ENTRANCES

ENergy TRANsitions from Coal and carbon: Effects on Societies

D2.3

Multidimensional Analytic Framework for Coal and Carbon Intensive Regions in Transition

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Main author	**Kenneth Vilhelmsen (NTNU)**
Contributors	**Manfred Spiesberger, Martina Lang (ZSI)**

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Abbreviations

CCT   Coal and Carbon Territory

CET   Clean Energy Transition

MAF   Multidimensional Analytical Framework

PAR   Political Administrative Region

PIG   Preliminary Information Grid (for socio-cultural component)

Table of Contents

Index of Figures

CHAPTER 1

Task description and methodology overview

Chapter 1 – Task description and methodology overview

1.1 The aim of this deliverable

This deliverable 2.3 summarises the results of work performed under ENTRANCES task 2.6 Update of the methodology.

A survey was conducted only for colleagues involved in ENTRANCES. The purpose of this survey was to collect the experience the ENTRANCES members had with research methodology and to provide recommendations for its improvement. The survey was answered by those, who have been working on case studies and/or with the methodological guides for these case studies. The results of the survey were discussed subsequently at a project internal online workshop.

The survey approach and questionnaire were developed by ENTRANCES partners NTNU and ZSI in September 2022. The survey was programmed by ZSI using LimeSurvey and sent out to all ENTRANCES members the 26th of September. The original deadline was on the 5th of October, but was extended to the 7th of October to help ensure that more ENTRANCES members had the opportunity to provide their feed-back and that we gather responses from all case studies. In total 26 ENTRANCES members completed the survey questionnaire, and this report is based on those 26 responses.

On the 20th October an internal Workshop was held, where all ENTRANCES members were invited to participate and where the results of the survey were presented. A discussion was then conducted on all the different components, and members provided feed-back on the results. It was an opportunity for colleagues to highlight what went well, but also for voicing concerns on methodologies and their implementation in the frame of the case studies.

The survey consisted of two separate parts, one quantitative, where component contributors rated the different methodological guides per each component on a Likert-scale (5 - excellent: easily understandable, clear, and facilitating the work, to 0 - very bad: hard to understand, unclear, and complicating the work). The quantitative part was followed by a qualitative part where respondents provided feed-back in free-text, which was divided in two separate parts where they responded to the question "What was good and helpful?" and one part where respondents responded to the question "What did not work, what did you miss in the instructions, what needs to be improved?". Respondents were asked to provide feed-back only on components they had been working on.

The six separate parts were:

- the socio-economic / data collection

- the socio-political component / text research

- the socio-psychological component / survey

- the socio-cultural component / focus group

- the socio-technical & -ecological component / interview

- Other guides: state of the art (including PIG); final deliverable instructions & template, etc.

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CHAPTER 2

Quantitative assessment of methodology guides

Chapter 2 – Quantitative assessment of methodology guides

In this chapter we provide the analysis of the quantitative questions in our survey on the ENTRANCES methodology guides.

2.1 Profile of survey participants

We have collected responses from all 13 case studies, which have been prepared in the frame of ENTRANCES. The entry question to the survey was:

Q01: In the implementation of which case study have you been involved? N=31
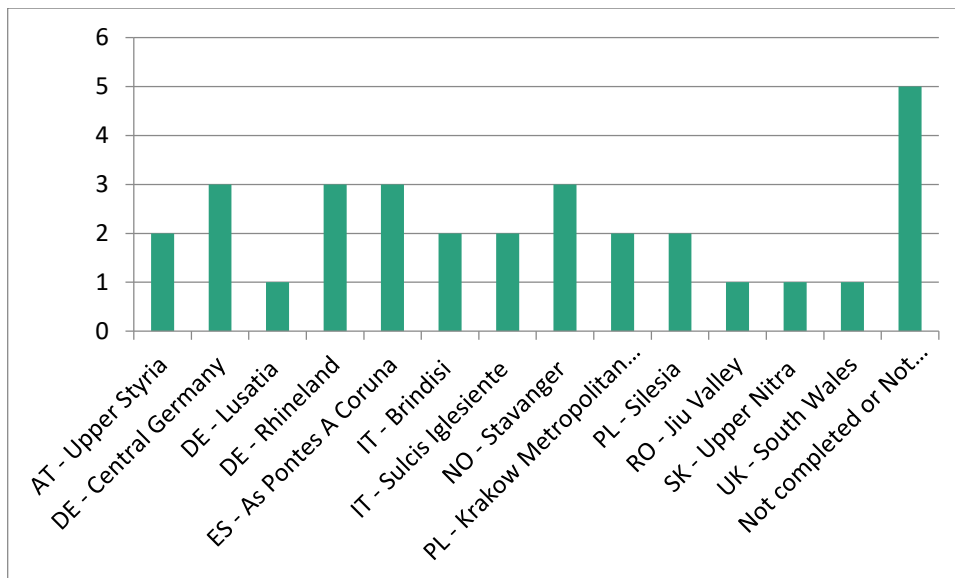
Figure 1 – Responses per case study

The survey was accessed in total 31 times and 26 did fill in this question. Most responses were recorded from the German and Norwegian case studies with 3 responses each.

