

Transdisciplinary Field Research Training 2023/24

Fragmentation of Society & Resilience

REPORT

Organisational Improvisation in Polycrises:

How do organisations deal with continuously disruptive events?

Authors:

Alan Dill

Boris Stamenov

Elissa Tokusato

Jonathan Tertsunen

Nino Samsonidze

Supervisor:

Lukas Zenk

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1. Introduction

The 21st century has borne witness to the increasing prevalence of *polycrises*, instances “...where disparate crises interact such that the overall impact far exceeds the sum of each part”, as defined in the World Economic Forum’s 2023 *World Risk Report* (WRR) (WEF World Risk Report, 2023, p. 9). While such crises also existed in the past, the contemporary, complex, globalised, industrialised and digitalized world has provided ample opportunity for myriad interconnected and -dependent polycrises to form. These are continually increasing in severity and in a variety of aspects regarding socioeconomic, technological and environmental indicators. Respondents to the cited WRR survey include actors from major business, community and government organisations, and thus primary risks identified by each group can be conflicting, with the starkest difference in opinion arising between economically-oriented business and socially-oriented government respondents (WEF WRR, 2023, p. 13).

The most prevalent crisis the world is currently experiencing, as reported, relates to the cost of living, driven by increasing food and energy prices. This trend is directly related to the Russian invasion of Ukraine, as well as continuing supply chain bottlenecks following the Covid-19 pandemic, which national economies are only now fully recovering from. However, this crisis has also augmented inflation globally, particularly in low-middle-income markets, both of which erode middle-income households, social cohesion, and public and private investments to address the problems of the present and the future. On top of such short-term instability, the more indirect effects of climate change loom on the horizon and must continually be included in societal as well as organisational needs and decisions (OXFAM, 2023).

Here, we report the process taken to derive socially robust orientations regarding the **role of organisational improvisation in the face of polycrisis**, a proposition to build resilience in a world characterised by volatility, uncertainty, complexity and ambiguity (VUCA). “We”, that is a group of Erasmus Mundus students of the M.Sc. “Transition, Innovation and Sustainability Environments (TISE)” with myriad academic backgrounds. This report is the final deliverable of an intense, participative “field research training”. The so-called “VUCA-approach” on the other hand denotes the global backdrop and the preconditions our analysis situates itself within - amidst the expectation that rapid changes of previously unknown origin, i.e., social, natural or technological, are inevitable and will time after time avail organisations at all levels (see Harari,

2020; Kaivo-Oja & Laureaus, 2018). This, in turn, means that the affected organisations must try to predict changes, allocate a part of their yearly budget to analytic foresight and maybe transition their organisational structures to be more reactive and resilient to outside changes (see Alasingachar, 2019). The latter possibility underlines our examinations in this report.

Throughout our work, we use the term “organisation” broadly to denote a group of people who share a common set of goals and intentionally organise themselves in a structured way, whereby this structure allows them to cooperate and coordinate their activities effectively. (Gibson et al., 2020). It is precisely through this coordinated effort that people in structures achieve their common goals and create value (ibd.). Another aspect of the organisations we speak of is their status as legal entities, insofar they are registered within the respective nation-state or region they operate in and are “legal organisations” with binding responsibilities, such as paying taxes and adhering to common regulations (Edelman & Suchman, 1997). The term then refers to a formal entity, often predominantly involved in economic activities, and, as we shall see, not merely producing value but also employing and embodying *values*.

It is further important to note that polycrises affect organisations differently depending on their size or the sector they operate in, so the ways of dealing with crises may differ from context to context. Thus, our scientific endeavour delves into the energy sector to investigate how organisations imbricated there are navigating the VUCA world, first in the Austrian context, and then globally. We depart from the hypothesis that not for profit and non-governmental organisations have a comparative advantage to survive through improvisation. In economics, a country is said to have a comparative advantage in the production of a good if it has lower opportunity costs in producing this good compared to another country (see Black et al. 2009; Findlay, 1987). As much as this theory is already contested by macroeconomic reality, also our hypothesis might hold untrue in specific cases - this in turn being a case we will now explore.

In the next section, we provide a glimpse of the theoretical background that supports our research. Next, we will describe our initial guiding question and preliminary system model. The following section provides insights into the first activity with stakeholders, which were individual interviews that brought our theoretical understanding to a practical level and refined our guiding question. After discussing the interview process and its outcomes, we present a new system model, quite different from the one it was based on. In the next section, we dive into a collective scenario-building and -analysis with our stakeholders. The results of these sections are then discussed and socially robust orientations provided. A brief conclusion rounds this report off.

