

Deliverable 2.5: Report on evaluation of quantified indicators, detailing the effects of best practices application for policy-makers and stakeholders

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1. Introduction

In the year 2009 the leaders of the European countries agreed to cut by 2050 the level of green house gas (GHG) emissions across the European economies by at least 80% below the level of 1990. Such GHG reduction would mean decarbonisation of energy generation sector by almost 90%, which could be reached by scaling up of renewable energy sources (RES), nuclear energy or fossil fuels with CCS. Energy policy in Germany is centered around energy transition (Energiewende), which means a reorientation of policy from energy demand to energy supply and from a centralized to distributed energy generation. The key goals of energy transition were outlined in 2011, after the Fukushima nuclear accident. They include the decision to phase out nuclear power production until 2022 and the following goals by 2050: an increase of renewable energy share by 60%, reduction of green house gas emissions by 80-95% and increase of energy efficiency by 50%. This created significant drivers for deployment of renewable energy sources (Sander, 2011).

Deployment of renewable energies in Germany was progressing during the last decades. Only in the electricity sector the net-generation from renewable energies increased from 6.3% in the year 2000 to about 30% in the year 2014, which is above the OECD average of 18%. This increase was mainly due to the growth of electricity production from wind, which reached its record of 29.7 GW in peak power production in December 2014 and daily wind energy production of 562 GWh (EEX Transparency Platform, 2014). The net installed renewable energy capacity made 38 GW for solar, 35.6 GW for wind, 8 GW for biomass and 5.6GW for hydro (Statistisches Bundesamt, 2014).

Further expansion of electricity grids is important for future electricity supply of Germany, based on renewable energy generation, as this significant increase of renewable energy was also due to a great extent to large, utility scale installations. Today, debate about social and economic impacts of energy transition became more prominent as the share of renewables is continuing to grow. This discourse shows that energy transition is not only the question of technical availability and economic feasibility of renewable energy generation but this is a question of public acceptance of the entire energy transition, and of deployment of infrastructure necessary for this transition, in particular. Energy transition also requires understanding of governance of the transition process, including decision-making, institutional structure, uncertainties, acceptance and risks perceptions of different stakeholders.

2. Background

2.1. Barriers for deployment of electricity transmission grids

The study conducted by McKinsey focuses on energy scenarios to reach 2050 GHG reduction targets in Europe, where transmission grid expansion is optimised to lowest cost to support deployment and exchange of renewable energy across regions. The study makes trade-offs between adding new transmission capacity, back-up generation or posing additional operational costs to balance power system. The study also evaluates the options for smart grid and how they reduce the need for transmission and back-up services. This study tells about the need to shift existing approach to planning and operation of transmission systems. The study finds out that expansion of transmission system capacity is a crucial and cost-effective way to take full advantage of low-carbon resources. Inter-regional transmission should develop replacing minor trading and reserve sharing to wider sharing of generated resources. This will require addition of significant new transmission capacity and the „overall expansion over 40 years by a factor-three increase from today’s level of inter-regional transmission capacity“. In some corridors the capacity currently is less than 1 GW and would need to be increased up to 15-40 GW. However, public opposition is the major barrier for further expansion (McKinsey, 2010).

Scientific evidence shows the importance of considering public acceptance as a key dimension of decision-making in energy sector (Bertsh and Fichter, 2015). The study conducted by PriceWaterHouse Coopers in cooperation with the International Institute for Applied Systems Analysis (IIASA) and the Potsdam Institute for Climate Impact Research (PIK) evaluates enabling factors for further expansion of renewable energy in Europe. These enabling factors include clear political leadership, supporting market structure, right investment climate, adequate planning and permitting for new infrastructure and technological progress. It finds that while there has been good progress in the EU with the publication of the European Network of Transmission System Operators for Electricity (ENTSO-E) ten-year network development plan and the EU blueprint for an integrated European energy network, only few projects were realised on the ground. The major barrier is complex permitting processes, especially on the regional level (Schellekens et al., 2011).

Another study conducted by PIK in cooperation with IIASA on barriers for deployment of electricity grids in Europe finds that this is some kind of the “chicken and egg” problem, in which the grid needs to be in place for increased renewables generation capacity, but the generation capacity has to be in place to provide the incentive for the grid development projects. Based on stakeholders’s feedback, this study identifies two major barriers, which are complex regulations for grid expansion, especially at local level, and public opposition to the grid extension projects on the ground. The study also provides two major recommendations. The first one is the need for better, simplified, and standardised regulations. The second one is the need for regulations, which should provide the basis for a strong and transparent consultation process in all stages, from early planning to realisation of the projects (Battaglini et al., 2012).

2.2. SUED.LINK project

The need for SUED.LINK was identified in the national grid development plan. Also the Germany’s Federal Network Agency (BNetzA) speaks about an urgent need of new power transmission lines, which will run from the Northern and Eastern Germany to the Southern Germany. Among the reasons for further grid expansion are large overcapacity of wind in the North and security of supply in the South. By evaluating suggestions for future grid development until 2024 from Germany’s transmission systems operators, BNetzA found that 92 grid expansion measures, making altogether 7.300 km, were in a position to be authorized.

The SUED.LINK project is a direct current (DC) corridor, which is listed in the “Federal Requirement Act” as a project of critical importance. It is also a part of the German Grid Development Plan (NEP, 2013). It is classified as a critical infrastructure project of the European importance. The total length of the project will be 800 km connecting the North Sea with the South of Germany, which makes SUED.LINK also the largest electricity transmission infrastructure project in Germany. The overall transmission capacity will be around 4GW, mainly for electricity generated from wind energy in the North Sea.

Several stakeholders perceive the deployment of this electricity transmission infrastructure as a big step in the country's energy transition, necessary for quick development of renewable energies and exist from nuclear power in the near future.

There are two challenges regarding implementation of this project. The first one is the new permitting procedure, which was introduced in Germany in 2012. This procedure shifted authority for permitting of electricity transmission projects, which affect more than one federal state, to a new permitting authority, the Federal Network Agency. The new permitting regime in Germany is currently under implementation and all involved stakeholders need to learn how to fulfil their new roles. Existence of dual legislation is a major challenge when some infrastructure needs were determined under previously existing framework, at the same time as other ones under new legal framework. This duality might lead to misunderstandings and confusions, thus highlighting the need of clear and transparent communication process about the needs of infrastructure and decision-making processes. We do not go into discussion about regulatory structure in this deliverable, however we mention these regulatory challenges in terms how they affect public acceptance. The major challenge is that construction of SUED.LINK did not start yet and the need for basic information among inhabitants of potentially affected communities is very high.

The second one is public acceptance of this infrastructure project. SUED.LINK is planned to go through densely populated regions with on average 235 people living on each km² (DSTATIS, 2009). The local governments of some of the states, where infrastructure is planned, continue to campaign against the grid expansion plans developed at the national level. Inhabitants are also questioning the planned infrastructure as well as its impacts on human health and environment.

2.2. TenneT public information campaign

The major focus of actions taken by TenneT to deal with public acceptance is currently on communication of the needs of the project, planned corridors and possible impacts on human health and environment. According to the TenneT action plan, the communication process has the following goals: to increase awareness about the project and the need for the project, to create trust, to facilitate the progress of planning process through dialogue with stakeholders, to establish reputation of

TenneT as a reliable partner. TenneT plans to reach these goals mainly through information and dialogue campaigns, which are based on such principles as clear and transparent information and possibilities for early stakeholders engagement and consideration of environmental concerns.

As a first step TenneT was conducting a stakeholder mapping, mainly to identify views of inhabitants about the need for grid expansion. The stakeholders mapping was commissioned by TenneT and conducted by Forsa Society for Social Research. The mapping was conducted with the help of a survey in the period between the 10th and the 19th of March 2014 via telephone interviews. Altogether 1,537 persons participated in this survey. The survey took place in Schleswig-Holstein, Niedersachsen, Nordrhein-Westfalen, Hessen and Bayer. In each province more than 200 people participated in the survey, thus we can say that the critical necessary number of stakeholders to generate robust results was achieved. The results in separate groups of population were weighted according to the percentage of this group in the entire population of Germany.

Another action was to establish an issue management and monitoring system to identify, document and process comments, questions and concerns from stakeholders regarding the SUED.LINK project. This system includes two components: daily monitoring of relevant local media and collection of feedback from stakeholders on public information events. The topics covered by information campaign are: direct current transmission, underground cables versus overhead lines, necessity in terms of meeting Germany energy requirements and energy transition, possibilities for public participation, information about planning of transmission corridors and approval processes, electromagnetic waves.