Colleagues had then to indicate, which methods they have been implementing.

Q02: In the implementation of which method/s have you been involved?
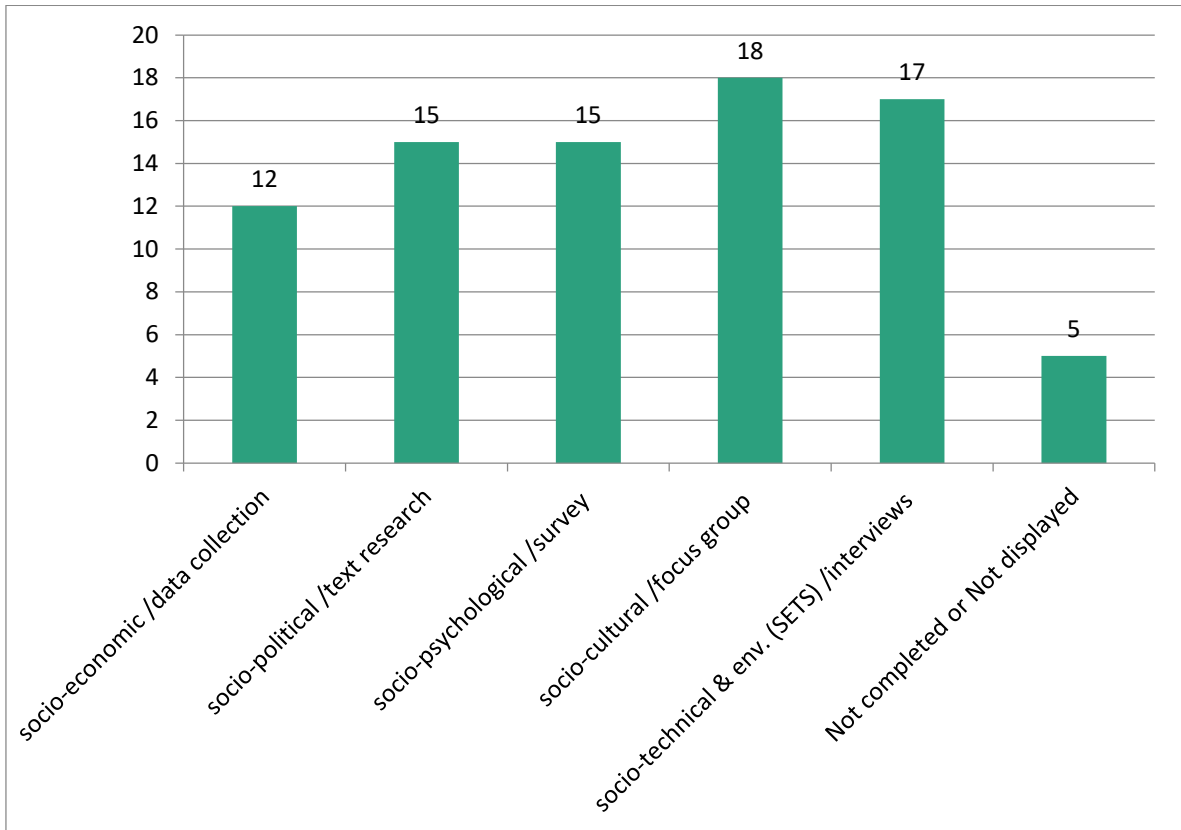
Figure 2 – Responses per method

Respondents were involved in the implementation of several methods. Most colleagues were involved in the socio-cultural method (18), while in the socio-economic method showed the lowest involvement of respondents with 12.

2.2   Assessment of methodology guides

We have asked respondents to assess the methodology guides on a scale of 5 for excellent to 0 for very bad, so as to reflect their satisfaction and experience with the guides, templates and instructions. For each of the five methodological components and the two case study templates, respondents had to assess the guides in a grid.

The question was formulated as follows:

Q03: Assess for each method the quality of the respective methodology guide & instructions/templates on a scale from: 5 - excellent: easily understandable, clear, and

facilitating the work, to 0 - very bad: hard to understand, unclear, and complicating the work.

In the following we present the assessment results per each methodological guide.

