

Accelerating LNG developments in Germany - bringing participation to a standstill?

The case of Wilhelmshaven, Germany

pre-master thesis

student: Michael Walter, BSc

supervisor and first assessor: Dr. Phillipe Hanna de Almeida Oliveira

Second assessor: Prof. Dr. Frank Vanclay

cultural geography // climate adaptation governance

faculty of spatial sciences

university of groningen

june 2023

Word count without abstract and abbreviations: 6.639

Word count with abstract and abbreviations: 7.139

Abstract

The invasion in Ukraine has laid Germany's vulnerability to Russia's geopolitical powerplay bare. In an attempt to become independent from Russian imports, the German federal government has adopted an act on accelerating infrastructure planning in order to promote liquified natural gas (LNG) imports from non-European countries. Whilst the LNG terminal development has gained considerable momentum, environmental and social repercussions are visible. By means of unstructured interviews and participant observations, this study examines impacts on selected stakeholders, how their relationship with planning officials is influenced and which reactions on behalf of the local community these recent developments produce. Environmental concerns include chlorine discharges, noise and light emissions, affecting local communities and tourism dependent livelihoods, thereby jeopardizing socioeconomic wellbeing. Social impacts were predominantly evident at a higher strategic and political level, rather than directly influencing participation in the planning process. The study reveals a lack of transparency and participation in the decision-making process, with accusations of government favoritism towards gas and heavy industry lobbies and deceptive claims regarding security of supply for the wider public. The formation of the citizen-led initiative *Netzwerk Energiedrehscheibe* is highlighted as a response, which aims to raise public awareness and foster fact-based discussion. The initiative stresses that supraregional cooperation is necessary in order to do justice to the complexity and intertwinement of energy-related issues. The findings emphasize the need for greater transparency and consideration of public interests in agenda setting and development of energy related infrastructure. Lastly, the study underscores the importance of informed citizens able to engage in a politically salient discourse.

Keywords: LNG, Germany, Social Impacts, Public Participation

Abbreviation

BUND	Friends of the Earth Germany (<i>Bund für Umwelt und Naturschutz Deutschland</i>)
DUH	Environmental Action Germany (<i>Deutsche Umwelthilfe</i>)
FSRU	Floating Storage and Regasification Unit
EID	Energy infrastructure development
EIA	Environmental Impact Assessment
GHG	Greenhouse Gas
NED	Network Energy Hub (<i>Netzwerk Energiedrehscheibe</i>)
NG	Natural Gas
LNG	Liquified Natural Gas
LNGG	Act on Accelerating Infrastructure Planning (<i>LNG-Beschleunigungsgesetz</i>)
RUC	Russo-Ukrainian Conflict
SLO	Social License to Operate
SI	Social Impacts
SIA	Social Impact Assessment
UVPG	Act on Environmental Impact Assessment (<i>Gesetz über die Umweltverträglichkeitsprüfung</i>)

Contents

1. Introduction	4
1.1. Background	4
1.1.1. Societal & academic relevance.....	5
1.2. Theoretical Framework.....	6
1.2.1. Energy democracy and social justice.....	6
1.2.2. The social dimension of infrastructure planning	6
1.2.3. Social impacts of energy infrastructure development.....	7
1.2.4. Conceptual Model.....	8
1.3. Hypothesis.....	8
1.4. Research problem	8
1.4.1. Research objective	8
1.4.2. Research question	8
2. Methodology	9
2.1. Data collection.....	9
2.2. Data analysis	10
2.3. Ethics.....	10
3. Results.....	10
3.1. Experience of environmental and social impacts	10
3.2. Relationship with planning officials	12
3.3. Reactions on behalf of the community	13
4. Discussion	14
5. Conclusion	16
6. Reflections	16
References.....	17
Appendix I Interview guide and deductive codes	20
Appendix II Overview Coding	22
Appendix III Additional comments Participant 1	Fout! Bladwijzer niet gedefinieerd.
Appendix IV Interview transcription Participant 2...	Fout! Bladwijzer niet gedefinieerd.
Appendix V Interview transcription Participant 3...	Fout! Bladwijzer niet gedefinieerd.
Appendix VI Interview transcription Participant 5...	Fout! Bladwijzer niet gedefinieerd.
Appendix VII Notes Fieldwork	Fout! Bladwijzer niet gedefinieerd.

1. Introduction

1.1. Background

Russia's invasion in Ukraine continues to have far-reaching repercussions, not only in terms of international law and human rights, yet also in regards to European energy security (Kuzemko et al., 2022; McWilliams et al., 2023). Although policymakers advocate for beneficial effects of transnational energy infrastructure to stabilise international relations, successful cases are rare, with the fiasco of North Stream 2 showcasing this in late 2022 (Kotek et al., 2023). After a price surge from 20 € to 80 € / MWh (Osička & Černoč, 2022), Russian gas imports into the EU have declined by more than 50% (McWilliams et al., 2023), leaving the EU struggling to safeguard its energy security (Osička & Černoč, 2022). In response to these developments, a rethinking within the EU's energy strategy is imperative (Kemfert et al., 2022; Kotek et al., 2023; Osička & Černoč, 2022), especially in regards to reducing vulnerability to exogenous forces and decarbonisation (Osička & Černoč, 2022).

Liquefied Natural Gas (LNG) is widely recognised and promoted by a variety of actors as a bridge technology and has gained significant momentum in recent years as a legitimate transition fuel (Brauers, 2022; Brauers et al., 2021), however, simultaneously has remained a controversial energy source, (Brauers, 2022; Kemfert et al., 2022). Natural gas (NG) is widely criticised for its adverse environmental impacts, mostly due to hydraulic fracturing (*fracking*) (Benham, 2016; Brauers, 2022). Despite international efforts to reduce greenhouse gas (GHG) emissions, NG production continues to increase globally, contributing to GHG emissions, particularly in terms of methane (Brauers, 2022). Following the EU embargo on Russian imports, gas for the EU as part of the REPowerEU strategy (Selei et al., 2022) currently is secured predominantly via pipelines from Norway and the Netherlands, but to a greater extent via record amounts of shipped-in LNG (e.g. from the U.S. and Qatar) (Brauers et al., 2021; European Commission, n.d.; McWilliams et al., 2023).

Arguably, Germany is considered a forerunner in the transition to renewable energy (*Energiewende*), yet remains Europe's largest net importer and consumer of NG (Brauers et al., 2021; Wiertz et al., 2022), which has been elucidated by the Russo-Ukrainian conflict (RUC). Russian gas imports accounted for 54% of German gas consumption in 2019 (Berger et al., 2022; Kment & Fimpel, 2022), illustrating its dependency on and vulnerability to Russia's geopolitical power play (Kment & Fimpel, 2022; Kuzemko et al., 2022). The paradigm shift in the Russo-German relationship and subsequent impacts on the status quo of gas supplies require *ad hoc* solutions to achieve independence from Russian gas, particularly in the short term (Kemfert et al., 2022). As fruitful as the LNG solution might appear in the short term, it brings about novel challenges within the associated social and institutional realms and their mutual nexus (Brauers et al., 2021). Resituating German energy supply in light of a changing global spatial hierarchy thus becomes inevitable (Osthorst & Mänz, 2012). This becomes particularly notable as Germany did not possess any LNG infrastructure i.e. terminals and regasification units (FSRU) (see figure 1) before the RUC (Kment & Fimpel, 2022). Yet instrumentalising the RUC to further rely upon fossil fuels is not the way forward if international climate targets are to be met and the crisis is to be transformed into an opportunity for the *Energiewende* (Brauers, 2022; Brauers et al., 2021; Osička & Černoč, 2022).