Figure 1: SUED.LINK project



Source: Rotraud Hänlein, 2014

It was planned to provide information in the following information documents: project brochures, website, roll-ups, press releases, newsletters, video diaries and others. It was also planned to include the following actions of stakeholders dialogue: central opening press conference, editorial visits, regional state conference, and parliamentary breakfasts, regional public information markets.

The third element of the TenneT campaign was the information campaign called “information markets”. It included exhibition of detailed maps on the SUED.LINK project, which showed how the preferred corridor was identified step by step. The event also provided an opportunity for direct discussion with the TenneT staff. The TenneT also provided give-aways presents such as pencils, mint pastilles etc. The information markets were organised in spring and autumn 2014 in the following communities, as the figure 3 shows below¹. Public events took place in the following communities: Ahlerstedt, Bad Brückenau, Borgenteich, Brackel, Elfenhausen, Fritzlar, Großburgwedel, Hammeln, Hassendorf, Hildesheim, Horst, Kirchheim, Kirchlinteln, Lehrte, Petersberg, Rischenau, Walrode, Warburg, Wasserlosen, Wilster, Winsen, Wolfshagen. All communities are situated along the planned route passing through German States of Lower Saxony, North-Rhine-Westfalia, Hesse, Bavaria and Schleswig-Holstein.

Approximately 300 inhabitants in each community, including lay people, politicians, and environmental groups, visited each information market. All information events were conducted in a well-known central location, such as town halls, which were easy to access for all inhabitants. In average, each visitor stayed over one hour at the information market. The core team from employees of TenneT and different consultancy agencies was conducting these information markets with the main goal to provide information about the company and about the SUED.LINK project in the style of a market place. Several specially trained experts from TenneT were present during the events and eager to provide individual answers to all raised concerns. Often the participants of the event were directly approached by the TenneT staff to give them an overall introduction to the exhibition, provided answers or guided people to relevant experts. All participating in the information events partners were briefed by TenneT before the event about possible questions and concerns from the side of participants and possible answers to these concerns. TenneT was also collecting inputs from inhabitants in a form of a questionnaire and received almost 2,000 complete requests for additional information. TenneT was promising to provide written feedback to all expressed concerns.

¹ This photo was taken by Rotraud Hänlein during the public information event in Wasserlosen.

The information and dialogue events took place before the beginning of the formal planning procedure when the planning scope was not yet fixed. This provided an opportunity to inhabitants to express their concerns in the time period when they still could be included into the planning procedures. To avoid the situation when the topic of infrastructure planning could become a matter for intensive discussion among politicians, information events of TenneT on SUED.LINK were conducted after the elections in Bavaria took place in March 2014. However, the first event out of three information events in Bavaria in June 2014, which was in Wasserlosen, took place only 10 days after the elections to the European Parliament and the media interest to this event was quiet high due to political debates on the need of new power lines in the State of Bavaria.

2.3. Existing studies on public information campaign of TenneT

In the year 2014 TenneT commissioned the private company Forsa Politik- und Sozialforschung GmbH to conduct a survey among inhabitants with the goal to evaluate their views on further deployment of the electricity transmission grids. The survey targeted 1.503 inhabitants in Schleswig-Holstein, Niedersachsen, Nordrhein-Westfalen, Hessen and Bavaria in the period from November to December 2014. In each province the minimum number of 200 completed questionnaires was reached. The data were collected with the help of telephone interviews in the German language. The report was published in December 2014.

According to this survey 76% of all respondents consider deployment of electricity grids as necessary for on-going energy transition in Germany and 67% consider deployment of electricity grids as necessary to integrate electricity from renewable energy sources (Forsa, 2014). It seems that the major factor for support is affordability of energy for private consumers and economy as well as competitiveness of the German industry (81%). At the same time it seems that only 62% of all respondents consider acceptance of such development by inhabitants as an essential factor of support, with such factors as good coordination among all stakeholders (77%), timely and efficient construction of transmission line (76%) and timely and efficient electricity generation from renewable energies (68%) as essential.

The results of this survey also show that 25% of respondents oppose deployment of high voltage direct current lines across Germany. The respondents in Bavaria are the most critical (29%) and respondents in Hessen are the least critical (19%). The higher is the age of respondents, the more critical they are as 27% of respondents older than 60 years are opposing the project, at the same time as 19% of people in the age between 19 and 29 are opposing it. Workers are the most critical (42%), followed by self-employed people (27%), government employees (22%) and other employed people (21%).

In general the level of awareness about SUED.LINK project is low as only 24% of all respondents heard or read about it, with the lowest level of awareness in Schleswig-Holstein (18%) and the highest in Bavaria (32%). People in the age between 18 and 29 are also least aware about the project (13%) as well as the workers (16%).

From people who are aware about the project, 67% consider deployment of electricity grids as necessary and 19% are opposing further deployment of the grids. In Bavaria among aware about SUED.LINK project respondents only 47% consider deployment of electricity grids as necessary and 29% are opposing further deployment of the grids.

By speaking about the need of SUED.LINK project, 48% of aware about the project respondents consider that the project is necessary to guarantee transmission of electricity to the South of Germany, 20% think that SUED.LINK is needed to guarantee energy security and stability of grids, 11% think it is necessary to support energy transition in Germany and 3% think that the project will help to guarantee affordable electricity prices.

The arguments of opposition against the project are negative impact on environment and landscape (28%), negative impacts on inhabitants and local communities (12%), high costs (10%). Among aware about the project stakeholders 8% doubt about its need and 5% would prefer such alternatives as underground options.

3. Methodology

The methodology of data collection included several methods such as survey, observations on the site of stakeholders' events and recording of concerns. The detailed methodology is described in Komendantova, Linnerooth-Bayer and Patt, 2014. The results of evaluations on side of public information events, concerns and efficient actions are described in Komendantova and Linnerooth-Bayer, 2015. This deliverable contains only the results from surveys conducted on the side of public information events in different communities where SUED.LINK project is planned.

Originally, it was foreseen that such surveys will be conducted in other pilot projects covered by BESTGRID also. However, there were several reasons why survey was not conducted in other pilot projects. These reasons included postponement of the Elia Waterloo-Braine- l'Alleid underground cable project, where the survey was originally planned in September 2014, post-evaluation of concerns in case of the National Grid pilot project where no survey was foreseen or changes of plans in the case of 50Hertz pilot project, where a comprehensive questionnaire on electro-magnetic fields and public acceptance was developed and tested on the site of the mobile information office but later on it was decided not to distribute the questionnaire further, as it would require special capacities to address stakeholders actively and only distributing of the questionnaire would not be sufficient to collect feedback.

We use the definitions of stakeholders developed by Sander (2011), which identifies a range of stakeholders whose role is crucial for public participation in transmission grids expansion debate. This is the government, which needs to provide clear roadmaps and legislation towards further expansion of the grids. The Federal Network Agency for transparency about governmental objectives and decision-making processes. The big environmental interest groups are considered to be needed to promote grid-expansion. Transmission system operations (TSOs) provide electricity services. Civil action groups who are the partners in discussion and neutral experts to study the process.

IIASA was conducting evaluation of public acceptance on the site of public information events of TenneT, which were mainly informarkets, during spring and autumn of 2014. Prior to public information events IIASA developed a questionnaire, which was distributed on the site of public information events in 33 communities. The questionnaire contained both multiple choice questions and

open questions. The detailed description of the questionnaire is in the results section. Altogether IIASA collected 307 completed questionnaires. The answers were evaluated with the help of statistical programs like SPSS and STATA to identify correlations between studied variables.

The data collection activities took place mainly during public information markets and included standardized questionnaires distributed to participants on the event on the site of it. Participants had a chance to fill the questionnaire and to return it back to organisers. The questionnaire was developed based on available in scientific literature evidence about public acceptance of renewable energy, in general, and electricity transmission infrastructure, in particular. It was developed in cooperation between IIASA, RGI, Germanwatch and ERM GmbH, which is a private company cooperating with TenneT on questions about sustainability and communication.