1. Theoretical background

1.1. Polycrisis

To start off, we must first define the term “polycrisis”. The concept of *crisis* used to be associated with a single crisis event or with a series of events, related to a particular issue. However, this concept has been going through some changes, or rather, the world has, which has given rise to the need for a re-conception (see Lawrence et al., 2024). The characteristics of the contemporary, global status quo - being non-static and chaotic - frequently enabled several different, although often interconnected crises to arise in the world at the same time. This phenomenon is manifested in the concept of polycrisis, quite vividly, where the Latin determinative “poly”, meaning *many of often*, meets the basal, single “crisis”.

The term “polycrisis” has been used by several authors and experts, the aforementioned WEF report citing it 13 times over 90 pages (Torkington, 2023). The term has recently gained traction, one case being Edgar Morin and Anne Brigitte Kern, who used it to explain “interwoven and overlapping crises...the complex intersolidarity of problems, antagonisms, crises, uncontrollable processes, and the general crisis of the planet” (from Henig & Knight, 2023, p. 3). An early mention of the term occurred in 2016, during a speech of the then-European Commission president Jean-Claude Juncker. For him, it denoted the emergence of several issues together: security fears, a migration, and Brexit were called a polycrisis, since these issues altogether had a capacity to destabilise the continent (ibid). Recently, the term is often called in the mainstream agendas by complexity theory and system thinking scholars - Christopher Hobson suggesting that the concept of polycrisis has the potential to define our age “by identifying an entangled system of escalating problems” (2022).

Another author who discussed the term polycrises and suggested his theoretical version was the South African sociologist and sustainable-transition theorist Mark Swilling (2013) - defining the term as “a nested set of globally interactive socio-economic, ecological and cultural-institutional crises that defy reduction to a single cause” (Henig & Knight, 2023, p. 4). It is noteworthy to emphasise his understanding of polycrisis “as a comprehensive label for the multiple interconnected crises facing the global political economy, including climate change, rising inequality, and the threat of financial crises” (ibid).

The brief theoretical introduction to this concept illustrates that its key characteristics are the following: to have several crises happening all together and have interconnected and interwoven events aligned in the face of simultaneous challenges, frequently on the global scale. One idea which was not yet delved into was the role of culture in creating resilience in polycrises (see Hoyer et al., 2023), which is something this report now touches upon.

1.2. Improvisation

In 2021, the journalist Wolf Lotter published a book that targets the question of how to generate agency and meaning on an organisation level, when the world, as we knew it, had changed starkly and was marked by newfound irregularities that render previous modes of conduct obsolete. The theoretical conceptualisation of this world can be called a “knowledge society”, which focuses on knowledge as the central productive force, the so-to-say “capital” of contemporary, mostly Western democracies, and the need of any individual actors and institutions to continually generate new knowledge (see also Innerarity, 2012; Knorr-Cetina, 2005; Drucker, 1969). In essence, knowledge is regarded as the determining force whether change *can* be undertaken, as well as the reason *that* it is undertaken. The question then becomes, where to generate the type of knowledge that enables organisations to adapt to the fast alterations and continual crisis scenarios embodied in a VUCA approach. Here, Lotter maintains that old paradigms of stability and security must be overcome, for a paradigm shift to more open, innovative and flexible organisational stances to occur (2021, p. 202, 217).

In fact, an organisation's (in)capabilities to quickly and effectively respond to changes and crises posed by this new environment can soon enough become an existential matter. Organisational Improvisation (OI) is the scholarly concept that tries to encapsulate the complexity of activities, processes and behaviours that actors inside institutions, and companies do to navigate such scenarios. Ciuchta et al. (2021) highlight that OI has long been associated with the jazz and theatre metaphors, given the ubiquitous arrangement on the go that artists execute when performing. The definition of OI by Cunha et al. (2016) is grounded in the degree of *extemporaneity*, novelty and intention of a process. Thus, an improvisation stems from an intentional design and production of something new, with the absence of premeditated planning. Nevertheless, the extemporaneous and innovative nature of improvisation doesn't mean that all innovation is improvisation, nor that every unplanned action is improvisation (see Cunha et al., 2016).

OI is often associated with concepts such as creativity, innovation, and bricolage. Nevertheless, Ciuchta et al. (2021) warns for clarification of such concepts, given that the presence of one doesn't necessarily imply the existence of the other. For the record, not every outcome of an improvisational episode might be considered innovative or creative. In fact, innovation and creativity can occur as planned initiatives (Ciuchta et al., 2021). Bricolage is a concept derived from the anthropological work of Levi Strauss to characterise “making do” with resources available (Silva et al., 2023). Simply put, this means that in the case of a (poly-)crisis, one should not look for outside resources but rely on what lies at hand. The distinction made by Silva et al. (2023) highlights the resource availability aspect of both phenomena. While improvisation happens in a setting where there are available resources, bricolage happens when resource availability is suboptimal. Thus, improvisation is a process of resource adaptation and bricolage is a process of resource combination.