Figure 1: A tanker delivering LNG to a floating storage and regasification unit (FSRU) (RWE, n.d.)

In response to the emerging unpredictability of foreign imports, Germany adopted an act on accelerating infrastructure planning (*LNG-Beschleunigungsgesetz* - LNGG) on June 1st 2022 (Kment & Fimpel, 2022), addressing not only national interests but also international ones, particularly those of the U.S. due to new investment possibilities (Brauers et al., 2021; Kment & Fimpel, 2022). Although this is in favour of affordability and reliability of NG, §4 LNGG absolves the competent authority from performing an environmental impact assessment (EIA) and involving the public, as required by §16 act on EIA (*Gesetz über die Umweltverträglichkeitsprüfung* – UVPG) (Kment & Fimpel, 2022; Roth, 2023). The novelty of both accumulated international crises and associated national infrastructure development responses challenge Germany’s capacity and freedom to act within the legal arena of the EU (in particular Directive 2011/92/EU, dictating the assessment of effects of certain projects on the environment) in which these recent responses play out (Kment & Fimpel, 2022; Roth, 2023).

1.1.1. Societal & academic relevance

Following McWilliams et al. (2023), most attempts to study impacts of drastic reduction of Russian gas and subsequent restructuring of energy systems have focused on quantifiable aspects, predominantly in relation to economic impacts. Whilst this has an emphasis on a specific realm, Brauers (2022) identified a multitude of structural differences in relation to different national frameworks and characteristics. Past research has focussed on specific countries, most notably the Netherlands, the U.S. and the U.K.. Similarly, empirical studies on societal costs and benefits associated with LNG-transition remain rare (Brauers, 2022). Benham (2016, p. 62), based on Sovacool (2014), argues in favour of comprehensive qualitative research that ‘explores the complex human and environmental dimensions of energy development along the entire production chain’.

Furthermore, a variety of recent media articles (e.g. NDR, 2023; NWZ, 2023; RND, 2023; SWR2, 2022; Tagesschau, 2022) revealed both local and national resistance of numerous organisations (Deutsche Umwelthilfe, BUND, NABU) both in relation to the process and outcome of LNG developments. Central points of critique refer to adverse environmental impacts and carbon lock-ins i.e. entrenchment of fossil-based energy systems (Brauers et al., 2021). This resonates with wider debates around the relationship between climate change and political responses in times of crises (Espig & de Rijke, 2018). In addition, a variety of actors might experience adverse impacts due to novel developments, may not have been given a voice yet (Flannery et al., 2018; Vanclay, 2012). Drawing from both relevant literature as well as current affairs, the above demonstrates the research gap in relation to societal elements in LNG development, particularly in Germany as well as the EU in general.

1.2. Theoretical Framework

1.2.1. Energy democracy and social justice

Essentially, the supply of energy is a multidimensional endeavour, entailing competing and occasionally incompatible societal interests. This is commonly referred to as the energy trilemma (Bridge et al., 2018, p. 3). Most notably, these competitions play out between the three pillars of access to energy services, security of energy supplies and environmental sustainability (Brauers, 2022). Although all three pillars include elements of social justice, it cannot be argued they occupy this position exclusively as economic exigencies are at play. Social elements continuing beyond aspects directly related to affordability and security of energy increasingly receive attention. Whilst the traditional energy trilemma emphasises the above mentioned tension, expanding the triangle by means of social justice, in the widest sense, enriches the perspective on LNG developments. Bridge et al. (2018) refer to it as the *energy-society prism*, with social justice as an integrated and underlying dimension rather than merely a fourth pillar. Whilst social justice traditionally has focused more on the legitimacy of outcomes, energy democracy has an emphasis on procedures themselves and is considered playing an essential role in executing calls for justice (Droubi et al., 2022; van Veelen & van der Horst, 2018). Although energy democracy calls for a renewal of public governance systems around energy related matters, it also emphasises the changing role of citizens and organisations in functional engagement such as common ownership (Bridge et al., 2018, p. 193). Energy democracy stresses decentralised political systems with a shift to the local level (van Veelen & van der Horst, 2018), however, thereby also creates its own problems as justice in one place can create injustice in another (Droubi et al., 2022).

1.2.2. The social dimension of infrastructure planning

Stakeholder engagement during the planning and implementation of energy infrastructure development (EID) addresses both normative rationales (e.g. values driven aspects such as social justice) as well as efficiency, most importantly acceptance (Ciolek et al., 2018). Acceptance of EID on behalf of the affected community has recently been considered as a *social licence to operate* (SLO), thereby understanding consent, agreement or approval of a project in various degrees (Boutilier, 2014; Vanclay et al., 2015). Following Luyet et al. (2012, p. 213), participation can be defined as “*a process through which stakeholders influence and share control over development initiatives and the decision and resources which affect them*” with the objective of enhancing the overall quality of the plan. Luyet et al. (2012, p. 213) distinguish between stakeholders and the public at large. The public is “*considered as a collection of individuals generally unstructured*

and unorganized” whereas stakeholders are regarded as “*any group of people organized, who share a common interest or stake in a particular issue or system*”. Depending on the context of the project, benefits of participation are versatile but can include, amongst others, an enlarged knowledge base and prevention of conflict (Luyet et al., 2012, p. 213). However, it must be stressed that participation is still a vague and contested concept with different parties having different definitions, expectations and attitudes towards it (Bridge et al., 2018, p. 190; Dean, 2019; Uittenbroek et al., 2019). Asking who is a relevant actor largely depends on who is asking the question and who manages to answer at the right time and place (Bridge et al., 2018, p. 10). In synthesis, the question of *cui bono* – who profits? - by far cannot always be answered with *ad utilitatem omnium* – for the benefit of all (Vanclay, 2012).

According to Bridge (2018, p. 177) energy controversies arise in a ‘*situation in which various actors, stakeholders, engage in politically salient discursive conflict*’, thereby implying that actors are aware of and capable to act within their capacity to address the issue at hand to at least some degree, albeit discursive. In case of systematic non-participation in the decision-making process, energy controversies can lead to protest within the community. In light of rising development pressure and changing global hierarchies, protest is considered a legitimate practice for the community to address the failure of decision-makers to acknowledge their rights and interests. Furthermore, protest has been found to foster the creation of social capital and a common identity, which is reflected in the emergence of novel alliances i.e. rapprochement of diverse groups addressing an issue of mutual interest (Hanna et al., 2016; Mills, 2019). Despite the geopolitical circumstance, categorically avoiding conflict during the planning process is avoiding democracy at its very essence as democracy is best to be played in ‘*an arena where differences can be confronted*’ (Bridge et al., 2018, p. 177).