The questionnaire contained altogether 8 questions with multiple choice answers and 4 questions with open-end answers, as well as four questions to identify demographic profile of stakeholders such as age, sex, proximity to the project and the type of the ownership (rented apartment, private apartment, private house or other type of real estate). The questionnaire was distributed during spring 2014 in the following communities: Ahlerstedt, Bad Bruckenau, Brakel, Elfenhausen, Fritzlar, Grossburgen, Hameln, Hasedorf, Hildesheim, Horst, Kirchheim, Kirchlinteln, Lehrte, Petersberg, Rishenau, Walrode, Warburg, Wasserlosen, Wilster, Winsen, Wolfshagen. The participation in the survey was too low in the following communities: Brakel, Kirchheim and Wilster so we do not take the results received from these communities into account. During the autumn 2014 the questionnaire was distributed another time at the following communities: Fulda, Hannover, Hameln, Hixter, Kassel, Moorege, Rotenburg.

During the first round the questions with multiple-choice answers were the following:

1. Information event provided me with important information about the SUED.LINK project
2. I wished to have another form of information event
3. Information event made the planning of SUED.LINK project clear and transparent
4. There were sufficient opportunity for direct dialogue about important questions
5. Information event provided enough opportunities to express my views and to provide feedback

6. I have an impression that I could from the beginning influence the planning process of SUED.LINK project
7. I have an impression that TenneT takes seriously my concerns
8. Information materials provided on place were useful for me

During the second round the question 5 “ Information event provided enough opportunity to express my views and to provide feedback” was excluded from the questionnaire, which was following the request from TenneT.

The open questions during both rounds, in spring and in autumn, were the following:

1. I wish further information to the following topics
2. I would propose the following alternative for information event
3. How would you like to be informed about the project in the future?
4. On which topics are you especially interested regarding the SUED.LINK project?
5. From which sources are you getting information about the SUED.LINK project?
6. Any further feedback and comments regarding information event and further opportunities for participation

4. Results

Generally, information events had friendly and open atmosphere. Visitors appreciated that they were approached in an open and friendly manner and that TenneT was doing such a big effort to provide transparent information on the route planning and to conduct open dialogue with inhabitants of affected communities. Several participants were pleased about an opportunity to provide a feedback about routing. The typical example is a farmer who was checking for different opportunities for routing on the map and by the end came to a conclusion that there is no “optimum route” and that in every case some one would be affected. According to Germanwatch, the approach chosen by TenneT in form of information markets could set a new standard for transparent information before the start of the formal planning procedure². This method of stakeholders dialogue works well to provide direct communication with inhabitants but it should be followed by round-table discussions in hot spot regions to discuss conflicting interests and to develop possible solutions, which could be proposed for the formal planning procedure. TenneT could also try to involve active participants of information markets by inviting them into planning workshops.

However in some communities, such as Wasserlosen, Elfershausen and Bad Brückenau, members of local actions groups were demonstrating outside the hall, where information event took place, and were protesting against the project. Majority of these groups were supporting energy transition in Germany towards low carbon economy however they claimed that SUED.LINK is not needed for energy transition. An example could be the slogan carried out by demonstrators “Pro Energiewende – against SUED.LINK”. Interestingly, that TenneT was proposing to some demonstrators to get involved into planning and corridor finding. However, this proposition by TenneT was declined with the argument that the SUED.LINK project is not needed anyways. Another argument against this involvement was that it would require too much time. In Elfershausen and Bad Brückenau, which are both located in Bavaria, opposition to the SUED.LINK project already existed in a form of several citizen action groups. In both towns demonstrations took place, involving more than 300 participants.

² Hänlein, R., (2014). *Report on TenneT Citizen Info Market in Wasserlosen. June 2014*

Local politicians were supporting these demonstrations. In Elfershausen, the mayor had a short speech. In Bad Brückenau the head of the district (“Landrat”), the member of the regional parliament (“Landtagsabgeordneter”), and a local environmental NGO were providing statements. The TSO was following the strategy to keep the demonstrations outside the building, however, in Elfershausen the demonstrators entered into the building due to bad weather conditions and atmosphere became very dense, as people reacted very emotionally. The examples were the following replicas: “If you are not working for TenneT then I still can stand next to you” and in response to the fact that some pens did not work when inhabitants wanted to provide a written feedback “Well, how TenneT is going to manage the grid if they cannot even make sure that the pens are working”³. Employees of TenneT tried to stay calm and engaged into personal talks where they answered all questions. The sound system installed by demonstrators affected these discussions as it was sometimes difficult to understand each other due to the noise and this lead to frustration as the arguments from both sides could not be heard.

The people participating in demonstration’s were mainly interested in such questions as impacts from SUED.LINK on human health and environment as well as decision-making process regarding routing planning, alternative solutions and why their community was selected. The mood was rather critical then neutral, which even reflected in the willingness to fill out the questionnaires. People were declining invitations to provide a feedback when they were approached actively but as soon as they were informed that questionnaires are on the table and that they could express their opinion, they were using this opportunity. Interestingly, people in different communities saw different reasons for their troubles. In Elfenshausen people were blaming TenneT at the same time as in Bad Brückenau they were blaming politicians for their energy policy and their decision for the need of new electricity line.

The open questions during both rounds, in spring and in autumn, were the following: I wish further information to the following topics; I would propose the following alternative for information event; How

³ Schneider, T. and Komendantova, N., (2014). Report on TenneT Citizen Info Market in Elfershausen and Bad Brückenau. June 2014

would you like to be informed about the project in the future? On which topics are you especially interested regarding the SUED.LINK project? From which sources are you getting information about the SUED.LINK project? Any further feedback and comments regarding information event and further opportunities for participation?

Here we summarize results for each open question, where inhabitants had an opportunity to express their opinion and answer to an open question.

Question 1: Request for additional information

Information events should have been organised early enough, before decisions were taken. These information events should have provided criteria for decisions and be conducted by politicians and not by TSOs in a form of a podium discussion to inform inhabitants early enough. This is not the job of TSO to run such information campaign but of politicians. Politicians could have also provided information about experience with similar projects in other places, be honest and open with information about risks of this project and possible impacts on human health, such as EMFs.

More information was requested about alternative corridors and criteria for their evaluation and how these criteria were implemented as well as what would be benefits, costs and impacts of alternatives, including underground cabling. Transparent information should be also provided about corridor and its distance to settlements as well as about type of pylons, planning and stages of the SUED.LINK project, time horizon.

Information about the need of the project should have include clear and understandable evaluations of energy needs in the region, in general, and the need of the project, in particular, including clear and understandable reports about the costs of the SUED.LINK project. Several hand-writings included comments like this: “I heard from my friends / family that the entire project is a senseless investment. Is it true?”

Question 2: Proposition for alternative events

The major issue of concern was the place of public information event and the requirement to organise such event next time in a public building in the center of the city where everybody could have passed

by. Otherwise only inhabitants who were informed in advance could participate. Format: information event at a public building where everybody who was passing by could participate and public information events were organized exclusively for already informed citizen.

There was a requirement for podium discussion with questions – answers session. Another suggestion was to establish an information centre about the project. Additional trustful source of information could have been inhabitants themselves, it would be good to organise a public information event where inhabitants could also provide a presentation about their experience of the project. Inhabitants from other affected communities could have been also invited. Such presentation could provide a presentation about the project and then be followed by “answers and questions” session. Generally, the recommendations on the format of event included recommendations that smaller events, such as roundtable discussions, could be more helpful.

Regarding the content of public information event, several requests were about experience with similar projects from other places and about alternative corridors, as well as a special information event about the need of the project, its impacts, risks and dangers. In a following up information event received feedback from inhabitants and their concerns could have been made transparent and discussed in a public format between a TSOs and politicians. Inhabitants suggested to invite health experts and experts from the region to speak about impacts of EMFs.

Question 3: Possible ways to provide information about the project in the future

Inhabitants suggested following channels of information, to which they have trust such as: local newspapers, round table discussions between local politicians and NGOs, flyers distributed directly to houses about the project and possibilities for engagement, information services of local communities, such as regional information events and information letters.

In the future these channels could provide information about decisions, how they were taken and decision-making criteria, the data about the project and energy needs could be publicly available electronically. These information channels could provide honest and open information directly from affected communities and their experience. Also copies of all plans and decisions as well as regional reports, maps and criteria for decision-making should be made publicly available electronically and

some of the above mentioned information and clear information where such reports could be downloaded could be sent to inhabitants per post.

Question 4: Further interesting topics in regards to the SUED.LINK project

By far, the largest number of suggestions was about the preferred corridor and its alternatives, followed by such topics as the need of the project in general and its costs, analysis of energy needs to reach 100% renewable electricity targets, evaluation of energy autarky possibilities, impacts on electricity prices and balances in the grid. Some suggestions also included providing more technical details and plans of construction works as well as evaluation about how far in reality the project will go and if it will be really constructed. Suggestions about impacts on human health came up several times, including such topics as regulations on minimum distance to houses, honest information about risks for human health and existing on EMFs regulations also across different countries.