socio-economic /data collection, N=13

- 5 - excellent
- 4
- 3
- 2
- 1
- 0 - very bad

socio-political /text research, N=16

- 5 - excellent
- 4
- 3
- 2
- 1
- 0 - very bad

socio-psychological /survey, N=15

- 5 - excellent
- 4
- 3
- 2
- 1
- 0 - very bad

socio-cultural /focus group, N=16

- 5 - excellent
- 4
- 3
- 2
- 1
- 0 - very bad

socio-technical & env. (SETS) /interviews, N=16

- 5 - excellent
- 4
- 3
- 2
- 1
- 0 - very bad
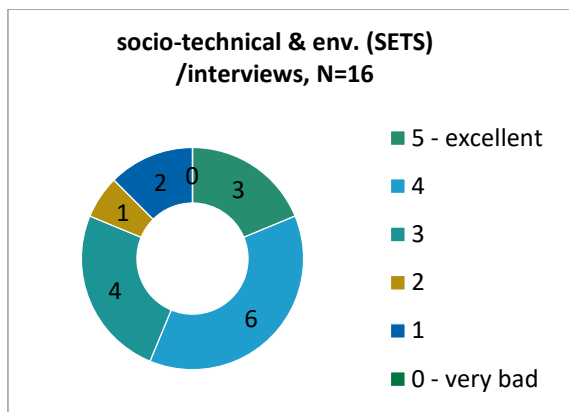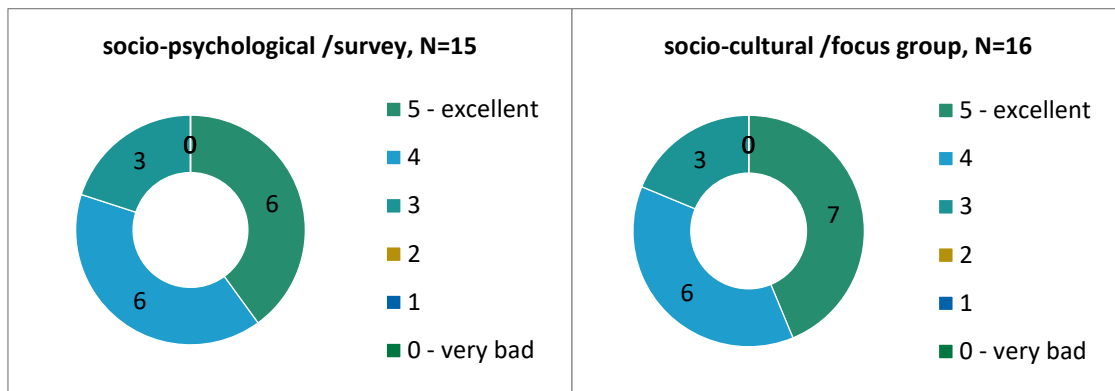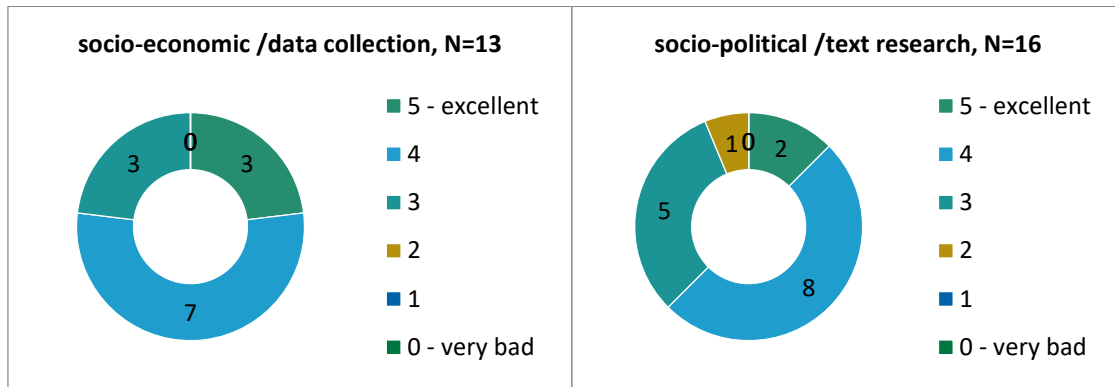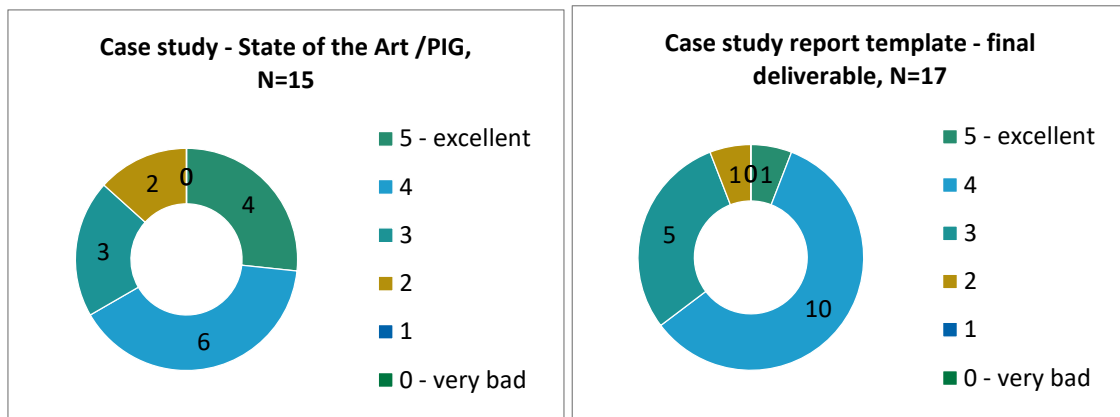
Figure 3 – Assessment per guide

The guides with the best scores were socio-cultural and socio-psychological, while the most critically assessed was the one on socio-technical & environmental method. For this latter guide, there were two colleagues assessing it as "bad" (giving only a 1); no other guide received score 1.