1.2.3. Social impacts of energy infrastructure development

SI of EID are multifaceted with impacts present on different geographical as well as temporal scales (Espig & de Rijke, 2018). Impacts can be distinguished as being direct, in-direct and cumulative (Benham, 2016; Vanclay et al., 2015), making it crucial to acknowledge the interconnectedness of individual impacts, in particular their multi-factorial nature (Vanclay et al., 2015). SI comprise a variety of alterations to people’s way of life, their culture, community, political system, environment, health, rights, fears and aspirations (Vanclay, 2003). For instance, EID has been found to impact access of locals to real estate market, social capital, amenities, recreation and government deliveries (Benham, 2016). Different social groups have been found to experience different impacts at different magnitudes (Vanclay, 2012). Exacerbation of existing societal predicaments in structurally weak and economically undiversified regions have also been found to deteriorate further in the light of EID (Benham, 2016). In contrast to environmental impacts, SI can arise long before the actual realisation of a project, with rumours being enough to disturb social order (Vanclay et al., 2015). When it comes to community expectations, anticipated benefits of the local community in relation to EID, most prominently increase in employment, often fade in demand of specialised requirements of developers that members of the community are unable to accommodate (Benham, 2016). Yet not all shifting processes within a community lead to SI as communities are resilient and capable to adapt to changing circumstances (Magis, 2010; Vanclay et al., 2015). The extent and magnitude of SI is closely related to the presence, inclusiveness and legitimacy of participatory decision-making as well as any resulting mitigation measures (Vanclay et al., 2015). Similarly, high occurrence of SI and the absence of a SLO are highly related (Boutillier, 2014).

1.2.4. Conceptual Model

Figure 2 shows a summarised visualisation of the above mentioned theories.

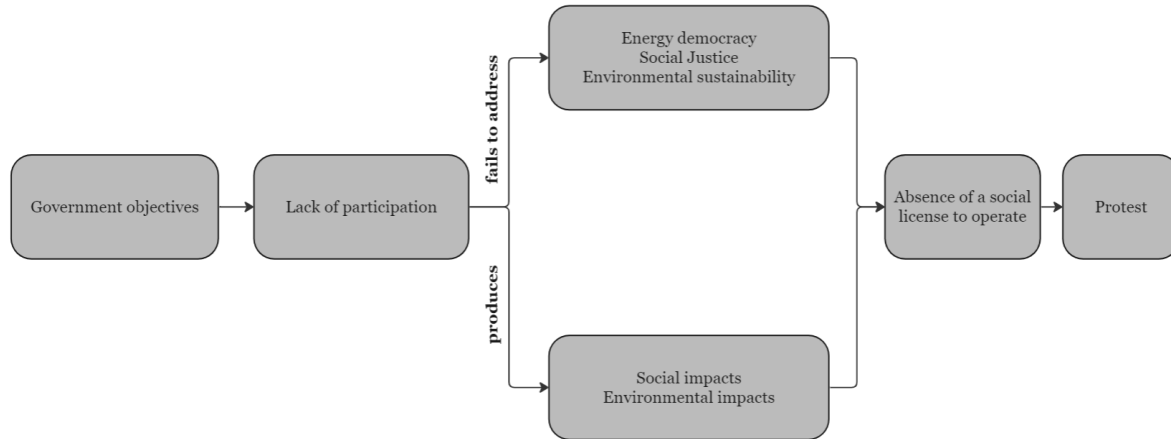


Figure 2: Conceptual model depicting streamlined procedures of infrastructure planning based on national interest conflicting with local interests.

1.3. Hypothesis

Drawing from the theoretical framework, this thesis hypothesises that the novel LNG-developments in the port of Wilhelmshaven, Lower Saxony will meet energy-security and affordability, however environmental and social justice remain unaddressed. The absence of a participatory process is expected to result in conflict between planning officials and stakeholders. It may be expected that the LNG terminal in Wilhelmshaven does not have a SLO at the local level. Both unaddressed aspects and conflict are expected to result in impacts, both in relation to the social and environmental realm and their mutual nexus.

1.4. Research problem

1.4.1. Research objective

The aim of this research is to explore and describe how stakeholders related to Wilhelmshaven, Germany are impacted by LNG-infrastructure developments. Based on this, this thesis aims to describe how this affects the relationship between planning officials and stakeholders. Furthermore, this thesis aims to explore, identify and describe reactions on behalf of affected stakeholders.

1.4.2. Research question

How are stakeholders related to Wilhelmshaven, Germany impacted by the novel LNG infrastructure development?

- I. How do stakeholders experience the environmental and social impacts of the LNG infrastructure development?
- II. How is the relationship between planning officials and stakeholders being affected?

III. What reactions on behalf of stakeholders does this produce?

2. Methodology

2.1. Data collection

The objective of data collection is to explore the current perception of relevant stakeholders in regards to LNG developments in the port of Wilhelmshaven, Germany. In order to do so, relevant stakeholders associated with the EID were identified based on online articles of local, regional and national scale as well as desk research. A requirement for this is a spatial and functional connection to the EID in Wilhelmshaven. Primarily, organisations rather than individuals were targeted for the data collection as this thesis focuses on organised groups, consisting of extractive industries (e.g. fisheries), citizen interest groups and non-profit organisations and local authorities. Relevant stakeholders were contacted via e-mail with an elaborate explanation of the background and objective of the study. Snowball sampling was employed to identify additional stakeholders.

This thesis employed semi-structured in-depth interviews. This entails that no fixed set of question but rather a topic guide was used. Unstructured interviews are simultaneously called ethnographic interviews, enabling participants to share their complex interpretations of phenomena without limiting them by any predefined categorisations on behalf of the inquirer (Punch, 2014, p. 147). Given the novelty of the EID in Wilhelmshaven this methods appeared suitable. As the author is German, invitations as well as interviews were conducted in German. Interviews were conducted at location or via Microsoft Teams, depending on availability of respondents and author. The interviews were sub-divided into three overarching themes: Experience of participants in relation to social and environmental impacts, the relationship between stakeholders and planning officials as well as reactions on behalf of stakeholders. Interview topics were developed based on existing literature and subsequently translated into German. The interview topic list can be found in appendix I.

In order to improve the overall understanding of the wider group and its dynamics, a field trip to Wilhelmshaven was conducted in which both the physical environment as well as group dynamics were observed. On march 28, I joined the citizen initiative *Netzwerk Energiedrehscheibe* (Network Energy Hub - NED) on a conference day in which several visits to the site as well as presentations and discussion rounds were organised. Notes were taken to complement data derived from interviews. Table 1 gives an overview of both data collection strategies and the involved individuals.

Further, this study utilizes cyber ethnography to examine the intersection of online communities and energy issues. This uncovers social dynamics, engagement strategies, and particularly knowledge sharing practices within a selected online community. This enhances understanding of digital spaces and energy-related engagement. General dynamics in the group were observed, detailed information was not taken into account due to privacy reasons (Hallett & Barber, 2014).