Question 5: Sources of information about SUED.LINK

This question aimed to analyse from which sources inhabitants receive their information about the projects and which sources they trust mostly. Overall, the answers showed that there is a lack of information about important for inhabitants' questions and that inhabitants are mainly getting information about the project from mass media, such as local newspapers. Internet was the second most frequently used source of information, followed by information campaigns of local communities.

Question 6: Further feedback and comments regarding information event and further opportunities for participation

Inhabitants wish more information about alternative corridors as currently they have too little information about it and they would like to know the second least cost option and criteria for evaluation of costs of the project as well as more information about possibilities for underground cable. Inhabitants also wished more transparency about planning processes on the project. Regarding transparency of public information events, such comments as "it was only for show and there was no transparency" were written.

Inhabitants would wish to receive more information about sources of electricity, which will be transmitted via the planned grid as they have a perception that it will be not only wind energy but also electricity generated from black coal. The comments from respondents on the public information event were very different. Some were optimistic and wrote about “very good format of information event and information events of this kind are very helpful and should be continued”. Others wrote that “information event should provide response to raised questions, information event was only for “alibi” and statistics”.

Several suggestions were expressed to invite independent experts to provide information and evaluation of the project with “less colourful pictures but more exact and grounded information”. Inhabitants were also interested in the BESTGRID project and requested more information about organisations participating in the project.

At the same time the quality of information material provided on place during the first round of public information events was criticised as it “does not respond to the actual situation, in the detailed plans the existing 380kV lines are not included”. Frequently the question was written “Is it done by purpose?”.

In general, inhabitants did not use too often the opportunity to provide written comments. In average the comments were provided in around 25% of all cases. From provided comments it is possible to make the following conclusions about successfulness of TenneT actions to address issues of public acceptance:

1. Local mass media and Internet are the most frequently used and trusted source of information about the project.
2. Small round discussions, podium discussions between local politicians and NGOs, presentations from inhabitants of other affected communities followed by questions-answers sessions are regarded as the most helpful information events.
3. The most frequently asked question for additional information is about the alternative corridors, criteria for decision-making and the option of underground cable.
4. The most frequently expressed concern was about impacts and risks from the project, namely EMFs, on human health.

Altogether, the reaction of inhabitants on public information events was positive. Here we provide median numbers for all communities where questionnaires were distributed during the first and second round of public information events.

The feedback from stakeholders received during the public information event shows that inhabitants were mostly satisfied by provided opportunity for direct dialogue with employees with TenneT about important for community questions, 57% of all stakeholders completely agree with this statement. Also the public information events were successful by providing information about the need of the SUED.LINK project, 42% of stakeholders completely agree with this statement. And 38% completely agree that public information events provided them with opportunity to express their views and feedback. These three results show that public information events of TenneT were successful in providing two-ways communication with inhabitants of communities where the SUED.LINK project is planned.

Less optimistic were stakeholders about how successful the public information event was in terms to make the planning of the project more clear and transparent, 33% completely agree and 32% agree that the public information event reached this goal. Also medium optimistic were stakeholders about that TenneT takes their concerns seriously, only 32% completely agree with this statement.

Stakeholders were mostly critical about the provided opportunity to engage and to influence the planning of the project. Only 19% of stakeholders completely agree that they had such opportunity, at the same time as 22% completely disagree with this statement. The most critical were stakeholders about the quality of information materials provided on place. Only 7% of all stakeholders agree that information materials were useful, at the same time as 24% completely disagree and 42% disagree with this statement.

One question was put in the inverse order, if inhabitants would wish an alternative form of the public information event, when the answer “completely agree” would mean the dissatisfaction with the event. The results show that inhabitants were mainly satisfied with the form of the event and 29% completely disagreed with this statement. However, the answers were polarized when 19% completely agreed with this statement.

Table 1: Results from survey among inhabitants on the side of public information events

	Completely agree	Agree	Nor agree, neither disagree	Disagree	Completely disagree
Information event provided me with important information about SUED.LINK project	42%	24%	15%	12%	7%
I wished to have another form of information event	19%	9%	19%	24%	29%
Information event made planning of SUED.LINK transparent and clear	33%	32%	15%	9%	11%
Information event provided enough opportunities to express my views and feedback	38%	23%	23%	9%	7%
There were sufficient opportunities for direct dialogue about important for me questions.	57%	19%	14%	4%	6%
I have an impression that I could from the beginning influence planning process of SUED.LINK	19%	17%	25%	17%	22%
I have an impression that TenneT takes seriously my concerns	32%	24%	22%	13%	9%
Information materials provided on the place were useful for me	7%	9%	14%	46%	24%

These results show that public information events organised by TenneT could be regarded as best practices in reaching the guiding principle “need” and possibility of two-side communication with stakeholders. However, their success was only medium to reach the guiding principle “transparency”. The action was not successful at all in reaching the guiding principle “engagement”. The feedback also showed that inhabitants rather prefer personal communication than distribution of printed information materials.

These results are summarized for all cities and communities where public information events took place. However, the results also show that there were great disparities among different communities and that the level of criticism did not decrease until the period when the second round of public information events took place. Here we provide details for each community where the questionnaires were distributed.

The evaluation of demographic data shows that inhabitants in the age between 46 and 60 years were most active, as 46% of respondents to our questionnaire are people at this age. This age group was followed by people in the age over 60 years (24%). The results also show that the younger the inhabitants were the least interested they were to express their opinion in the questionnaire. 14% of all respondents were in the age between 36 and 45 years, 9% in the age between 26 and 35% and 7% were younger than 25 years. Men were more active (68%) than women (32%) and in some cases men even filled the questionnaire for their wives, claiming that such questionnaire could be counted for two persons.

The majority of active inhabitants are living in direct vicinity of the project. 49% of all our respondents have their domicile in the distance closer than 1 km to the planned project. This group of stakeholders is followed by people living at the distance between 1 and 5 km (27%) and between 5 and 10 km (10%). The further the domicile of people is to the planned project, the lower level of interest they were showing. Only 5% of all respondents are living at the distance between 10 and 15 km and 9% have their domicile further than 15 km.

As expected and in accordance to available in scientific literature evidence, the majority of active stakeholders were owners of private houses and were concerned that the SUEDE.LINK project might impact value of their house, even though here we cannot say if concerns of people were directly

connected to value of houses or if owners of private houses were in general more concerned about impacts on health, nature, questioned the need for the project etc. This was beyond the scope of this evaluation. Here we can only say that 55% of all inhabitants willing to fill out the questionnaires were owners of private houses and 20% were owners of private apartments. At the same time as 16% were renting the apartment and 9% indicated that they live in other form of property such as student homes or rented houses.

This was, at one hand, a draw back of this study that we could not settle a proper sampling methodology based on the random distribution method to identify the households where the survey ought to be conducted. Such method of data collection would require an active approach to inhabitants. At the same time, this was also an advantage of this research that we reached a significant number of filled surveys to be able to derive conclusions. This sample also included active inhabitants who were willing to fill out the questionnaire by themselves. This allowed us to identify the profile of the most active stakeholders. These are men at the age between 46 and 60 years. At the same time young women seemed to be the least interested in providing their opinion.

The results of correlation analysis based on the Pearson function showed that there was significant correlation between the attitude towards the project and the age of respondents. The evaluation of answers shows that younger stakeholders (below the age of 25) were more critical towards the SUED.LINK. However, stakeholders with the age over 46 participated more actively in the survey. Their answers also show a higher level of awareness about the project. They were also interested in public information events and were requesting for more information about the project. At the same time younger stakeholders were less frequently requesting information but they were also more critical towards the project, saying that they did not need the SUED.LINK project at all. These results are contradicting available evidence on siting renewable energy generation capacities. For example, Ek (2005) in her study about public and private attitudes towards “green” electricity in Sweden finds out that probability of finding an average individual in support of setting wind power generating capacities decreases with age and income.