Ciuchta et al. (2021) offers a framework to identify and organise research opportunities on OI, departing from the concept Organisational Improvisation Episode (OIE), observed on a temporal scale. An OIE is simply a group of activities that “has a high presence of improvisation” (Ciuchta et al., 2021, p. 289), which is always a matter of degree. The proposed framework is divided between pre OIE, OIE and post OIE. Pre OIE phase is the interplay of triggers and antecedents that take place and influence the intentional decision to proceed with OIE, simply do something else, or nothing at all. Next, the process OIE happens, and it is moderated by socio-cognitive and structural factors. The post OIE phase is the output of the episode and is marked by immediate, short and long-term effects.

Beyond such theoretical ponderings, this report delves into the practical orientations and realities of the involved stakeholders. The next section presents a preliminary system-model we constructed for Austria and then imagines a more international one, focused on the DACH-region. Key aspects related to the research question are explained, with the help of poignant diagrams. They should be regarded as signifiers of a cyclical process that is continually engaged in a reflection of itself, both for methodological improvements and dense, scientific rigour (Knorr-Cetina, 2005).

2. System models and guiding questions

The present report is the final outcome of a desk research, a series of interviews with experts and practitioners to refine the guiding questions, the creation of in-depth scenarios and a participative workshop. In the desk research stage and its resulting system model, we thought that we should take into account as many actors as possible for a comprehensive view of the sector and its interlinkages, of which we noticed later on that this approach worked against us by making the system complex. Altogether, we firstly mapped 21 stakeholders and 42 factors: 13 global elements, 18 regional/Austrian, and 11 organisational (Figure 1). Austria was chosen as a geographical context, which we broadened later due to logistic constraints. A difference in the mapped stakeholders and the final system-model becomes evident, as the latter must be significantly more reductive to ensure readability and thus communicative efficiency.

First, we approached humanitarian organisations, as they would be the intersection of energy and socially oriented work, focusing on NGOs and NPOs. We reasoned that values were a driving factor in these types of organisations and they could further benefit from our transdisciplinary work, as they often have little social and economic resources at hand and rely on outside funding. Therefore, a reciprocal value-creation was attempted. After an expert interview, we however broadened the scope for “organisations” in general, as we learned in the interview phase that the relationship of the use of strategic improvisation to deal with crisis is not related to factors such as being an NGO versus a for-profit company, the organisation size, or type or hierarchical relations (more flat structure or more hierarchical). This rather depends on the leadership’s unique approach and a psychologically safe work environment. Therefore, we changed the guiding question from “NGO” to “organisations” in general, considering now the private sector actors and academia working in the energy sector. The relevant hypothesis then proclaimed: *A more open, improvisational culture enables an organisation to respond to polycrises in a more resilient way.*

This second and final model included a consolidated number of variables, from the original 42 down to just 11 for the sake of analytical ease and visual simplicity. A threefold-level made most sense, folding out into regional, national and international factors. From there, we attempted an onion-shaped system-map incorporating the manifold relationships between these levels.

The loops present in this system, between individual variables or sets of variables, are described by the various dimensions: while most, if not all of the loops were closed to various degrees, the strongest relationships seemed to be present *within* the organisation, particularly regarding *diversity and inclusion*, *leadership's openness to new ideas*, and *psychological safety*. Changes to variables within the organisational dimensions would ripple out to the greater sector through the connection between the *strategic improvisation* and the *competition in the energy sector* variables, influencing regional variables most greatly. Direct external influence between the organisation and environment occurred entirely through second level variables, mainly regional factors such as *inflation* and the *competition in the energy sector*.

This final model is not a projection, however: this is covered later in the *Scenarios* section of the report. Current trends regarding the variables are largely static, and/or inconclusive. Present trends regarding *psychological safety* in the workplace are inconclusive, while progress towards handling *geopolitical instability*, *inflation* and the *energy crisis* has been slow, which could also be said for efforts promoting the *green transition* as well as *diversity and inclusion in the workplace*.