Interviewee	Organisation	In text citations	Field trip	In-depth interview
Chair local nature conservation NGO and chair Network group	NABU Wilhelmshaven, Netzwerk Energiedrehscheibe	Participant 1	✓	✓
Local politician and member of municipality council Wangerland	Gemeinde Wangerland, member of party Pro Wangerland	Participant 2	✓	✓
Campaigner and consultant LNG	Independent	Participant 3	✓	✓
Founding director	Louisiana Bucket Brigade	Participant 4	✓	
Member of BUND Schleswig-Holstein	BUND	Participant 5		✓

Table 1: Overview of involved participants per data collection strategy

2.2. Data analysis

Transcribed data was analysed employing thematic analysis using NVivo 12, adopting an open and flexible approach with both deductive and inductive codes. Data was transcribed using Microsoft Teams and subsequently corrected for eventual mistakes. The set of deductive codes can be found attached to the interview topic in appendix I. The final coding overview can be found in appendix II. Interview transcriptions, field notes and additional comments can be found in appendices II – VII.

2.3. Ethics

Participants of data collection were informed about the collection, storage and processing of data. Verbal consent was given by all interview participants. One interview participant requested to leave out particular information discussed during the interview. This sensitive data has been excluded from the written transcript and has not been taken into the analysis.

3. Results

3.1. Experience of environmental and social impacts

In terms of environmental impacts, participants mentioned the discharge of biocidal chlorine as one of the major issues. Chlorine is used to prevent mussels and barnacles from growing inside the FSRU (Niedersächsisches Ministerium für Umwelt, 2023). In 2021, Australian authorities refused to allow the FSRU Höegh Esperanza from operating in Australian waters due to those discharges (Deutsche Umwelthilfe, 2022). Without further adjustments and EIA, German authorities granted the Höegh Esperanza access to the German coastal zone, causing an outcry amongst a variety of stakeholders (NDR, 2022). Participants have a strong connectedness to the Wadden Sea as part of their local identity and were appalled that the LNGG would result in discharge of biocides, particularly as a consequence of the novel policy environment *‘with a so-to-say pre-approval granted by law, without any EIA, with the subsequent effects ... i.e. biocide*

discharges permitted until 2043 in a UNESCO World Heritage Site. Completely abstruse things [are happening] according to Participant 3. After several parties, amongst which Participant 2 and his local party Pro Wangerland, pressing for adjustments and an expert report filed by *Deutsche Umwelthilfe* (DUH) exploring feasible alternatives, the Höegh Esperanza is on the verge of undergoing retrofitting to a more environmentally friendly technique based on ultrasound (Woldt, 2023).

Furthermore, participants mentioned noise and light emissions as both environmental and social impacts. Citizens living in the vicinity of industrial ports were reported to be used to disturbing activities during business hours, however, LNG related activities would take place round the clock. Participant 2 mentioned light emissions as one of the most unexpected problems, particularly as this was not communicated on behalf of planners. Participant 5 compared FSRU with a *'supernova, it is really dazzlingly bright'*, for safety-related reasons. Not only does this disturb citizens living close by but also disturbs natural processes in the Wadden Sea. Next to light and noise, the mere presence of the FSRU visible from the beaches adjacent to Wilhelmshaven, a touristic area, was mentioned as a potential threat for the local tourism industry. Participant 1 stated that concerns regarding job security are present in the community at large, due to negative impacts on the attractiveness of beaches. Due to the novelty of the FSRU, the main season of 2023 shall reveal the degree to which tourists negatively experience the new industrial character of the coastal zone as disturbance. Participant 1 expressed concerns regarding the viability of tourism dependent businesses as of the new industrial character of the coastal zone. With a more optimistic attitude, Participant 2 mentioned potential opportunities of the new illumination of the coastal area as beaches would be accessible round the clock *'in a warm orange light.'*

The critique on pollution widely resonated with the overall critique on the LNGG and its inability to account for any adverse ramifications along the entire chain, thus not only in terms of local impacts. Currently, the majority of imported LNG originates in the U.S.. Participants not only expressed concerns regarding local damages, but were equally concerned for adverse impacts occurring on site of production and export, especially since the locations of export and import show environmental similarities, such as mudflats and sandy shores, enabling mutual identification in terms of local attachment. Participant 4 portrayed the situation in New Orleans, where most export terminals are located. According to her, trustworthiness of operators is highly questionable with industry interests outweighing public ones such as coastal defense and livability in a highly storm prone area. According to her, production and export of LNG causes elevated concentration of benzene and other toxic chemicals in the air, displaying a health concern by which particularly black communities are hit the most due to spatial proximity. Participant 4 quoted a representative of U.S. operators with *'let the hurricane take care of people'*, illustrating how the emphasis on economic expansion tends to overshadow the importance of public interests. She further explained how operators utilize alleged revitalization of structurally weak regions as an argument for EID in the U.S..

Concerns regarding ecosystem integrity and dependent extractive industries were present for both the U.S. and Germany. Particularly fisheries are threatened due to chemical discharges. Participants agreed that the issue of LNG cannot be considered, understood or addressed as a local phenomenon, but rather as a global issue of neoliberal opportunism and associated lobby efforts, disguised as an undertaking to safeguard public interests in light of the RUC. Participant 3 described this with *"one makes use of the fear of war and the narratives that have been used before to push through all these projects and ultimately frivolously burn a lot of public funds"*. He described the failure of several governmental agencies to debate the industries priorities in

light of telling people to have “cold showers and less heating”, whilst industries remained unencumbered by repercussions during the same period. They furthermore stressed that the public largely is still unaware of these recent developments and that powerful narratives are required. This illustrates the wide ranging spatial distribution of LNG associated impacts as well as participants’ far reaching and interlocal concerns.

3.2. Relationship with planning officials

Participant 3 critiqued the overall narrative of the government and subsequent impacts on the public opinion, allegedly safeguarding energy supplies for the public by instrumentalizing the fear of war’s consequences. Based on a jeopardized supply of gas, the LNG plans received wide public support during the winter of 2022/2023. However, stored gas supplies have not dropped below 60% as of today, making claims of security of supplies an invalid argument in his view, especially since contribution to stocks was predominantly secured via neighboring states and not LNG imports (NDR, 2023b). Participant 5 agrees with this and argues that in light of current developments, an overcapacity of about 50% will be realized, making LNG terminals redundant and serving economic interests only. Beyond, Participant 3 remarked that the overcapacity simultaneously forms an economic risk. Participants further were astounded that Robert Habeck, Federal Minister for Economic Affairs and Climate Action is “*playing the gas game*”. Participant 3 referred to Robert Habeck as “*the minister for Economic Affairs, he has not yet earned himself the title of Minister for Climate Action*”. This exemplifies the overall concerns participants have in terms of climate targets and carbon lock-ins under increased LNG imports.

In terms of impacts on political participation, Participant 2 mentioned tensions arising in the local council of Wangerland in light of chlorine discharges. He stated a ‘*bad idea of democracy*’ as he was accused by fellow members of the local council for damaging the reputation of local tourism by raising the issue of chemical discharges. Participant 2 and a fellow member of the local council received information regarding chlorine discharges and agreed on writing a statement to the state administration. According to him, they were hindered by other members of the council, particularly in terms of discussions around the issue. Being part of a local party, he described the sympathies members of the local branch of the Social Democratic Party of Germany (SPD) have with the state and federal level of the party as a form of nepotism. According to him, critical voices are rather unwelcome. Furthermore, nepotism played an important role across different layers of governance i.e. municipal, state and federal level. Moreover, he stated to have perceived a form of political hostility during this period for not sympathizing with the plans at large. Participant 2 found that particularly the political culture of SPD caused members to exceedingly trust federal politicians and their agenda. Participant 5 depicts similar experiences, stating that no one in the village would talk to him anymore for “*being the greenie*” after raising the issue. Here, clear tendencies of political and social exclusion resulting from critical commentary are evident.