Our results from the survey allow making following conclusions (the detailed analysis of responses is in the annex). In some communities the level of satisfaction was high for almost all discussed topics,

such as content and format of information event, clarity and transparency of provided information, opportunities for engagement and for influence on the planning process as well as to provide feedback. The highest level of satisfaction for all these topics was in Horst. Other communities with high level of satisfaction are Ahlersted (satisfied with information event, clarity and transparency of information, provided information materials and how seriously TenneT treats concerns), Petersberg (satisfied with information event and its form, provided information materials and how seriously TenneT treats concerns), Lehrte (clarity and transparency of information, opportunity for dialogue and provided information), Warburg (information event, clarity and transparency of information, how seriously TenneT treats concerns), Rotenburg (provided opportunity for dialogue and influence on planning process), Hassendorf (information event but very high level of dissatisfaction with opportunities to influence planning process), Moorege (satisfaction with form of information event but dissatisfaction with how seriously TenneT treats concerns), Elfenhausen (provided opportunity for dialogue but high dissatisfaction with opportunity to influence planning process), Bad Bruckenau and Elfenhausen (opportunity to express views and feedback), Hildesheim (opportunity to influence planning process). In Hildesheim inhabitants were satisfied with provided opportunities to influence the planning process but dissatisfied with provided opportunities to express views and feedback.

Table 2: Highest and lowest level of satisfaction with actions to address public acceptance

Question	Highest level of satisfaction	Lowest level of satisfaction
Satisfaction with information event	Petersberg, Ahlersted, Hassendorf and Warburg	Hixter, Rischenau, Kirchlinteln and Fulda
Satisfaction with the form of information event	Moorege, Petersbert, Lehrte and Horst	Rischenau, Hixter, Kassel and Fulda.
Satisfaction with clarity and transparency of information about planning of SUED.LINK	Ahlerstedt, Horst, Lehrte and Warburg	Wasserlosen, Rischenau, Kirchlinteln and Fulda
Satisfaction with provided opportunities for dialogue	Warburg, Lehrte, Rotenburg, Elfenhausen and Horst	Rischenau, Hixter, Fulda and Walrode

Satisfaction with provided opportunity to express own views and feedback	Horst, Warburg, Hameln, Bad Bruckenau, Elfenhausen and Walrode	Petersberg, Hildesheim, Fritzlar
Satisfaction with provided opportunity to influence the planning process of SUED.LINK	Hildesheim, Rotenburg and Horst.	Hixter, Wolfhagen, Petersberg, Hassendorf, Fritzlar and Elfenhausen
Satisfaction with how seriously TenneT treats concerns of inhabitants	Petersberg, Warburg, Ahlerstedt and Horst	Moorege, Hixter, Fulda, Kirchlinteln, Hassendorf and Fritzlar
Satisfaction about provided information materials	Lehrte, Horst, Petersberg and Ahlerstedt	Hixter, Wasserlosen, Hannover, Rischenau

At the same time the level of criticism in other communities was also very high. For instance, in Hixter and Fulda inhabitants expressed criticism and dissatisfaction for almost all these topics. Other critical communities were Rischenau (dissatisfied with information event and its form, transparency and clarity of information, provided opportunities for dialogue and provided information materials), Kirchlinteln (information event, transparency and clarity, how seriously TenneT treats concerns), Kassel (form of information event), Wasserlosen (clarity and transparency of information and provided information materials), Walrode (provided opportunity for dialogue), Wolfhagen (provided opportunity to influence planning), Fritzlar (provided opportunity to influence planning and how seriously TenneT takes concerns from inhabitants), Hannover (information materials).

The overall results from the survey allow making the following conclusions about the level of satisfaction with public information events. Especially comparison of answers on opportunities for direct dialogue and quality of information materials show a clear preference for personal conversation with employees of TenneT.

High level of satisfaction: opportunity for direct dialogue with employees of TenneT about important for community questions (57%), information about the need of SUED.LINK project (42%) and opportunity to express own views and feedback (38%). Middle level of satisfaction: planning of the project became more clear and transparent (33%) and how seriously TenneT treats concerns of inhabitants (32%),

form of public information event (29%). Low level of satisfaction: opportunity to engage and to influence the project (19%) and the quality of information materials provided on place (7%).

The profiling of active stakeholders showed that the most active and willing to provide a feedback stakeholders were men in the age between 46-60, living in the vicinity of the project of less than 1 km and owning a private house. People over 46 years had the highest level of awareness about the project as well as the willingness to provide feedback. They were also interested in additional public information events and are requesting for more information. At the same time young stakeholders (below the age of 25) were the most critical towards the SUED.LINK project and less informed about it. They were not actively searching for information and were not requesting additional information. At the same time the number of answers “ we do not need this project at all” was also the highest among this stakeholder group.

5. Conclusion

Comparison of our results with available scientific evidence and empirical data allow us making following conclusions.

First, our results correlate with the survey conducted by Forsa on the level of awareness and criticism of inhabitants. Indeed, young people are the least aware about the project in the results of Forsa and in our case they are not only not aware about the project but they are also not actively searching for information about it. However, our results show that young people are also the most critical towards the project, at the same time as the survey of Forsa shows that people above 60 years are the most critical.

Second, the results of Forsa show that the major argument of support for the project is affordability of electricity prices. At the same time, as our evaluation of hand-written comments shows that this is not only affordability but also sustainability and the lowest possible impact on environment and human health.

Third, our results complement results of Forsa, which show that the level of awareness about SUED.LINK is low, however, our results show that information provided in frames of SUED.LINK information campaign was positively perceived by inhabitants, the majority of inhabitants would like to



have a follow-up of information campaign and would appreciate possibility for direct discussion of employees of TenneT rather than distribution of printed information materials.