We put the guides against each other according to the top score 5 – excellent, and combining score 5 – excellent and 4 – very good.

ranking by scores: 5 - excellent & 4 - very good
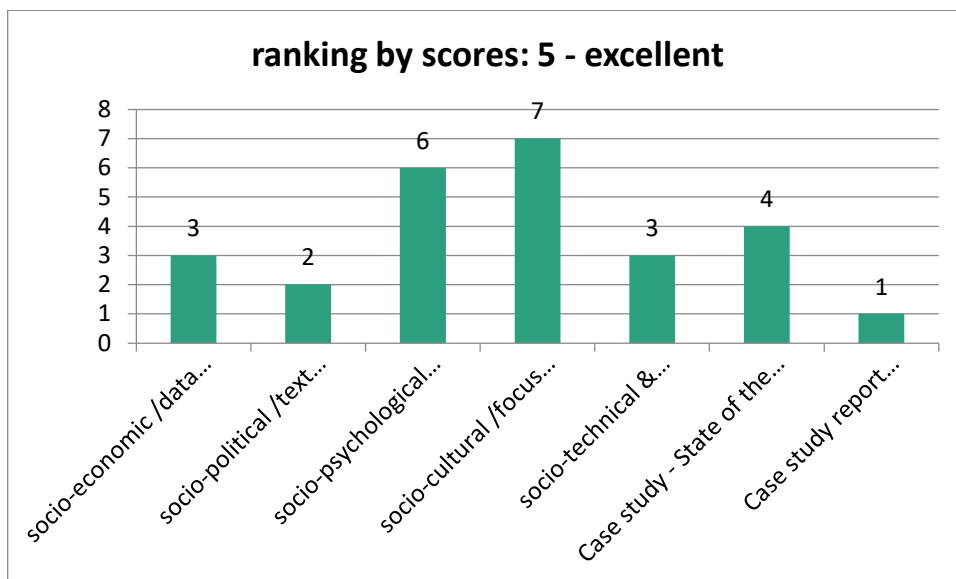
Figure 4 – Ranking per top scores

In this overview, the top score 5 - excellent gives a good differentiation: socio-cultural guide came out as best assessed with 7 excellent received, and socio-psychological with 6 excellent received. The case study report template for the final deliverable was here weakest with only one excellent received. When adding up responses to scores 5 – excellent and 4 – very good, the result is much more levelled out, although the trends as outlined above are confirmed.

CHAPTER 3

Component description and evaluation

Chapter 3 – Component description and evaluation

3.1 Evaluations of the different components

This chapter evaluates all the different components and the free text feed-back provided by ENTRANCES members will be outlined and summarised. A short description of the methodology for each component will be presented and then the assessment.

3.2 Socio-economic component / data collection

The socio-economic component focuses on structural change in the economy, i.e., the reallocation of economic activity across different economic sectors and regions. Structural change can lead to a change in a region's economic, financial, and demographic composition. The component is thus focused on a descriptive analysis of technological progress, demography, economic inequality, employment, and economic activity based on various data sources over the last three decades. The socio-economic component focuses on the Labour Market Area where our case studies are embedded, but also relies on the other units of analysis (Political Administrative Region, Coal and Carbon Territory) as a reference and as a comparison.

For the socio-economic component, an extensive set of data was collected from national sources, mainly national statistical offices, and Eurostat.

3.2.1 *What was good and helpful?*

The respondents stated that the data templates were well structured and that they covered all of the aspects related to the socio-economic component. The templates had great instructions for how to collect and interpret the data. Furthermore, the organisation of the excel-file provided by IWH was considered very helpful. This organisation of the file received positive feed-back, and that all figures were provided was seen as a great help.

3.2.2 *What did not work, what did you miss in the instructions, what needs to be improved?*

Respondents replied here that some of the data that was requested were not made available on municipal level, leading to missing data in the reports. It was also noted that the Case Teams did not provide additional data beyond Eurostat (that was provided by

component leader IWH). Some case teams were not able to change figures on their own, and as a result, figures even had to be prepared by IWH in the final round. During the workshop it was noted that another request for additional more data on carbon and coal industry should be sent out to ensure that a status quo analysis could be conducted.

It was finally noted that there was a lack of instructions for data interpretation in the methodology guides. This created some problems, and it may have made the analyses of the economic factor more difficult for some ENTRANCES members.

3.2.3 *Summary*

Based on the feed-back provided by the ENTRANCES members the methodology guides and instructions were generally good. The respondents were happy with the excel-sheets provided where all data were very well organised. This contributed to an easy workflow that facilitated the work.

In general, the lack of feed-back indicate that most Partners were satisfied with the methodology guides, and except for a few suggestions, there was a general happiness with the guides and excel sheets provided. However, the guides for the socio-economic component could be more comprehensive so that members not familiar with economic analyses can provide more thorough analyses.