The interviews showed that concerns about the realization of LNG terminals did not concern the aspect of participation in the ultimate planning, but more on a higher strategic level. Participants widely agreed on the thought that the German government falsely adheres to a dogma in which the realization of LNG terminals is without alternative. Participants linked this to the high degree of influence the gas and heavy industry lobby has on the federal government. Participant 3 stated that the proposed LNG infrastructure will be “*an integrated component of existing petrochemical clusters*”, and thus will not be in the interest of the wider public, but rather in the interest of particular economic sectors linked to high gas consumption. Additionally, he drew parallels

between the COVID-19 pandemic and the current crisis. According to him, many industries were expected to go into lock-downs whereas in the current geopolitical crisis this apparently cannot be expected from particular industries.

Critiques on the overall narrative of the federal government were present amongst all participants. As part of the political strategy to accelerate infrastructure planning, the federal government decided to label this *Neue Deutschlandgeschwindigkeit* (New German Speed), contrasting the notoriously tedious and bureaucratic procedures in Germany. Participant 5 criticized this as false marketing: *“There you have a ready-made system, you just put a pipe on it. It is only media-effective what is going on there, it has nothing to do with reality.”* The government’s framing of this hitherto unseen realization of infrastructure in combination with heavy lobby influences result in low trust towards government officials. Participant 1 stated that she has no trust in the government whatsoever, perceiving them as puppets of the gas lobby and acting from a position in a political ivory tower. She further stated that agencies in question are not transparent regarding potential environmental repercussions caused by LNG EID. Participant 2 stated that federal politicians are subservient to the economic agenda in which one *“rather saves 1,000 jobs in an industry that you actually know has no long future.”*

As the LGG basically makes public participation not required, participants expressed dissatisfaction regarding participation. Participant 2 remarked that in a dynamic process, the rigid procedures that were actually in place were not transparent and suitable. Participant 3 referred to the permitting procedures as a farce, with the public having no trust in planning officials. Participant 1 agreed with this and views the permit authorities as an extension of the gas lobby. Participant 3 further stressed the responsibility individual permitting authorities should take when it comes to invoking the law and having an EIA, including participation. Participants described the participation that was in place as reactionary, only comments on draft plans were possible. However, according to all participants, none of the commentary was taken into account on a serious level. Hence, none of the suggestions on alterations was actually implemented but rather downplayed as *“we had already thought of that”*. Participant 3 compared the conditions under which plans were accessible for the public between the state of Lower Saxony and other states. He came to the conclusion that Lower Saxony did the best job as plans were readily available online whereas in other locations, plans were only available on paper during certain business hours. In other locations, Participant 3 was denied access to documents as *“it is not of public concern”*, according to the authorities in question and depicted by him. Participant 1 illustrated participation as making plans available as *“the last page in the newspaper”*.

3.3. Reactions on behalf of the community

In terms of reaction on behalf of stakeholders, the emphasis lied on revealing factual data whilst connecting people from different locations. NED plays a crucial role in this. Participant 1, founding member of NED and chair of NABU describes the network as a citizen led initiative for discussion, without any particular strategy. It’s a citizen movement for education and to promote public awareness with an informal character and without a clear hierarchy. According to her, the motto of NED can be seen as *“let’s bring all the facts on the table”*. Activities of NED therefore also aim to bring together people and to produce a community, centered around creating non-institutional knowledge infrastructure. *“We put our heads together and then it becomes one big head, that’s a form of mass knowledge - mass horizon - and suddenly you are part of such a huge head!”* Activities entail regular meetings of members and organizing conferences for pan-

German, transatlantic and international exchange. For instance, during the conference “*Transatlantic Conversations*” with Participant 4, it was agreed upon a strong transatlantic cooperation between German and U.S. stakeholders to expose the full array of repercussions and to put a face to the issue whilst “*connecting people not infrastructure*”. Participant 1 stated the importance of bringing together facts on the table and acknowledged the complexity of EID. Further, she underlined the passion and commitment she and others find in organizing activities. Participant 1 stressed the fun she and others find in bringing together specific facts as well as the entertainment she finds in “*noticing how the argumentation of the gas industry changes*”. NED is continuously gaining momentum with a growing number of participants. Fostering a sense of community thereby takes a central role, which is underlined by activities such regular meetings to foster a shared identity and responsibility.

Although Participant 1 is readily engaged with most recent developments she states “*I see how many more people are getting engaged, and I see how much more they know than I do*”. This illustrates the growing character of the initiative, their capability to self-organization, and most notably, their growing impact on decision-makers. “*It’s not like we’re being played against the wall. That’s what one likes, but we are being heard more and more*”. This is underlined by Participant 2’s perception of the network as he states that “*the network appears to develop a certain power, however it might not always be visible in the end. If there is a critical comment in the newspapers, who has organized that the newspapers talk to a certain person? Who has organized a certain expert opinion? That is not always visible*”. He thereby describes a soft power that the network is developing in influencing the public discourse around EID in Wilhelmshaven. This is emphasized by Participant 5 as he states that in Brunsbüttel, another LNG terminal location, there is no community centered around the protest against LNG, “*there are no supporters from the population, not at all*”. He justified this with the fact that since 2013, there are continuous yet small “*positive LNG drops in the media*”, thus influencing public opinion and acceptance for a decade.

Participant 1 stressed a well-informed citizen as the basis for every discussion. This becomes evident in a vibrant online community in which daily issues related to EID are shared and discussed. Decision-making related to follow-up actions of the network are decided by a poll in a WhatsApp group. This resonates with Participant 3’s thoughts on responsible citizenship. He thinks that uninformed and disengaged citizens lead to frustrated society in which there is no space for discussion, which is evidently necessary to foster an engaged public and a living democracy. He illustrates this with his perception of the governments mode of operating in which complex issues are simplified and reduced to half-truths, based on the preceding assumption “*that people are stupid*”. He referred to the situation in Wilhelmshaven where “*there is the entire spectrum of society and they dig deep into highly complex stories. I have to be able to tell the company or industry that it is talking nonsense, because I have to be able to prove it. I have to be able to plausibly explain to the press why I am right and where the facts are.*” He thus agrees with Participant 1 on the vital importance of engaged and educated citizens in becoming involved in fact-based discussions concerning the interest of the public.

4. Discussion

The case of Wilhelmshaven proved not to be an advancement in establishing balance in the energy-society prism. The focus remains on affordability and security of supplies at the expense of environmental sustainability and social justice. Whilst it can be argued that elements of social

justice are inherently captured in these aspects, participants expressed sentiments of political and social exclusion in regards to the realisation of the FSRU and the popular discourse surrounding it. Participants indicated *procedural injustice* due to suspension of commonly applied participatory processes, e.g. EIA (Droubi et al., 2022). The data indicates that the lack of these procedures fails to meet stakeholder demands, ultimately resulting in frequently identified outcomes such as a lack of trust in decisions and public acceptance (Luyet et al., 2012). As local communities are more likely to grant a SLO when purposeful engagement is given, the absence of any participation explains why no SLO was granted (Hanna et al., 2016).