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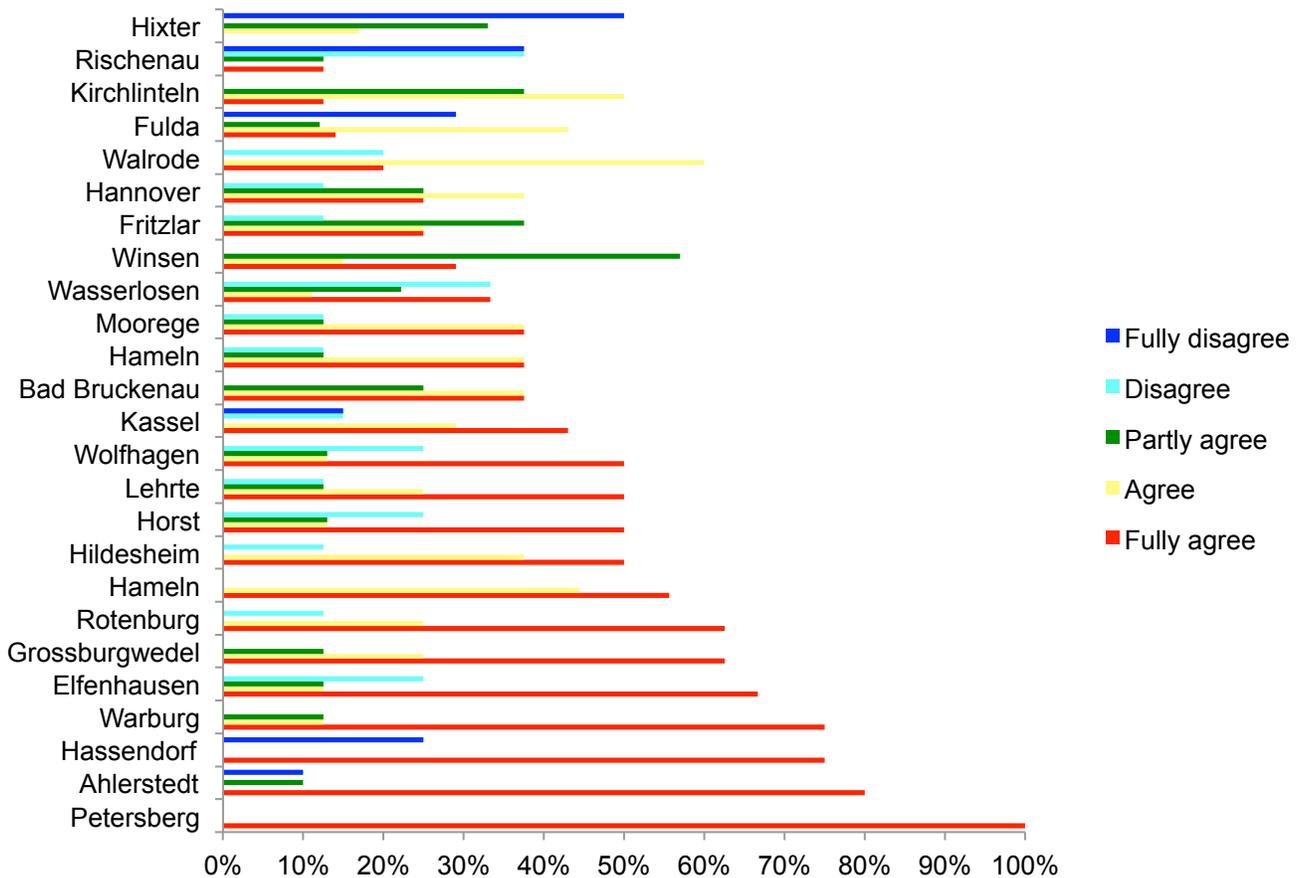
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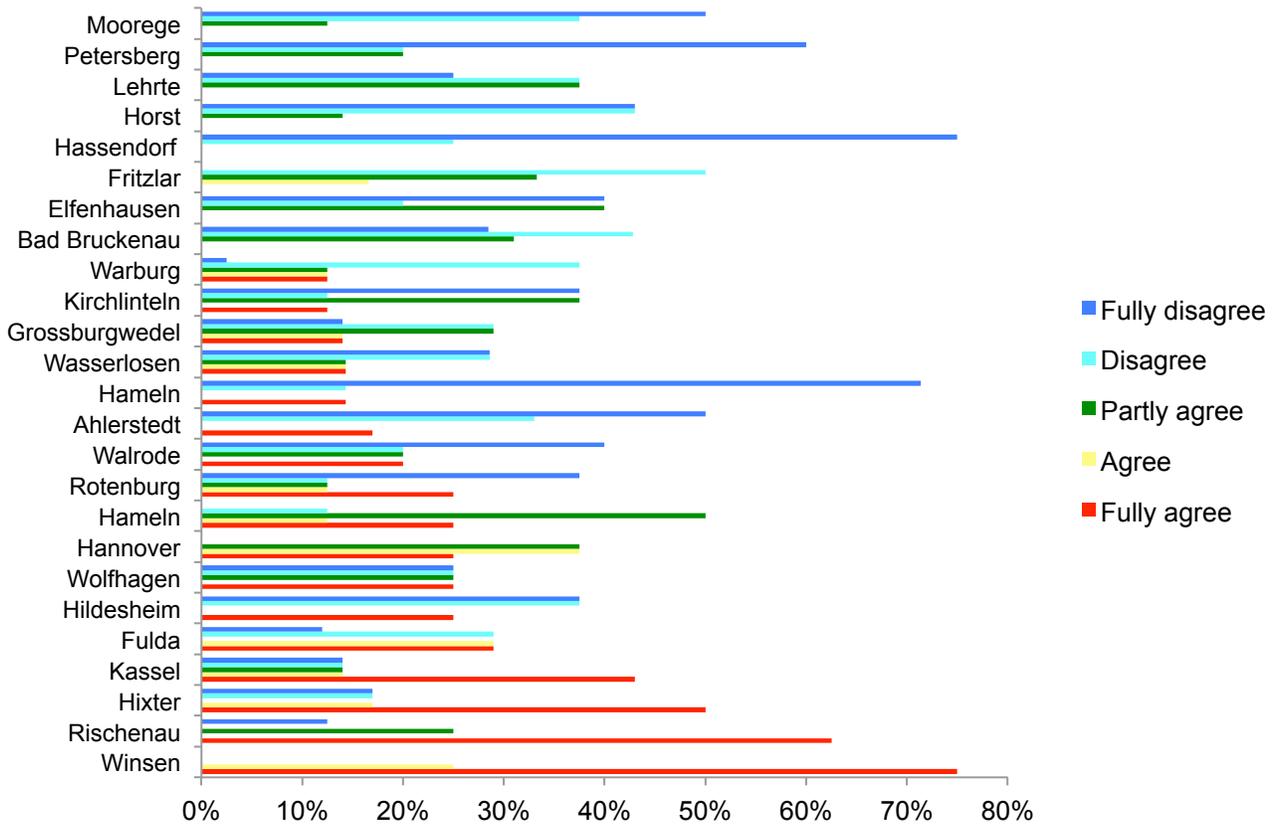
ANNEX

Information event provided me with important information about the SUED.LINK project



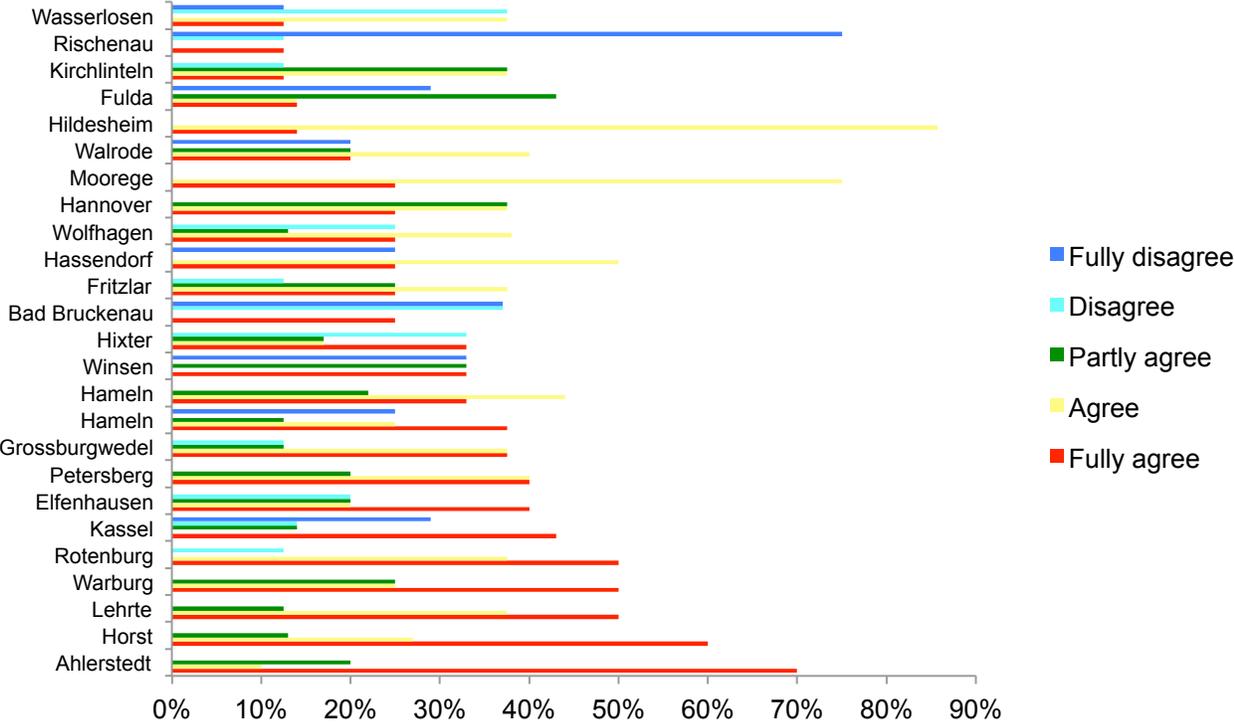
The highest level of satisfaction with information event was in Petersberg, Ahlersted, Hassendorf and Warburg. The lowest level was in Hixter, Rischenau, Kirchlinteln and Fulda.

