |
| **Intention of the stories told** | *To raise awareness* | Trying to raise awareness of the importance of (specific parts of) the ET, that people always have it in mind | “I do pay attention to that: the more often I repeat my arguments, the more often I repeat them, and | Sentence and paragrap h level |

| | | | | |
|---|---|---|---|---|
| | | | at some point it's going to be in the back of your mind the next time your conversation partners come into contact with the topic of the energy transition in everyday life, for example." // "I identify with the idea of the energy transition or the project to such an extent that I don't let it get to me when people rant about the approach to the transition or demonize everything that isn't green, but which is realistic in terms of the energy transition. I try to bring my realistic point of view into it." | |

| | | | | |
|---|---|---|---|---|
| | *To inform* | To provide meaningful information about the energy transition and answering questions if professional is asked about the ET | "I want to spread my knowledge, because I know more."// "But in my other environment, then the whole thing runs on an explanatory basis, because they ask a lot of questions. That they want to get a lot of information." // "I do not talk to them about my research, they come already to me like "I am going to buy solar panels", etc., my younger brother lives in Germany and there it is a bit different, so people want to hear "How can I use this technology?" | |
| | *To persuade* | Trying to persuade the opposite person of a viewpoint on the ET | **"**I hope so, I can influence my peers due to my constant | |

| | | | | |
|---|---|---|---|---|
| | | | chattering to a certain extent, sure.” //<br><br>„Anyway, I try to contrast my opinion with that and everyone is allowed to have their own opinion. “ | |
| **Content of the conversation** | *Energy transition in general (without referring to specific areas of interest)* | The general situation regarding the ET, for instance, regarding the expansion of RETs | “We also talk in the company about how it looks wind-technically, in some countries it is promoted more and in some less. In Germany, we have many regulations that limit the expansion of wind power and I think that in the industries will be no different.” | Paragraph level |
| | *Type of energy sources* | wind energy, solar, e-mobility, fossil fuels, etc. | “But by and large the electrification of the | |

| | | | |
|---|---|---|---|
| | | | transportation sector is important and that has come across to my parents, for example, that it's actually alternatively loose, that you can't always fill up with gas and that there's no right to fill up cheaply. Those are the main points." //"In my course, it's a very frequent discussion (about ET), because we're also very involved in the topic. I'm also very critical and try to represent the other side sometimes (Fossil Fuels), to listen to the arguments that I might raise myself on another day with other people." |

| | | | | |
|---|---|---|---|---|
| | *Other/Miscellaneous (e.g., less meat, circle clothes, etc.)* | e.g., eating less meat to prevent climate change, wearing recycled clothes, etc. | "People are very happy to tell me what they're already doing, so I hardly cook any meat, etc., so people are also very aware when they talk to me that I'm very climate-conscious" | |
| **Triggers** | *Ukraine war* | Ukraine war and the consequences for all aspects of the ET | "Due to the Ukraine war, people are talking about these topics more, for example at the dinner table or among friends." | Sentence level |
| | *Gas prices* | Why gas prices are growing; possible solutions for the individual | **"**Perhaps the subject of the car best that my parents complain, for example, about the expensive gas, traffic jams, etc.. I also say that they can ride | |

| | | |
|---|---|---|
| | | a bike or take the train.” |
| *RE “in the backyard”* | RETs are built in the near of houses | “By being active in the industry, you can classify a lot of things correctly and see whether it makes sense. For example, you shouldn't be so idealistic about it, but rather realistic. Also the "not in my backyard" thing. Everybody says great wind energy, but nobody wants it around. Everybody says that's the best thing for the energy transition, but nobody wants it. Even if I can understand it with the volume problem, but there are |

| | | | | |
|---|---|---|---|---|
| | | | regulations for that. “ | |
| | *Media headlines in general* | Media that recently covered something about the ET | **“**The starting point is usually either the current price of gasoline or a headline about electromobility that my parents have picked up somewhere.” | |
| | *Job position of the professional* | if the professional is known for being well-informed and educated on the topic, people come to the professional on their own and start a conversation | “I think that the advantage is that many people know what I've been dealing with for a long time, so it's also a private topic for me. At some point it is already so that one can take fears, that one notices, people deal with it and ask then with someone who deals with it. But sometimes only to overcome these threshold | |

| | | | | |
|---|---|---|---|---|
| | | | fears that still need such a final step. That is then something where you have the advantage that you are also considered as one in the area, ok he deals with it, if he says that and does it himself, then I can also use that as a last push, so that they also go the last step."<br><br>//"you are listened to because you are a specialist. The credibility is there, trust. Which is a very big issue." // | |
| **Points of criticism regarding energy transition** | *General pessimistic attitude towards energy goals* | No real arguments against it, solely critical about the whole plan to switch to renewable energy sources | "I have also a very critical family-in-law, since just the topic renewable energies rather... not rejecting, but then | Paragrap h level |

| | | | | |
|---|---|---|---|---|
| | | | nevertheless rather very doubtfully opposite... These classical stories." | |
| | *RET (Renewable energy technologies) disturbance* | RETs volume or look next to houses | "There have been some complaints from monasteries or so when people feel disturbed when there is a wind turbine in the garden. There are already a few stories (I heard)." | |
| | *Financial Fears* | Fear of higher energy prices due to renewable energies | "That's the issue when it would then at some point go to your own wallet, where people would then no longer go along with it in the same way." | |
| | *Questioning RET's sustainability* | Questioning if the renewable energy tech is really that sustainable as it is claimed (e.g., batteries of e-vehicles) | "Sustainability does not only exist in the sense of regenerative energy, but also sustainability up | |