The study demonstrates a failure of decision-makers to take into account local societal networks, illustrated by shifting energy regimes yet unaddressed power dynamics between the wider public and central government. Whilst the added value of comprehensive social impact assessment (SIA) has been acknowledged in advancing democratic decision making, particularly in a coastal context, Wilhelmshaven proved to be a negative example of what happens if SIA is not taken to heart (Vanclay, 2012). The data indicates no shift to a locally lead energy governance, potentially as a consequence of institutional lock-ins arising from the novel policy environment (Brauers, 2022).

The data resonates with the findings of Brauers (2022), indicating a strong lobby interest and subsequent opposition to restrictive government interventions. Discursive lock-ins and issues regarding government framing in relation to *opportunity vs inhibitor to sustainable transformation* have equally been identified by Brauers (2022). This resonates with participants' experiences in relation to terminology such as *Neue Deutschlandgeschwindigkeit*, indicating that not independence from foreign exports but lock-ins are accelerated. Low tolerance of state and industry actors towards community initiated resistance to development plans have equally been identified by Bridge (2018, p. 176).

Benham (2016) identified declining civic engagement as a result of LNG development. In Wilhelmshaven, on the contrary, EID stimulated civic engagement. Reactions on behalf of the community, that is NED, were identified to focus on exchange and disclosure of relevant information as well as fostering exchange to create awareness. NED is growing in its ability to exert political pressure via drawing the wider public's attention to the issue. This is predominantly achieved by coordinated efforts to bring together the right people in the right time and place, as referred to by Participant 2's description of soft power. The media as a crucial channel for underdogs has long been identified (Hanna et al., 2016). As Hanna et al. (2016) further identified, protest comes in versatile forms, however usually emerges as a response to challenges and controversy. In Wilhelmshaven, protest emerged in offering a platform of communal understanding that elevates individual experiences to an augmented narrative that has the potential to resonate with the wider public including greater significance and meaning.

Lastly, the current study demonstrates that local EID and the decisions and discourses surrounding it need to be understood in a wider geopolitical context. Participants expressed concerns from what Droubi et al. (2022) referred to as *cosmopolitan injustice* i.e. concerns beyond national borders and horizons. This became evident in participants' expression of repercussions along the entire LNG chain as well as their intentions to address the issue holistically.

5. Conclusion

This research sought to examine social impacts of the novel LNG developments in Wilhelmshaven, Germany on various stakeholders. Consistent with the initial hypotheses, the findings suggest that the implementation of the FSRU and the associated decision-making process fail to adequately address stakeholder needs, resulting in the absence of a social license to operate. Participants expressed concerns regarding direct environmental impacts, notably chlorine discharges, prompting efforts to explore alternative techniques and retrofitting measures. Additionally, potential disruptions arising from noise, light emissions, and the industrial nature of the coastal zone were emphasized, alongside the adverse effects on the local tourism industry. Participants also voiced broader apprehensions concerning the global ramifications of LNG production and export, particularly with regards to pollution and health risks faced by communities situated along the entire LNG chain.

The existing participatory processes were criticized for their limited scope, accessibility as well as rigidity, ultimately failing to convey a sense of energy democracy. Furthermore, participants were appalled by the narratives and framing employed by the federal government, particularly regarding disguised efforts to prioritize gas and industry interests over public welfare. They raised concerns about the prioritization of economic considerations and the lack of transparency in decision-making processes, resulting in a diminished level of trust in government officials and planning authorities. The findings of this research shed light on the citizen-led initiative NED, highlighting its significant role in fostering a sense of community, raising awareness, and providing a platform for discussion and knowledge sharing along the entire chain. As NED continues to gain momentum, its influence on decision-makers and public discourse grows, underscoring the importance of an informed and engaged citizenry in addressing complex energy and environmental challenges. Due to the context specific similarities with other novel LNG import terminals in Germany, similar impacts and dynamics might also be present in other locations.

6. Reflections

Data collection proved to be studying *in*, rather than *a* community. Participants were aware of each other and tied in with each other's narratives, which enabled the researcher understanding the situation from a holistic yet nuanced perspective. However, the selection focused on semi-organized groups and could be complemented with individual citizen's perspectives. Also, a focus group discussion might have revealed more nuanced information regarding actor dynamics and the central discourse. Beyond, no representative of state or federal government were interviewed, which would have illuminated the other side of the spectrum involved. So far, no study has focused on social impacts related to LNG in Germany, so this research provides a good starting point for future research, particularly in terms of effects of national discourses in local EID. As the network is currently organizing two conferences called "*citizen owned energy*", there is potential for future research to explore how NED's capacity for self-organization evolves, how they influence the local discourse and if and to what degree they are able to advocate, promote and realize citizen owned energy initiatives. Lastly, future research has potential to focus on the collaboration with international networks and collective actions to address impacts caused by LNG developments.

References

- Benham, C. (2016). Change, opportunity and grief: Understanding the complex social-ecological impacts of Liquefied Natural Gas development in the Australian coastal zone. *Energy Research & Social Science*, 14, 61–70. <https://doi.org/10.1016/J.ERSS.2016.01.006>
- Berger, E., Bialek, S., Garnadt, N., Grimm, V., Other, L., Salzmann, L., Schnitzer, M., Truger, A., & Wieland, V. (2022). *A potential sudden stop of energy imports from Russia: Effects on energy security and economic output in Germany and the EU*. www.imfs-frankfurt.de
- Boutilier, R. G. (2014). Frequently asked questions about the social licence to operate. *Impact Assessment and Project Appraisal*, 32(4), 263–272. <https://doi.org/10.1080/14615517.2014.941141>
- Brauers, H. (2022). Natural gas as a barrier to sustainability transitions? A systematic mapping of the risks and challenges. *Energy Research & Social Science*, 89, 102538. <https://doi.org/10.1016/J.ERSS.2022.102538>
- Brauers, H., Braunger, I., & Jewell, J. (2021). Liquefied natural gas expansion plans in Germany: The risk of gas lock-in under energy transitions. *Energy Research & Social Science*, 76, 102059. <https://doi.org/10.1016/J.ERSS.2021.102059>
- Bridge, G., Barr, S., Bouzarovski, S., Bradshaw, M., Brown, E., Bulkeley, H., & Walker, G. (2018). *Energy and Society - A Critical Perspective*. Routledge.
- Ciołek, D., Matczak, M., Piwowarczyk, J., Rakowski, M., Szeffler, K., & Zaucha, J. (2018). The perspective of Polish fishermen on maritime spatial planning. *Ocean & Coastal Management*, 166, 113–124. <https://doi.org/10.1016/J.OCECOAMAN.2018.07.001>
- Dean, R. (2019). Control or influence? Conflict or solidarity? Understanding diversity in preferences for public participation in social policy decision making. *Social Policy & Administration*, 53(1), 170–187. <https://doi.org/10.1111/spol.12445>
- Deutsche Umwelthilfe. (2022, October 11). *Deutsche Umwelthilfe schlägt Alarm: Uniper plant mit LNG-Terminal Wilhelmshaven große Mengen umweltschädlicher Biozide ohne Umweltverträglichkeitsprüfung in die Nordsee einzuleiten*. <https://www.duh.de/presse/pressemitteilungen/pressemitteilung/deutsche-umwelthilfe-schlaegt-alarm-uniper-plant-mit-lng-terminal-wilhelmshaven-grosse-mengen-umwelts/>
- Droubi, S., Heffron, R. J., & McCauley, D. (2022). A critical review of energy democracy: A failure to deliver justice? *Energy Research & Social Science*, 86, 102444. <https://doi.org/10.1016/j.erss.2021.102444>
- Espig, M., & de Rijke, K. (2018). Energy, Anthropology and Ethnography: On the Challenges of Studying Unconventional Gas Developments in Australia. *Energy Research & Social Science*, 45, 214–223. <https://doi.org/10.1016/J.ERSS.2018.05.004>
- European Commission. (n.d.). *Liquefied natural gas*. Retrieved 9 March 2023, from https://energy.ec.europa.eu/topics/oil-gas-and-coal/liquefied-natural-gas_en
- Flannery, W., Healy, N., & Luna, M. (2018). Exclusion and non-participation in Marine Spatial Planning. *Marine Policy*, 88, 32–40. <https://doi.org/10.1016/j.marpol.2017.11.001>