3.3   Socio-political component / text research

This component analyses the narrative battles for the interpretation of decarbonisation and energy transition in the Political Administrative Region (PAR) of the case study. The component identifies which are the actors that are forming different "constituencies": the constituency designing the transition, the constituency coping with the transition, or opposing the transition. Through analysing the narratives of such actors, the component investigates how the constituencies understand the benefits and losses from the decarbonisation process. Finally, the component shows the inclusion and exclusion dynamics resulting from technological change in the region.

The socio-political component was focused on a semantic analysis of public statements and counterstatements of different social actors and key regional stakeholders about the energy transition and coal phase-out. The analysis was carried out at the level of the

PAR and based on analysis of media articles, press-releases of key stakeholders, strategies, and other relevant documents and statements. .

3.3.1 *What was good and helpful?*

Entrances members were happy with the template provided to them, and which was described as being good. Some respondents were happy with the code list provided to them for coding of texts. They also commended the text research guide, and rated this as very good. Furthermore, the detailed instructions and examples provided by ZSI for qualitative analysis with MaxQDA software were highly appreciated.

3.3.2 *What did not work, what did you miss in the instructions, what needs to be improved?*

Members reported that expectations pertaining to the qualitative software were too strict and that it was not guaranteed that all involved researchers utilise such software that was used in the socio-political component. It was noted that nVIVO software had to be learned by a research group through a course provided by the University in question. It was questioned if other Universities / Research Institutions could have also provided such courses, because this could present unecessary complications. A more inclusive approach and openness to other coding strategies were argued to be an advantage. It was also noted that the code book consisted of too many codes and a better adaptation/implementation were seen to have been an advantage. The code book was thought to reflect the conceptual framework well, but the application was not seen as easy to apply to certain Clean Energy Transition (CET) debates. It was suggested that a better collaboration on the development of the code book should have taken place. It was critisised that the mechanisms of selecting texts were not fully consistent. This was argued to result in the collected data not being comparative. During the workshop it was noted that input for the code book was requested via mail, but a meeting could have been a better way to gather input. Another issue was that the software recommended to use was decided rather late.

Some respondents also noted that they provided a detailed analysis with many citations, but these details were not implemented in the Case Study Report (Final Deliverable), but only in the more extensive Short Report. Finally, it was noted that the gender dimension was missing in the guide.

3.3.3 *Summary*

The template was well received and the preparation of it was noted favourably. Some respondents noted that both the code book and text research guides were very good. The detailed instructions were considered good. The respondents, however, had some feed-back regarding the qualitative analysis tools and that over a diverse and transdisiplinary group of researchers not everyone is familiar with specific tools such as nVIVO. Higher flexibility in coding tools for qualitative research is therefore recommended. Agreement between all researcher involved in this task on which tools to use should have been reached, and more openess to other coding strategies is suggested.

3.4 Socio-psychological component / survey

The socio-psychological component was surveyed through a structured self-report online questionnaire consisting of 90 items representing 17 socio-psychological constructs (i.e., the different factors of the above-mentioned model). Most of these items and latent constructs are taken from other studies, where different researchers have applied and tested them in different contexts. All the items have been assessed by the respondents using scales.

3.4.1 *What was good and helpful*

It was stated that the survey questionnaire and survey guides were well structured and very useful. Members were also satisfied with the services provided by the survey company they used. Colleagues from German speaking cases mentioned that they were happy with the "common translation with all the German speakers". Component leader UDC was complimented with the feed-back provided on calculations.

3.4.2 *What did not work, what did you miss in the instructions, what needs to be improved?*

Some respondents would have liked that the sampling and the mode of data collection to have been standardised across all regions for the survey questionnaire that was utilised. However, they also communicated an understanding that such implementations would have required different use of resources and more detailed planning. With this in mind, they commended the flexibility given. Some further noted that the questionnaire

provided was too long, and they therefore suspected high dropout rates among survey respondents. This issue was discussed during the workshop and some argued that the questionnaire could have been shorter. However, it was also argued that the survey questionnaire produced valid results and that there is no reason to reduce the amount of questions, but more gender related question could have been included. Some obstacles related to data gathering were noted due to the COVID19 pandemic.

It was noted that the company that was used to conduct the survey by several partners could not measure the dropout rate, only the number of completed surveys was registered in their system. Information that some members received for implementing the survey were seen as confusing and unclear before guides and instructions were provided. The guides were also provided too close to deadlines according to some and this resulted in time constraints. It was commented that there were delays in the software implementation and the company hired to do the survey did not implement some changes. This lead to the software provided not being used by a case study team.

3.4.3 *Summary*

This component was well received by ENTRANCES members and although there was some criticism voiced regarding the survey questionnaire, it was agreed that it provided valid results and that it is not necessary to reduce the amount of questions. However, the questionnaire could have included more gender related questions, although this component did have some items included and an analysis of responses according to gender was done.

3.5 Socio-cultural component / focus group

The analysis of stress-strain situations in the Coal and Carbon Territory (CCT) was based on a focus group mapping (or participatory mapping) of the strain situations in the CCT. The focus group was composed of local key informants who disclosed their local knowledge of the strain situations generated by a variety of globalisation-related factors. The data collected were transcribed and processed into a consistent set of strain situations. An analysis across all the mapped strain situations allowed us to identify stress vectors, recurring strains and change-stability dynamics characterising the CCT.