I wished to have another form of information event



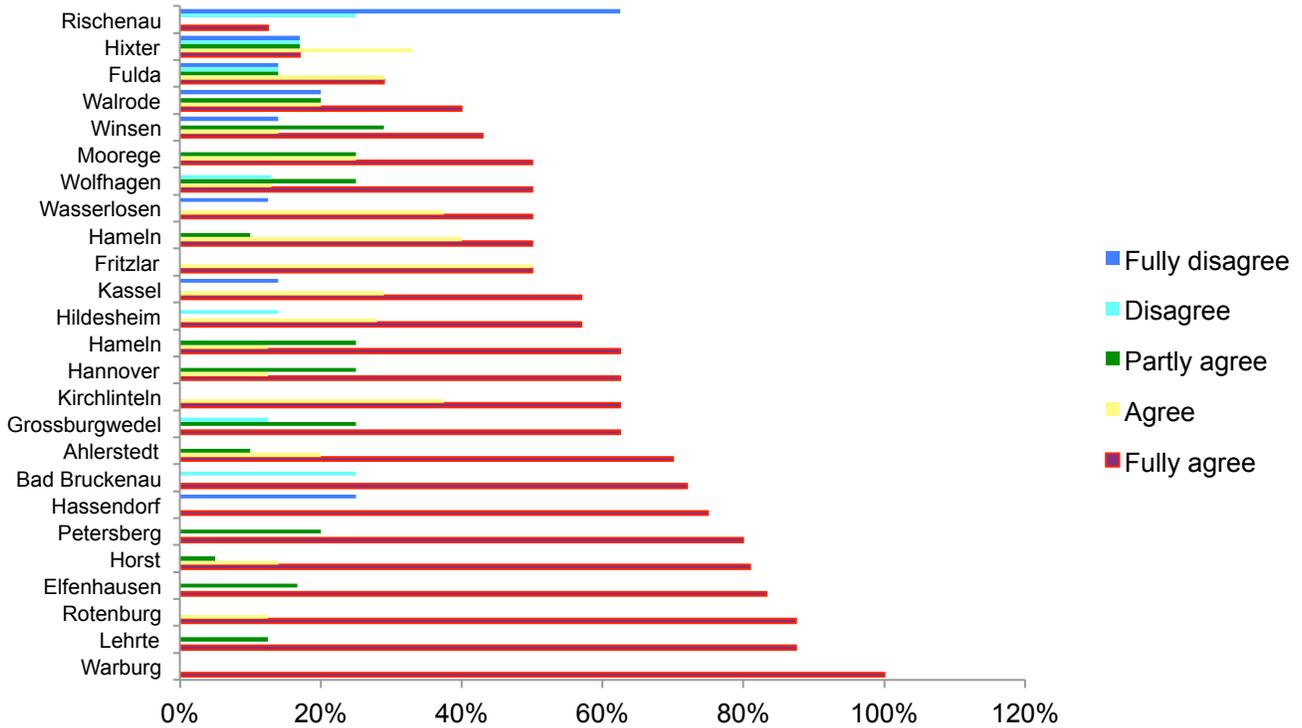
The highest level of criticism was in Winsen, Rischenau, Hixter, Kassel and Fulda. The lowest level of criticism in Moorege, Petersbert, Lehrte and Horst.

Information event made the planning of SUED.LINK project clear and transparent



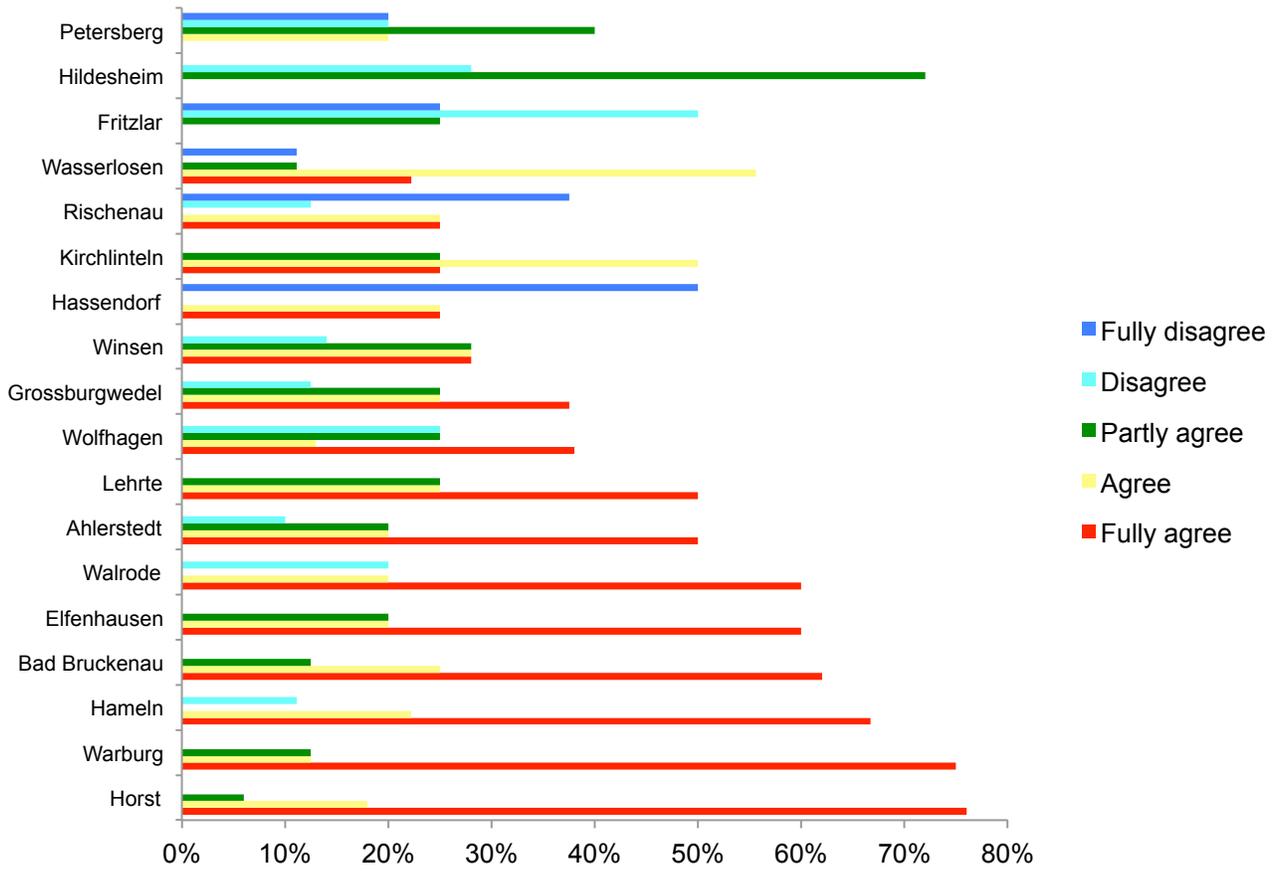
The highest level of satisfaction with provided information, which made the planning of the project clear and transparent, was in Ahlerstedt, Horst, Lehrte and Warburg. The lowest in Wasserlosen, Rischenau, Kirchlinteln and Fulda.

There was sufficient opportunity for direct dialogue about important questions.



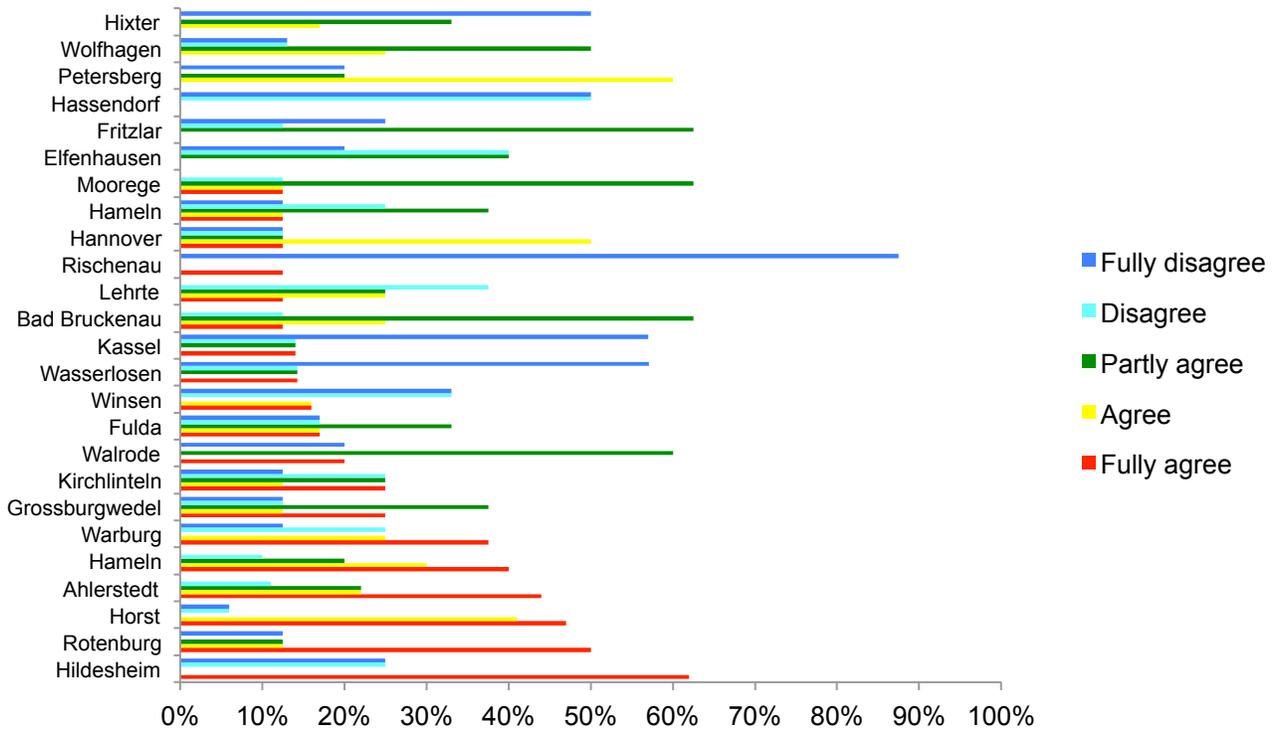
The highest level of satisfaction with provided opportunity for direct dialogue with employees of TenneT about important questions was in Warburg, Lehrte, Rotenburg, Elfenhausen and Horst. The lowest level was in Rischenau, Hixter, Fulda and Walrode.