- Hallett, R. E., & Barber, K. (2014). Ethnographic Research in a Cyber Era. *Journal of Contemporary Ethnography*, 43(3), 306–330. <https://doi.org/10.1177/0891241613497749>
- Hanna, P., Vanclay, F., Langdon, E. J., & Arts, J. (2016). Conceptualizing social protest and the significance of protest actions to large projects. *The Extractive Industries and Society*, 3(1), 217–239. <https://doi.org/10.1016/J.EXIS.2015.10.006>
- Kemfert, C., Präger, F., Braunger, I., Hoffart, F. M., & Brauers, H. (2022). The expansion of natural gas infrastructure puts energy transitions at risk. *Nature Energy*, 7(7), 582–587. <https://doi.org/10.1038/s41560-022-01060-3>
- Kment, M., & Fimpel, S. (2022). LNG-Terminals ohne UVP – heiligt der Zweck die Mittel? *Natur Und Recht*, 44(9), 599–604. <https://doi.org/10.1007/s10357-022-4071-z>
- Kotek, P., Selei, A., Takácsné Tóth, B., & Felsmann, B. (2023). What can the EU do to address the high natural gas prices? *Energy Policy*, 173, 113312. <https://doi.org/10.1016/J.ENPOL.2022.113312>
- Kuzemko, C., Blondeel, M., Dupont, C., & Brisbois, M. C. (2022). Russia’s war on Ukraine, European energy policy responses & implications for sustainable transformations. *Energy Research & Social Science*, 93, 102842. <https://doi.org/10.1016/J.ERSS.2022.102842>
- Luyet, V., Schlaepfer, R., Parlange, M. B., & Buttler, A. (2012). A framework to implement Stakeholder participation in environmental projects. *Journal of Environmental Management*, 111, 213–219. <https://doi.org/10.1016/J.JENVMAN.2012.06.026>
- Magis, K. (2010). Community Resilience: An Indicator of Social Sustainability. *Society & Natural Resources*, 23(5), 401–416. <https://doi.org/10.1080/08941920903305674>
- McWilliams, B., Sgaravatti, G., Tagliapietra, S., & Zachmann, G. (2023). How would the European Union fare without Russian energy? *Energy Policy*, 174, 113413. <https://doi.org/10.1016/J.ENPOL.2022.113413>
- Mills, L. N. (2019). The conflict over the proposed LNG hub in Western Australia’s Kimberley region and the politics of time. *The Extractive Industries and Society*, 6(1), 67–76. <https://doi.org/10.1016/J.EXIS.2018.08.002>
- NDR. (2022, December 15). *LNG-Terminal: Umweltschützer kritisieren Chlor-Einleitung*. https://www.ndr.de/nachrichten/niedersachsen/oldenburg_ostfriesland/LNG-Terminal-Umweltschuetzer-kritisieren-Chlor-Einleitung,lng538.html
- NDR. (2023a, February 28). *Wilhelmshaven: Zweites LNG-Terminal soll umweltfreundlicher werden*. <https://www.ndr.de/nachrichten/niedersachsen/Wilhelmshaven-Zweites-LNG-Terminal-soll-umweltfreundlicher-werden,lng666.html>
- NDR. (2023b, May 15). *Gasspeicher in Deutschland: So hoch ist der Füllstand aktuell*. <https://www.ndr.de/nachrichten/info/Gasspeicher-in-Deutschland-So-steht-es-um-die-Fuellstaende,gasspeicher120.html>
- Niedersächsisches Ministerium für Umwelt, E. und K. (2023, March 29). *Erfolg für den Umweltschutz: Uniper prüft auch für erste FSRU Umrüstung auf chlorfreien Betrieb*. <https://www.umwelt.niedersachsen.de/startseite/aktuelles/pressemitteilungen/erfolg-fur->

den-umweltschutz-uniper-pruft-auch-fur-erste-fsru-umrüstung-auf-chlorfreien-betrieb-221070.html

- NWZ. (2023, February 12). *LNG-Terminals laufen jetzt auf Hochtouren*.
https://www.nwzonline.de/wilhelmshaven/wilhelmshaven-lng-terminals-laufen-jetzt-auf-hochtouren_a_3,2,3588701386.html
- Osička, J., & Černoch, F. (2022). European energy politics after Ukraine: The road ahead. *Energy Research & Social Science*, 91, 102757.
<https://doi.org/10.1016/J.ERSS.2022.102757>
- Osthorst, W., & Mänz, C. (2012). Types of cluster adaptation to climate change. Lessons from the port and logistics sector of Northwest Germany. *Maritime Policy & Management*, 39(2), 227–248. <https://doi.org/10.1080/03088839.2011.650724>
- Punch, K. (2014). *Social Research - Quantitative & Qualitative Approaches*. Sage Publications .
- RND. (2023, February 11). *Umweltschützer prüfen Klage gegen LNG-Terminals*.
<https://www.rnd.de/politik/gas-umweltschuetzer-pruefen-klage-gegen-lng-terminals-an-nord-und-ostsee-IRME6XD66JFB2XR2HFYIGOYWRQ.html>
- Röckmann, C., van Leeuwen, J., Goldsborough, D., Kraan, M., & Piet, G. (2015). The interaction triangle as a tool for understanding stakeholder interactions in marine ecosystem based management. *Marine Policy*, 52, 155–162. <https://doi.org/10.1016/j.marpol.2014.10.019>
- Roth, M. (2023). Zur Vereinbarkeit von vorzeitigem Baubeginn und Naturschutz: Zwischen realpolitischer Hektik und rechtsstaatlichen Grundsätzen. *Natur Und Recht*, 45(2), 73–78.
<https://doi.org/10.1007/s10357-022-4100-y>
- RWE. (n.d.). *Floating Storage and Regasification Units*. Retrieved 13 March 2023, from <https://www.rwe.com/en/research-and-development/project-plans/floating-lng-terminals/>
- Selei, A., Kotek, P., & Takácsné Tóth, B. (2022). Russia's Gas Weapon and Europe's Best Response. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4172012>
- Sovacool, B. K. (2014). What are we doing here? Analyzing fifteen years of energy scholarship and proposing a social science research agenda. *Energy Research & Social Science*, 1, 1–29.
<https://doi.org/10.1016/J.ERSS.2014.02.003>
- SWR2. (2022, December 19). *Welche Folgen hat das LNG-Terminal in Wilhelmshaven für die Umwelt?* <https://www.swr.de/swr2/wissen/welche-folgen-hat-das-lng-terminal-in-wilhelmshaven-fuer-die-umwelt-100.html>
- Tagesschau. (2022, December 17). *LNG-Eröffnung in Wilhelmshaven*.
<https://www.tagesschau.de/inland/innenpolitik/lng-terminals-eroeffnung-wilhelmshaven-101.html>
- Uittenbroek, C. J., Mees, H. L. P., Hegger, D. L. T., & Driessen, P. P. J. (2019). The design of public participation: who participates, when and how? Insights in climate adaptation planning from the Netherlands. *Journal of Environmental Planning and Management*, 62(14), 2529–2547. <https://doi.org/10.1080/09640568.2019.1569503>