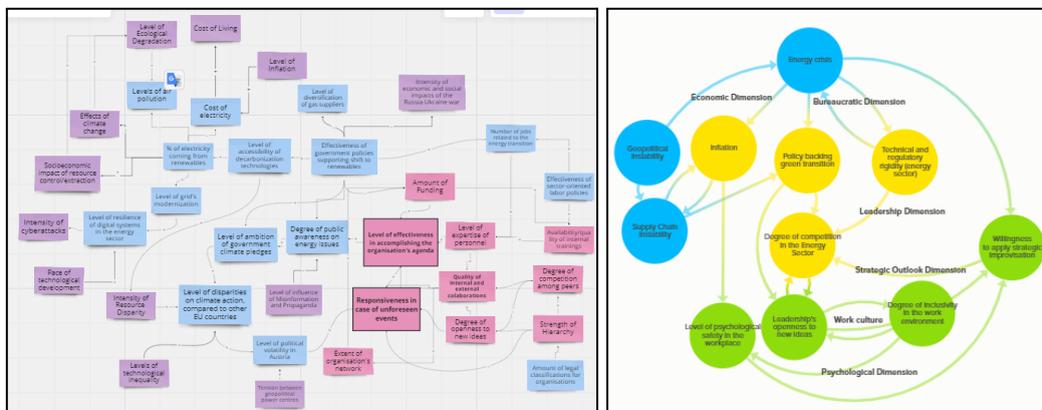


Figure 1: Comparison of the first draft of the systems' model, on the left-hand side, with the final system model, refined after the interviews. The factors will be detailed and discussed in the next sections.

3. Stakeholder engagement

In our first approach, we contacted 22 organisations across Austria (Annex A) and 1 master's graduate via email (Annex B). To date, only the latter replied, and signalled their readiness for an in-depth interview. We also reached out to a Whatsapp group with more than 200 business leaders in the sustainability area in Brazil, asking for potential contacts in the Austrian energy sector (Annex C). From there, three people responded but were not able to



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provide us with any direct contacts. We also used the LinkedIn platform to spread the information about the workshop and to reach out to the participants. However, none of these methods were sufficient considering the time period we were given to plan and organise these events, involving high-level actors.

After two weeks not receiving responses from Austrian organisations, we expanded the approach to actors outside Austria. Possible reasons for lack of success in contacting Austrian stakeholders could be the fact they were “cold calls”, Austrian cultural aspects, and language barriers. Adding to this, as mentioned above, the time constraints - the given timeline we had to plan and organise all these activities played a huge limiting factor for us. Eventually, we decided to individually reach out to those respective stakeholders that either we knew or we got recommended. Thus, our personal, internationally spanning networks proved the most valuable resource utilised. In a more broad reading, this then underlines the value of bringing together diverse scholars from heterogenous fields and backgrounds, such as what TISE does.

At the end we managed to have several interviews with stakeholders from different sectors - practitioners and academia mainly. These stakeholders worked for companies in Austria, Germany, Poland, the Netherlands and the UK. In addition to this, they represented different countries, thus bringing in diverse context and perspectives - Poland, Brazil, Austria, Germany. However, organising participation for the workshop was more challenging, since it required people from all around the world, from different time zones and with different agendas to agree on the same date and the same time. Eventually, we managed to have a workshop with relatively smaller groups. Nevertheless, it did not limit the quality of the workshop: in fact it did quite the opposite (further details about the workshop are in the chapters below). During the workshop, there were two stakeholders from Brazil employed in Europe and one representative of academia, representing Austria. To engage stakeholders in the process was challenging, nevertheless we managed, and our collaboration yielded quite interesting outcomes that will be discussed below. From an iterative perspective, this however points towards the value of continually reflecting on the process so far and promoting a culture that incorporates learnings and failures with positive values and continual improvement (see Welzer, 2021).

4. Interviews

This section presents the outcome of three interviews we conducted, all of which were conducted online due to geographical divergence. As noted in the previous section, these

interviews were conducted with one practitioner from the energy sector, and two scholars, one of whom is an expert in risk management and organisational strategy, and the other a graduate in OI within the context of Communications and Management. As mentioned in the previous section, they were not speaking exclusively from the Austrian context, but one concentrated her research on the DACH region (the German-speaking countries that besides Germany, include Austria, and Switzerland), while another worked for a long time in Poland and was quite aware of the peculiarities of both systems (**Table 1**).

As previously explained, this part of the project is expected to generate a better overview of the system we aim to model. All insights and orientations are integrated to generate the final model upon which we will build and discuss scenarios in the workshop activity.

| ID | Stakeholder | Affiliation | Position |
|----------------|--------------|---|--|
| Interviewee #1 | Academia | Donau University Krems | Master's graduate of Communications and Management |
| Interviewee #2 | Practitioner | Decarbon1ze GmbH | Assistant to CFO and CEO |
| Interviewee #3 | Academia | Poznań University of Economics and Business | Professor |

Table 1: Interviewee details.