Information event provided enough opportunities to express my views and to provide feedback



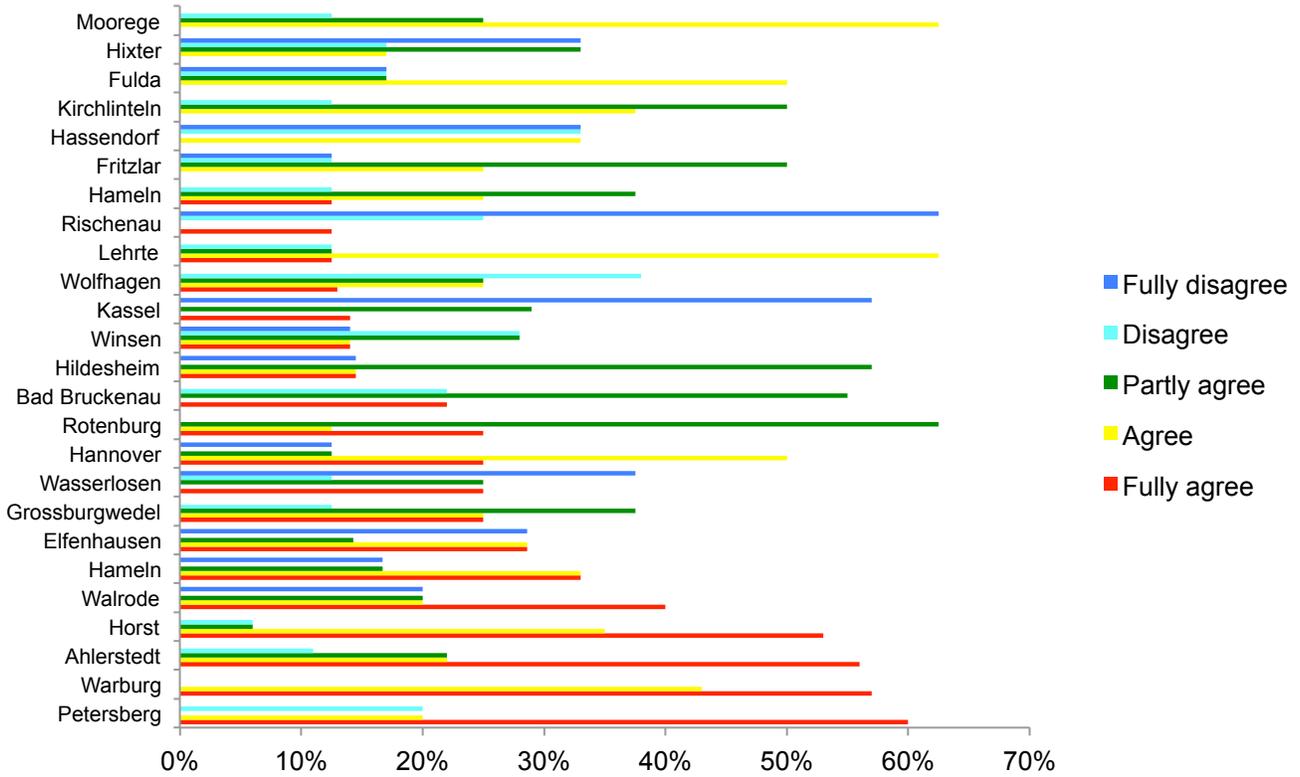
Inhabitants of Horst, Warburg, Hameln, Bad Bruckenau, Elfenhausen and Walrode were satisfied with provided opportunities to express their views and to provide feedback. Inhabitants of Petersberg, Hildesheim, Fritzlar thought that there was no sufficient opportunity to express their views.

I have an impression that I could from the beginning influence the planning process of SUED.LINK project



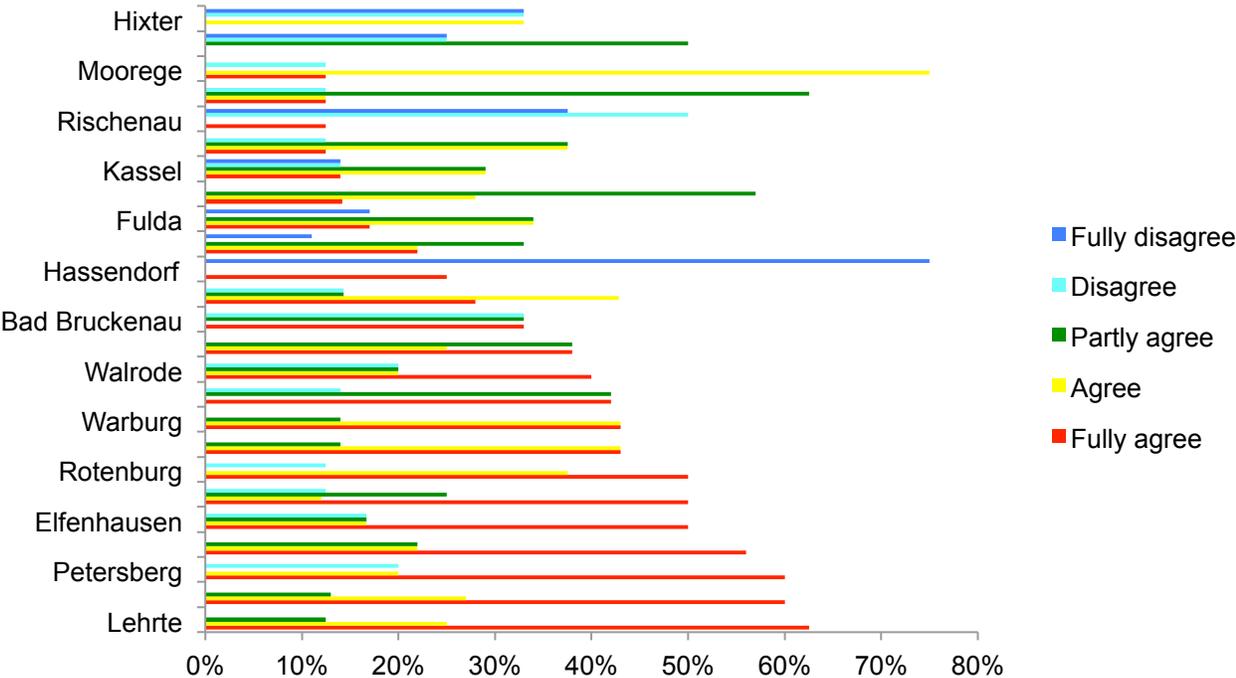
The answers to this question were very polarized even inside the same communities and the level of agreement was not as high as in case of other questions. For instance, the highest number of “fully agree” answers was in Hildesheim and made 62%. At the same time the remaining percentages was split among “disagree” and “fully disagree”. Thus, the highest possible level of agreement was in Hildesheim, Rotenburg and Horst. At the same time in Hixter and Hassendorf where nobody agreed with this statement, 50% of all respondents disagreed with it. So Hixter, Wolfhagen, Petersberg, Hassendorf, Fritzlar and Elfenhausen were the most critical communities.

I have an impression that TenneT takes seriously my concerns



The highest level of satisfaction about how TenneT treats concerns from inhabitants regarding the project was in Petersberg, Warburg, Ahlerstedt and Horst. The lowest level was in Moorege, Hixter, Fulda, Kirchlinteln, Hassendorf and Fritzlar.

Information materials provided on place were useful for me



The highest level of satisfaction with provided information was in Lehrte, Horst, Petersberg and Ahlerstedt. The lowest level was in Hixter, Wasserlosen, Hannover, Rischenau. We cannot count Moorege here as 75% “agree” with the statement that information was useful.