- van Veelen, B., & van der Horst, D. (2018). What is energy democracy? Connecting social science energy research and political theory. *Energy Research & Social Science*, 46, 19–28. <https://doi.org/10.1016/J.ERSS.2018.06.010>
- Vanclay, F. (2003). International Principles For Social Impact Assessment. *Impact Assessment and Project Appraisal*, 21(1), 5–12. <https://doi.org/10.3152/147154603781766491>
- Vanclay, F. (2012). The potential application of social impact assessment in integrated coastal zone management. *Ocean & Coastal Management*, 68, 149–156. <https://doi.org/10.1016/j.ocecoaman.2012.05.016>
- Vanclay, F., Esteves, A., Aucamp, I., & Franks, D. (2015). *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects*.
- Wiertz, T., Mattissek, A., & Kuhn, L. (2022). A turn to geopolitics: how Russia’s war against Ukraine unsettles the German energy transition discourse. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4200513>
- Woldt, E. (2023, March 1). *Ultraschall- statt Chlorreinigung: LNG-Terminal in Wilhelmshaven wird umgerüstet*. <https://www.haz.de/der-norden/ultraschall-statt-chlor-lng-terminal-in-wilhelmshaven-wird-umgeruestet-KSYWUM6JMVARDIBBTEMWU5Y55A.html>

Appendix I Interview guide and deductive codes

Sub question	Concepts	Interview topic	Deductive codes	Reference
I	Experience of social and environmental impacts	Health consequences	<ul style="list-style-type: none"> Physical health impacts Psychological health impacts Pollution of air or water Risks and fear of accidents Direct impacts on workers 	(Bridge et al., 2018, p. 181; Vanclay et al., 2015)
		Environmental and ecological consequences	<ul style="list-style-type: none"> Direct environmental or ecological impacts based on processes Changes in environmental quality Changes to tidal dynamics 	(Bridge et al., 2018, p. 181; Vanclay et al., 2015)
		Socio-economic consequences	<ul style="list-style-type: none"> Chances and risks for employment Access to amenities and services 	(Bridge et al., 2018, p. 181; Vanclay et al., 2015)

			<ul style="list-style-type: none"> • Consequences for tourism 	
		Landscape and visual impacts	<ul style="list-style-type: none"> • Impacts on sense of place • Impacts on local / collective identity 	(Bridge et al., 2018, p. 181; Vanclay, 2012; Vanclay et al., 2015)
		Civil liberties and human rights	<ul style="list-style-type: none"> • Consequences for rights of freedom • Impact on political participation • Impact on self-determination and autonomy 	(Bridge et al., 2018, p. 181; Vanclay et al., 2015)
II	Relationship between planning authorities and stakeholders	Perceived Legitimacy of decision makers	<ul style="list-style-type: none"> • Erosion of trust • Compliance with decision • Feeling heard by decision makers • Transparency of decision makers • Perceived transparency of communicated implications of the project 	(Röckmann et al., 2015) (Boutilier, 2014)
		Social Licence	<ul style="list-style-type: none"> • Level of acceptance of the project • Level of approval of the project • Trust in decision makers • Psychological identification with the project 	(Boutilier, 2014; Vanclay et al., 2015) (Vanclay, 2012)
		Power to influence the decision making process	<ul style="list-style-type: none"> • Authority to influence the process / project • Resources to influence the process /project • Power to veto a project • Political influence over the process / project 	(Boutilier, 2014) (Luyet et al., 2012)
		Perception of planning authority behaviour	<ul style="list-style-type: none"> • Tendency to downplay community initiated action • Perception of paternalization of decision makers 	Boutilier, 2014)

			<ul style="list-style-type: none"> • Repressing stakeholder power or influence • Way of responding to concerns • The way in which decision makers take local cultural and social norms into account 	(Luyet et al., 2012)
III	Reactions on behalf of stakeholders	Protest	<ul style="list-style-type: none"> • Social media protest • Physical protest • Self-organisation to promote autonomy • NIMBY responses 	(Hanna et al., 2016; Vanclay et al., 2015) (Vanclay, 2012)
		Legal action	<ul style="list-style-type: none"> • Availability of resources for legal action 	(Vanclay et al., 2015)
		Unlikely alliances	<ul style="list-style-type: none"> • Formation of unlikely alliances i.e. cooperation of parties that otherwise would not cooperate 	(Mills, 2019)

Appendix II Overview Coding

Code	Files	References
Experience of Environmental and social impacts	3	45*
Experience of environmental impacts	3	13
Ecological consequences	3	10
Changes in environmental quality	1	1
Import von Fracking Gas	2	5
Pollution of air or water	2	3
Landscape and visual impacts	2	3
Experience of social impacts	3	32
Civil liberties and human rights	3	11

Code	Files	References
Change is democracy	3	7
Impact on political participation	1	1
Health consequences	2	10
Psychological health impacts	2	5
Risks and fear of accidents	2	5
Socio-economic consequences	2	11
Consequences for tourism	1	10
Reactions on behalf of the community	4	47*
(Unlikely) alliances	3	6
Compensation	1	4
Legal action	2	8
Protest	4	26
Media	2	6
Self-organisation to promote autonomy	3	14
Relationship with authorities	4	183*
Perceived Legitimacy of decision makers	4	95
Dogma and lack of clear vision	3	11
Erosion of trust	3	28
Feeling heard by decision makers	2	6
Incompetence of those responsible	2	11
Perceived transparency of communicated implications of the project	3	4
Transparency of decision makers	3	28
Perception of planning authority behaviour	3	52

Code	Files	References
Influence of Lobby on decision makers	3	8
Perception of paternalization of decision makers	2	8
Repressing stakeholder power or influence	2	5
Tendency to downplay community initiated action	3	6
Way of responding to concerns or <i>Eingaben</i> or statements	3	24
Power to influence the decision making process	3	24
Political influence over the process or projects	2	6
Public willingness to intellectually engage with complexity	3	9
Resources to influence the process project	2	7
SLO	2	12
Level of acceptance of the project	1	6
Level of approval of the project	1	4
Trust in decision makers	2	2

**Accumulated number of codes per main code corresponding to sub questions*