We conducted semi-structured interviews with prepared questions tailored by area of expertise - academia, practitioners from the private sector and from NGOs, although the latter was not used. They were conducted by different members of the group, and in order to ensure interviews had a common ground, a short script was developed to guide interviewers during the process. However, the final decision on wording, and applicability of the question was a matter decided by the interviewer, tailoring questions to match the interviewee's experience and context. This approach helped us to set an engaging and conversational tone, in which the primary objective is to let interviewees talk freely, without losing sight of what is essential to hear from them. Overall, the main questions revolved around:

- *Experience with crisis management: academic vs. first-hand in a corporate environment.*
- *Identify polycrises affecting Austria (if not Austria, the context they know).*

- *Are some organisations more prone to improvise than others? If yes, is it due to culture, company size, or structure? Is improvisation more likely to happen, depending on the business sector?*
- *Are value-based companies (nonprofits, NGOs) more resilient to crises? Why?*
- *Experience with companies outside Austria (if not Austria, the context they know) and differences in organisational culture impacting crisis management.*
- *How does Austrian (if not Austrian, the context they know) organisational culture impact crisis management?*

Next, we summarise the outcome of each interview and systematise the key factors mentioned, classifying them according to the context they pertain to, the aforementioned global, regional, organisational levels. A key point here is the construction of a dense narrative that connects our various types of data with our research question.

4.1. Interview #1

Our first interviewee (Interviewee #1) recently finished their 3-year master's thesis in the role of improvisation in risk management in the DACH region. When discussing the current polycrisis facing Austria, they mentioned variables such as the energy crisis (and its ripple effect on inflation), unemployment crisis, and crises derived from supply chain uncertainties as the main ones affecting the Austrian context. Their work experience in the energy sector, and her field research for her master thesis, illuminated the struggle of companies from the energy sector with transparency and flexibility. Both the sector itself and the risk management department face the issue of lack of diversity, which was described to be “*dominated by white men*”.

On a possible relationship between the business sector, type of organisation and improvisation, they commented that resilience is mostly related to the leadership in the company rather than the level of hierarchy of the organisation. Thus, less hierarchical and decentralised organisational structures do not necessarily imply better improvisation and increased resilience in the face of crisis, as we had assumed. The same is true when analysing the border economic sector or structural characteristics of the organisation, such as size, for/non-profit and centralised/decentralised decision-making. In other words, these variables are independent of applied improvisation and resilience towards polycrisis. Although the social expectations of NGO and value-based organisations towards their ethical and moral behaviour might be higher

compared to a large for-profit corporation, Interviewee #1 asserts that the way these organisations deal with crises is quite similar. The difference is, again, the people who lead: if they are open or not to new approaches, and flexible enough to try new ways of doing.

Finally, when asked about how energy sector organisations incorporate improvisation in climate transition plans, they pointed out what was called strategic improvisation approach, making it clear which items are fixed, and which are flexible.

Key factors mentioned

- Organisational: Leadership's openness to new ideas; Gender equality and diversity; Organisational reputation; Strategic improvisation.
- Regional: Rigidity of sector's regulation, Inflation, Unemployment.
- Global: Supply Chain Instability; Energy crisis.

4.2. Interview #2

Interviewee #2 speaks from the energy sector, in which they have been working in a green tech startup focused on optimised electric heating in Berlin. It is important to take into account that the recent crises (pandemic, Ukraine war, inflation) did not cause a negative impact in the company where he works, rather the opposite, as its product benefited from rising fossil fuel prices and a greater focus on the green transition. According to him, the polycrisis affecting the German energy sector is related to the dependence on fossil fuels from potentially unstable suppliers, rising interest rates hindering renewable energy investment, and the risk of price shocks. In the mid/long run, Interviewee #2 mentions potential disruptions from a China-Taiwan conflict impacting solar panel production and a Trump re-election affecting international cooperation.

On organisational cultures, they mention his work experiences, ranging from slow-moving bureaucracies to fast-paced startups. For the interviewee, resilience is more likely to be a characteristic of companies that have a less hierarchical structure. The more open and participative the organisational culture, the more adaptable a company is likely to be, simply because everyone needs to understand and work in the same direction to tackle a crisis situation. Hence, the value of an inclusive and innovative environment for learning and growth. For the

Interviewee #2, the companies that are less likely to deliver crisis response in a timely manner are the ones who are linked to monopolies in which regulation and existing contracts serve as a disincentive to innovate. In this specific case, in a crisis situation governmental agencies can act as drivers of change if they spend their considerable resources strategically. The full transcript of this interview can be found on Annex D.