| | | | | |
|---|---|---|---|---|
| | | | to the supply chain. This has not yet reached the point where it is socially acceptable politically, and in the case of the average fiver, haha, it is not yet there, but it is something that can and should be cited in any case to counter a critical spirit. The same applies to car batteries. There I also always had a similar example that it is reused, Second Life so to speak. That is an argument that can be used to counter the critic of electronic waste." | |
| | *Pace of expansion of RETs (/ Not fast enough)* | The energy transition is not proceeded fast enough by politicians, energy suppliers and so on | "It depends on the environment, but in general, everyone in my | |

| | | | | |
|---|---|---|---|---|
| | | | social environment wants it to be faster, me too." | |
| **Job position and experience** | *Communication professional in renewable energy sector* | Working in the COM department of an energy company | "In my job, I'm in the editorial department for internal communications for a large corporation that is helping to shape the energy transition, and I inform employees about ongoing projects, especially in the area of renewable energies." | Paragraph level |
| | *Researcher* | Researcher in a field that is strongly connected to the ET | **"**I am an assistant professor in public administration and my domain of interest is actually in public policy and I am really interested in policy innovation. I have situated my questions on | |

| | | |
|---|---|---|
| | | what we call complex policy areas, that is an area that is characterized by high levels of uncertainty, there are wicked problems we do not know what the right answer is or the wrong and secondly there are critical interdependencies between different domains. And that is one of the key defining characteristics of the energy transition." |
| *RET Technician* | Building Windmills, for instance | "I am a dual student in a wind power company and am also a mechatronics engineer in the field. I'm currently writing my bachelor's thesis on the subject, have already learned |

| | | | | |
|---|---|---|---|---|
| | | | manufacturing activities in the wind power sector and was also out in the field for months, on top of the wind turbines. And now I'm in the office writing something technical about wind energy." | |
| | *Other employee in the renewable energy sector* | E.g., project manager | "I am a project manager and business consultant at a small software company for the energy sector. There are projects that are very much in the energy sector, and the entire energy sector is affected. However, the energy transition is often the topic." ////"At the moment I am not working, but since 1991 during my job | |

| | | | | |
|---|---|---|---|---|
| | | | and even before that during my studies I have been dealing with the topic of energy and energy transition, I have also been active in the topic of active energy generation until 2014 and from then on I have been in charge of passive energy saving in the form of sun protection in buildings for energy saving. At the moment I am free and have the one or other private request." | |
| **Context conversations are embedded in** | *Family sit-togethers* | Such as dinner or car rides | "I never approach someone directly and want to start a discussion. Because of the Ukraine war, people are | Paragraph and sentence level |

| | | | | |
|---|---|---|---|---|
| | | | talking about these topics more, for example, at the dinner table or among friends." | |
| | *Coincidental meeting* | E.g., at the supermarket/ everyday situations | "So quite funny, I met an acquaintance of mine three weeks ago while shopping in front of the Rewe and he told me just this topic of energy prices as they develop and that everything would be crazy and the policy ... Then I just took up this theme" | |
| | *Social events* | E.g., parties | "I say, if the topic comes up, you talk about it and exchange ideas, but it's not like I'm forcing the issue somehow, to address somewhere or something, because yes. I'm not the type who | |

| | | | | |
|---|---|---|---|---|
| | | | wants to talk about politics with people over a glass of beer anyway, haha..” // “But these conversations about such things have also simply become less because of Corona, the conversations come up at events or birthdays that were not at the moment and if then it's about Corona, for example.” | |
| | *Workplace* | At the office | | |
| | *Presentations* | e.g., in high schools or with experts as listeners | “I also give lectures, e.g. for the Lions Club in Münster, also in the technical area... for a broad audience, where you also try to explain energy transition | |

| | | | | |
|---|---|---|---|---|
| | | | in a different way.” | |
| **Frequency of conversations about energy transition** | *Often* | | “Yes with family actually very much, because my brother and my father work in the NPP and I work in the renewable sector.”<br><br>// “So, I talk to my friends, family, also in my community service clubs with different professional backgrounds, or high schools. So, wherever I can I talk about it. “ | Sentence level |
| | *Regularly* | From time to time | **“**And yes in the private environment it is not so extreme, every now and then the topic comes up, but now not that I | |

| | | | | |
|---|---|---|---|---|
| | | | would constantly talk about the energy transition." // "I'm happy to talk about it and discuss it, but I don't push this issue on anyone." | |
| | *Occasionally* | Rather seldom | "Circle of friends... Yes, I'll say that when the topic comes up, we talk about it and exchange ideas, but it's not like I force the issue in any way, address it somewhere or something." | |
| | *Never* | - | - | |
| **Feedback/response of the social environment** | *Open to input* | Conversation partner is interested and values the input of professional | "So yes, they take what I say and understand it, think about it, but that doesn't mean that they will change their mind directly, but I think these talks can take | Paragraph and sentence level |

| | | | | |
|---|---|---|---|---|
| | | | away a lot of fears, they don't directly turn opponents into supporters, but these talks bring the topic of the energy transition a little closer." | |
| | *Rejecting input completely* | Dislikes the opinions of professional, is against it; reacts with counterarguments | "I can't always reach these people, even with arguments that are subliminal. You have to be aware that you can't always influence the actions and thinking of others." | |
| | *Not interested* | Conversation partner is not interested at all and might stop the conversation about ET fast | " "I have the feeling that I don't have to talk about it very often in my social environment, because my social environment is not a target group that I have | |

| | | | | |
|---|---|---|---|---|
| | | | to convince of the energy transition, most of them have no contact with it and it doesn't interest them.” | |