3.5.1 *What was good and helpful*

Respondents were happy with the instructions that were provided on how to conduct the focus groups, so that although some felt that the methodology seemed complicated, the guides and template were seen as very helpful and clarified the approach. The short report template was highlighted positively for assessing the results. And the Power-point slides and "stress tree" that were provided were seen as very useful to respondents and helped facilitate the disucussion in the focus group. The tutoring for online focus groups was also commended.

3.5.2 *What did not work, what did you miss in the instructions, what needs to be improved?*

It was suggested to relate the methodology more closely with the established literature; as a result, the interaction between participants was not the priority in the focus group, but rather the mapping of information. The method was also argued to be a bit too rigid, and more openness and trust was needed. It was noted that regional differences needed to be taken into account and the strict application of methodological guidelines resulted in insecurities on how to apply the method, and it was not clear if the methods lead to the correct results. Further comments were that in this component the gender dimension was also missing from the template, and that some delays occurred with the instructions for interpreting data.

3.5.3 *Summary*

This component was rated high by the ENTRANCES members and there was a general satisfaction with the guides and template. Some members, however, noted that there could be some more openness regarding the methodological guides. During the workshop it was agreed that the guides could be more concise, and that some theoretical terms needed clarification.

3.6 Socio-ecological and -technical component / interview

This component was assessed by way of mixed quantitative-qualitative interviews with various stakeholders engaged in the CET. The aim was to obtain and contrast differential stakeholder assessments of transformative capacities. A diverse set of stakeholders were interviewed, representing public, private, third and civil society actors. Respondents were asked to assess statements corresponding to each measure of transformative

capacity according to whether and how much they agreed with or disagreed with the statements.[1] They were then asked to elaborate their answers in open follow-up questions, which were subsequently transcribed, coded and analysed.

3.6.1 *What was good and helpful*

The materials provided for the socio-ecological and -technical component were seen by some as clear and easily understandable and the interview guide as positive and helpful.

3.6.2 *What did not work, what did you miss in the instructions, what needs to be improved?*

Feed-back gathered from our internal survey showed that this component was difficult for several of the ENTRANCES teams. The interview guide was assessed as very theoretically driven and this approach complicated the interviews. Some of the stakeholders that were interviewed had problems understanding and answering the questions. In some cases, this resulted in problems recruiting participants. The questions were hard to differentiate and therefore hard to detail to the interviewees. The interview guide was extremely structured, inhibiting the opportunity to take advantage of the full potential of qualitative interviews as a means of collecting data. It was noted that the questionnaire had a lot of "social science jargon" that made it difficult for interviewees to answer, and the questions targeted abstract issues, difficult to assess by referencing real-world events. It was suggested that the questions could have been more open-ended, less complex and phrased differently so that stakeholders with different background could have understood the questions better. During the workshop it was also noted that there could have been inconsistencies in how, e.g., "leadership" was interpreted, and this could have led to different scores. Theory could have been included in the ENTRANCES interview guidelines to ensure consistent interpretation. It was also argued that language could have been simplified to ensure correct interpretation.

There were also problems with translating the questions to the local languages. The method and expected results needed to be better outlined in order to make it

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[1] Possible responses were: 1 – completely disagree; 2 – somewhat disagree; 3 – neither agree nor disagree; 4 – somewhat agree; 5 – fully agree; don't know.

understandable to respondents and there was no collaborative work on the tool. It was, however, noted that although the questions were complex and some interviewees skipped questions due to difficulties understanding them, there were many interesting and long discussions. Gender dimension was not included in this component either, and there were some delays with making the excel charts and guides available for preparing the reports.

3.6.3 Summary

This component was considered difficult by some members. The language could have been simplified and the questions easier to interpret. It was also agreed that in the guide a list of terms should have been defined so as to make it easier for ENTRANCES members to be able to explain the questions to interviewees.

3.7 Case study – state of the art/PIG

The Case Study report was structured into five chapters and summarized the conceptual, methodological framework adopted for the development of the case study. It also provided an overview of the socio-economic situation of the regions, and covered the analysis of the Clean Energy Transition underway at the regional level, and the main territorial challenges, associated coping strategies and gender-related aspects and discussed them in the light of all the dimensions included in the study (i.e. socio-economic, socio-cultural, socio-psychological, socio-political and socio-technical dimensions). The state-of-the-art report described the Coal and Carbon Territories, the Labour Market Area (LMA), and the Political Administrative Region (PAR), and provided and overview of the political regimes, governance, and economic powers. It also provided an overview of the historical background and an overview of the energy situation of the PAR, provided a strategic frame, a state of transition of the cases a stakeholder analysis, and migration status. The aim of the Preliminary Information Grid (PIG) was to collect the background information needed for the focus group implementation.