Key factors mentioned

- Organisational: degree of inclusivity and innovation in work environment; reliance on open, participative cultures in crises
- Regional: political backing of green transition; level of dependence on fossil fuels; level of interest rates; risk of price shocks; diversity of companies in ecosystem; market-share of competition; amount of renewable energy investment; fossil fuel prices
- Global: degree of reliance on unstable suppliers; risk of China-Taiwan conflict; risk of Trump re-election

4.3. Interview #3

Our last interview was with an economics professor from Poland with experience in risk management. Their expertise and close contact with different economic sectors help to shed light in different aspects we have been discussing so far. However, Interviewee #3 also touch topics already mentioned by the previous interviewees. For instance, they reinforce what was already said about homogenous corporate environments being less prone to improvise, and also less responsive and flexible to crises than more diverse organisations. In their experience, corporations, especially B2C, do not foster an environment encouraging organisational improvisation, mainly because of the increased time constraints that all operational activities ensue. Interviewee #3 also mentions that a strong regulatory environment discourages improvisation and can hinder an effective crisis response, while posing little historical precedent of preventing crisis.

They mention that organisations less focused on profit and reputation will likely be more open to improvisation, as well as be more proactive in handling crisis situations. However, they see that cultural differences between countries, or even regions within the same country, can have

a significant impact on how organisations approach improvisation. Interviewee #3, highlights that in professional settings, the word “improvisation” has a negative meaning, mostly understood as poor, or a lack of, planning. Yet, they also recognize that risk management and contingency planning share a number of characteristics with the phenomena of OI.

Key factors mentioned

- Organisational: operational costs of improvising; diversity in work environment; focus on profit; focus on reputation; cultural constraints to improvise
- Regional: Regulatory constraints
- Global: Cultural differences between countries central to OI, “improvisation” a word with a normative charge

In order to have a better overview of the correspondences and common points in the interviews, we systematised the factors mentioned and cross-checked each of them to see if they were mentioned also by another interviewee (Table 2). This approach is one we came up with during the process and has no previously sighted theoretical backing. Thus, it may contribute to a methodological advancement on transdisciplinary approaches, as desired by many researchers (see, i.e., Schmidt & Pröpper, 2017; Russell et al., 2008, pp. 460–461).

Table 2: Factors’ recurrence across the three interviews.

| Mentioned By | Factors | Also Mentioned in | | |
|----------------|------------------------------------|-------------------|--------------|--------------|
| | | Interview #1 | Interview #2 | Interview #3 |
| Interviewee #1 | Leadership’s openness to new ideas | ✓ | | |
| | Gender equality and diversity | ✓ | | ✓ |
| | Organisational reputation | ✓ | | ✓ |
| | Strategic improvisation | ✓ | | |
| | Rigidity of sector’s regulation | ✓ | ✓ | ✓ |
| | Inflation | ✓ | ✓ | |
| | Unemployment | ✓ | | |
| | Supply Chain Instability | ✓ | ✓ | |

| | | | | |
|--|--|---|---|---|
| | Energy crisis | ✓ | | |
| | degree of inclusivity and innovation in work environment | ✓ | ✓ | |
| Interviewee #2 | fossil fuel prices | | ✓ | |
| | political backing of green transition | | ✓ | |
| | level of dependence on fossil fuels | | ✓ | |
| | degree of reliance on unstable suppliers | ✓ | ✓ | |
| | level of interest rates | | ✓ | |
| | amount of renewable energy investment | | ✓ | |
| | risk of price shocks | | ✓ | |
| | risk of China-Taiwan conflict | | ✓ | |
| | risk of Trump re-election | | ✓ | |
| | diversity of companies in ecosystem | | ✓ | |
| | market-share of competition | | ✓ | |
| reliance on open, participative cultures in crises | ✓ | ✓ | ✓ | |
| Interviewee #3 | operational costs of improvising | | | ✓ |
| | diversity in work environment | ✓ | ✓ | ✓ |
| | focus on profit | | | ✓ |
| | focus on reputation | ✓ | | ✓ |
| | cultural constraints to improvise | | | ✓ |
| | Regulatory constraints | ✓ | ✓ | ✓ |

Apart from the agreements we identified on key factors, it became clear to us that our guiding question needed to be refined. First, the type of organisation seemed to our interviewees to be of less relevance, being mentioned only by one of the interviewees as an important distinction. Thus, focusing on NGOs and NPOs might not be of relevance either. Second, given our difficulty to reach stakeholders from Austria, we decided to broaden the geographical context. The refined guiding question reads as: **“How do organisations in the energy sector respond to polycrisis?”**

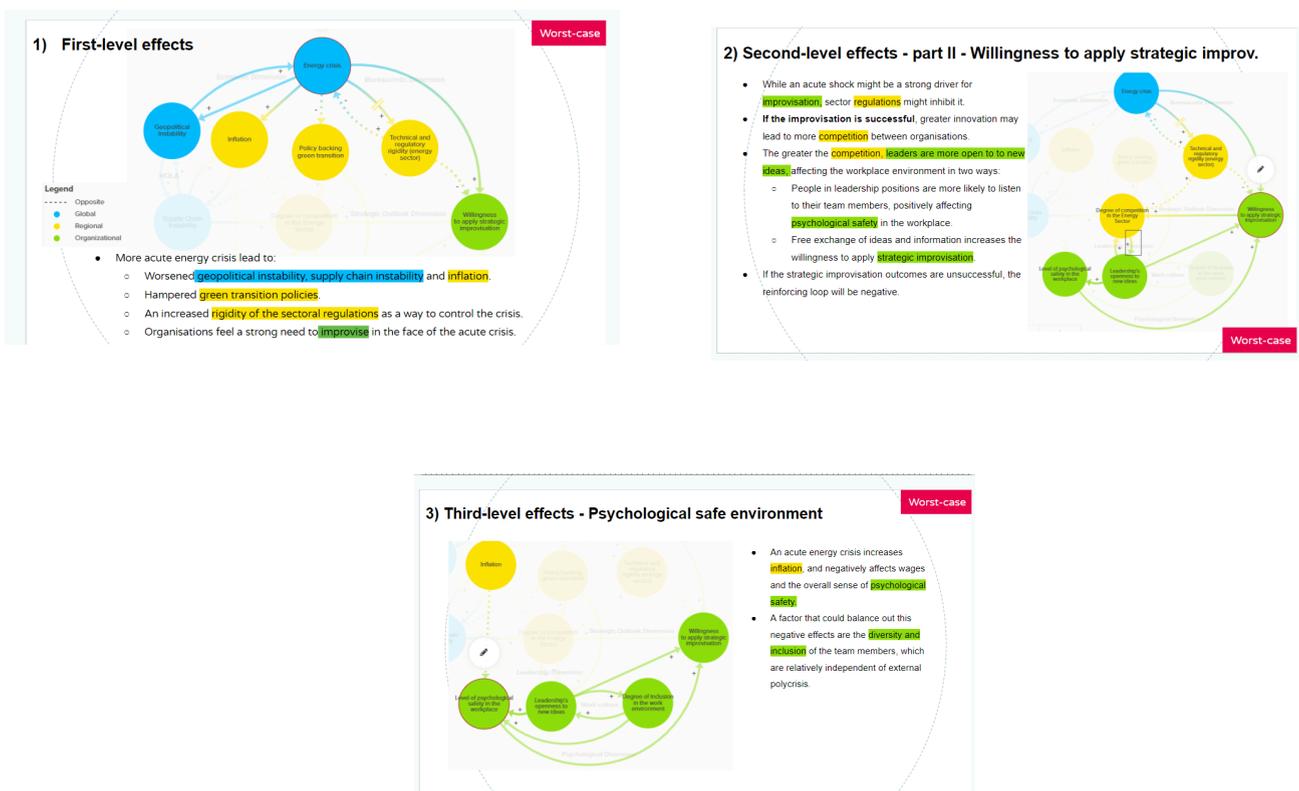
5. Scenarios

5.1. Scenario creation

For the scenario analysis workshop, the group worked on the system and built three key scenarios - worst, best, trending. In this process the general framework of scenarios went through some modifications, the first version of the worst scenario was quite general and broad, explaining the system with less structure.