3.7.1 What was good and helpful

The state-of-the-art report, the deliverable on conceptual framework and data management plan was seen as very helpful when writing the case study report. Also,

guides were seen as very helpful when searching for information on the state-of-the-art report.

3.7.2 *What did not work, what did you miss in the instructions, what needs to be improved?*

The final case study report was criticised by some respondents for introducing new concepts that, although not difficult to understand, required extra work for ENTRANCES team when they expected this work to be nearly finished. The report was also criticised for being a near copy in some parts, while other parts required rewriting existing materials. The final report was argued to be too exhaustive by some, which required an additional amount of work. The deadline for the completion of the final report was criticised as being too short and changes to the final report template occurred during preparation of the deliverable. The section on challenges and coping strategies was included in the template unexpectedly, and it was argued that this section should have been discussed among the consortium. Some feed-back on deliverable drafts was received very shortly before final submission deadline.

3.7.3 *Summary*

During the workshop it was agreed that the delays and short deadlines were a result, to some extent, of the COVID19 pandemic and the delays caused by this. There was agreement that it was unfortunate that the report template changed during the writing process, but this was a result of the input from members and several of the ideas were important to include in the final report. E.g., the coping strategies were considered an important addition to the final report and despite its late inclusion and that some members felt it "came out of the blue", none of the members found it difficult to complete. Despite some comments about the added workload late in the project the final deliverable was a good result in the end and summarised the components well.

3.8 Final comments and suggestions on ENTRANCES methodology and the implementation process

The ENTRANCES project is a large multinational and interdisciplinary research project that involves researchers of very different backgrounds and research fields. Based on this it was noted that it was inevitable that there would arise problems in communication and cooperation. In addition, COVID19 also complicated the execution of this project.

Some ENTRANCES members would have liked more "get to the point meetings" in regard to methodological aspects and clearer structure in e.g. train the trainer approach. For example, in regard to discourse/text analysis or focus groups not all of the researchers had the same level of experience or training in qualitative methods such as coding schemes. A closer coordination at the start of the project to improve workflow, and bilateral meetings or smaller work groups for those that were doing the analyses or applying the methods were suggested as a solution.

As a result of the developed multidimensional analytical framework that encompasses all the components, various quantitative and qualitative methods have been used to analyse the data collected through different sources, such as survey, focus group, interviews, socio-economic data and text material. The complexity of the issues related to the energy transition have made this study methodologically challenging. Following from this, two challenges have arisen: the first challenge is to harmonise the data collected from different sources and create indicators to measure and compare the different case studies. The second challenge is to turn these empirical results into policy recommendations.

The lack of inclusion of the gender dimension was brought up in connection with several of the components. It was noted that gender issues were not integrated concretely and deep enough, and that better alignment and integration during the development of research templates should have been done. For example, gender could have been conceived as a separate analytical component, and not as a horizontal category over the components. Another point raised was that the gender dimension could have been included more explicitly in the interview and focus group guides.

The online trainings were highlighted as good practice; in particular it was mentioned that the focus group training and tutoring of MIRO were very well done and dedicated. Some ENTRANCES members would have liked better communication in, for example,

the socio-psychological report, where some felt the information was unclear and confusing at times.

3.9   Gender dimension

We dedicate here a specific subchapter to the gender dimension, as it raised some discussions among the consortium. A lack of including the gender dimension was noted by some colleagues for several of the components. For example, the semi-structured interview guide contained no questions on the gender dimension and the focus group material did not provide specific topics for the gender dimension to be included.

This issue with the gender dimension was also brought up during the workshop, where the importance of including this topic was focused on. It was noted that the lack of gender inclusion could have been a result of rigid guidelines for templates and ENTREANCES members might have had less opportunity to contribute with their own input. It was suggested that the gender dimension could be included structurally as a separate component. In addition, more questions should have contained specific gender dimensions.

During a discussion regarding why gender mainstreaming has been a challenge, three factors were noted:

1. The gender dimension did not fit as an explicit issue into the different "scapes" and into the stress and strain situations of the socio-cultural component.

2. Women were represented in several regions in the socio-technical and -ecological component, but it was unclear why gender was not specifically included in the questionnaire.

3. The socio-political component relied on public discourses, and if gender is not present there, it is not our own barriers but others that are shown in real world.

In the future it was agreed that there needed to be more focus on the gender dimension, and it needs to be tried to include this as best as possible.

CHAPTER 4

Conclusion
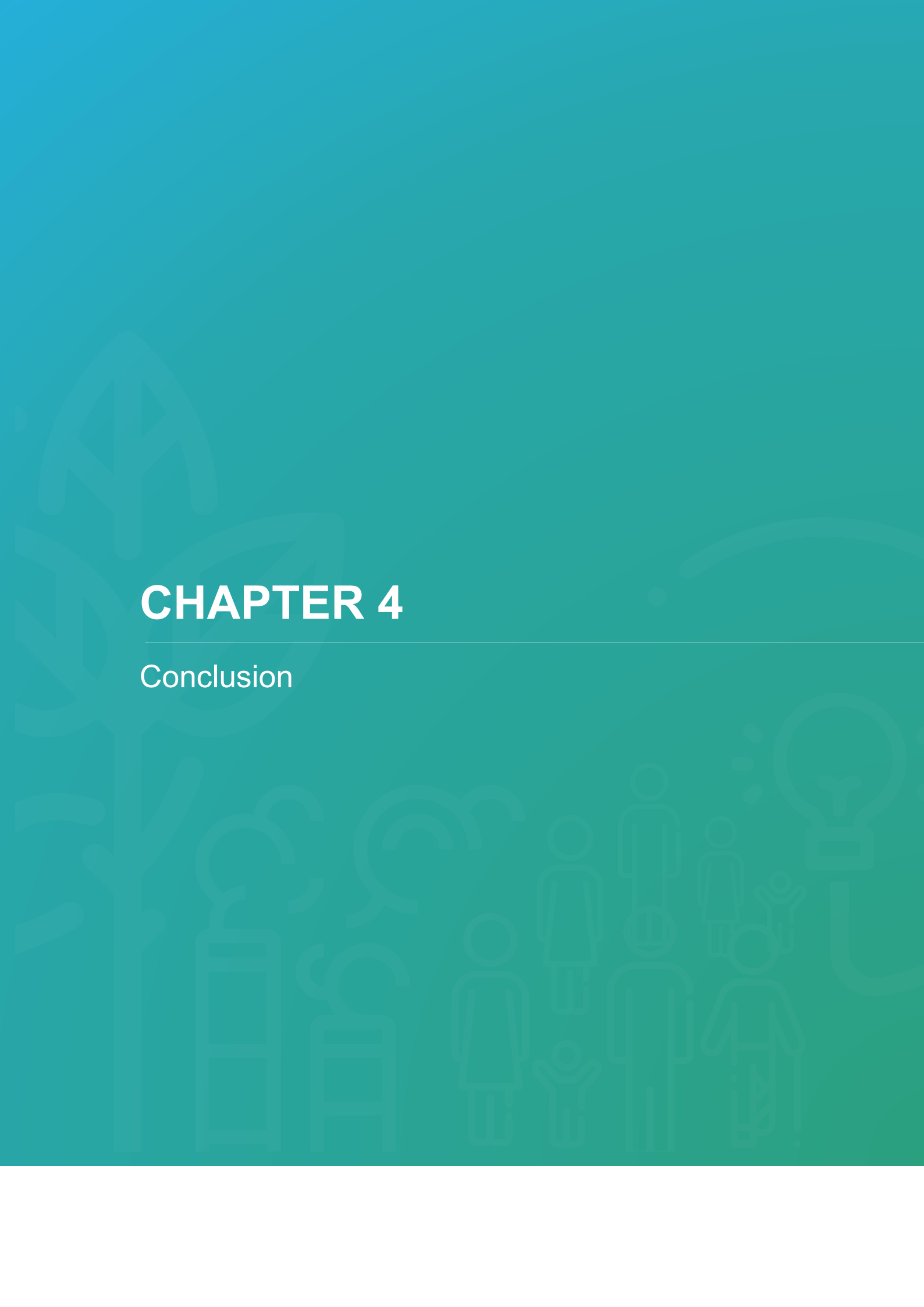
Chapter 4 – Conclusion

The ENTRANCES project is a large, multinational, and transdisciplinary project that involves both coal and carbon intensive regions. To this complexity, the worldwide COVID19 pandemic was added, which complicated the work for many members and resulted in some issues with data gathering and affected deadlines to some extent. Despite the challenges faced, the ENTRANCES project and its wide variety of methodologies utilized, has generally been well received by its members, as seen by the relatively high ratings the methodological guides for the analytical components received and the constructive remarks in the survey, as well as discussions in the workshop. A complete re-shuffling or abandoning of methods was suggested by no one.

Despite the high scores and general satisfaction, as seen in the quantitative chapter, with this project there were still issues that the members brought up in the qualitative part of the survey. In the socio-economic component it was argued that the guidelines should include instructions on how to interpret economic data so that members unfamiliar with this type of data are better able to describe and analyze. In the socio-political component there should be wider agreement on the code book used and more openness to other coding strategies. In the socio-cultural component it was agreed that the guides could be more concise, and that some theoretical terms needed clarification. There was a discussion during the Workshop on the problems ENTRANCES members faced during the implementation of the socio-ecological and -technical component with interpreting and explaining questions. It was agreed that the guides should be made more accessible and change the language as to make it easier to implement and explain to interviewees.

On a more general level, some criticism was voiced towards the way the communication between project leadership and researchers was handled: disappointment was mentioned with an overly corporate approach to the project, especially with relation to extreme deadlines and the often surly tone and lack of situational understanding from certain higher-ups in the project. A higher level of understanding and supportive communication from the leadership would have been valued.

In spite of these concerns, we note that the overall result of implementing methods and case studies was very much appreciated. A colleague mentioned that the lead researchers did an exemplary job despite encountering challenges with communication and deadlines. And further, the final report is something to be proud of, and that overall

this group is satisfied with the end product that is has delivered. This may stand as final resume for our work.

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