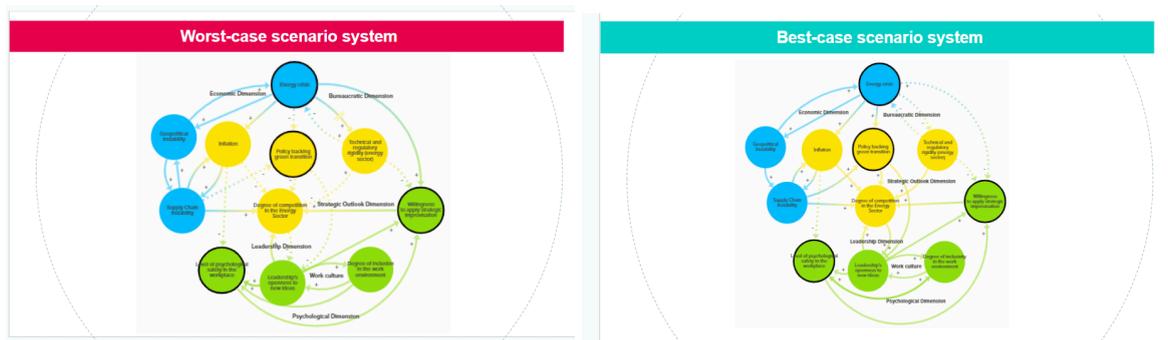
After some discussions, the structure and outline of the scenario changed. Three scenarios were portrayed within a more structured and analytical manner, and were presented to the stakeholders for validation. The final version of scenarios was more visual and easily digestible to compare with the one before. At the end, two scenarios were part of the discussion. The worst and the best, presented after a very brief synopsis of current trends (see details of the Trending Scenario in Annex F). There were three main levels of effects, starting from an enhanced or improvement of the energy crisis, revealed and discussed in each scenario (Figure 2).

Figure 2: Three Levels of Effects



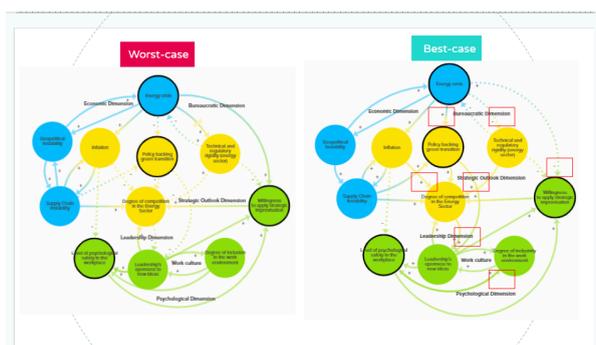
To complement and visualise these three case scenarios better, the system model was analysed and visualised from the perspectives of each case scenario, to have it discussed with stakeholders during the workshop.

Figure 3: System Model Visual Analysis of Scenarios



Besides visualising and discussing them separately, comparative analysis was also part of the process, to see the main differences and similarities, those converging points that are important in the overall dynamics.

Figure 4. Comparative Visual Analysis of Scenarios



5.1.1. Worst Case Scenario

Acute shock that worsens the severity of the energy crisis

The first level effect in case of the worst case scenario - *acute shock that worsens the severity of the energy crisis* - was expected to lead to the following outcomes:

- Worsened geopolitical instability, supply chain instability and inflation;
- Hampered green transition policies.
- An increased rigidity of the sectoral regulations as a way to control the crisis.
- Organisations feel a strong need to improvise in the face of the acute crisis.

As for the second level effects, it consists of two parts, one that is related to **green transition** and ensues in the following:

- The need to survive delayed advancements in green transition policies and leads to less need to innovate business models, decreasing the degree of competitiveness in the sector and making leaders take a more conservative approach, less open to new ideas .
- On the other hand, the supply chain instability increases the competition between organisations for limited resources.
- Uncertainty and fear at all 3 spheres has an impact in the workplace environment. Less sharing of ideas and information flow.

The second part applies to the willingness to practise strategic **improvisation**. While an acute shock might be a strong driver for improvisation, sector **regulations** might inhibit it. If the improvisation is successful, greater innovation may lead to more **competition** between organisations. The greater the **competition**, leaders are **more open to to new ideas**, affecting the workplace environment in two ways:

- People in leadership positions are **more likely to listen to their team members**, positively affecting **psychological safety in the workplace**.
- Free exchange of ideas and information increases the **willingness to apply strategic improvisation**.

It is noteworthy to infer here that if the strategic improvisation outcomes are unsuccessful, the reinforcing loop will be negative. It leads the way to the variable on the system that is **psychological safety environment**, which represents **third level effects in the model and develops the following logic**:

- An acute energy crisis increases **inflation**, and negatively affects **wages and the overall sense of psychological safety**.
- A factor that could balance out these negative effects are the **diversity and inclusion of the team members**, which are relatively independent of external polycrisis.

5.1.2. Best Case Scenario

The current energy crisis is a major driver for the green transition, and Its negative effects cease to happen soon

In case of the best case scenario, the first level effect would be manifested in the less energy crisis, that would lead to the following:

- A certain degree of **geopolitical stability and controlled inflation**.
- Stakeholders to push for better **green transition** policies and its implementation.
- More **flexible regulations** allowing for a more free market, capable of handling the crisis effect.

Eventually, greater optimism provides an opportunity for the strategic improvisation to be implemented not just as a need of a survival response, but more as an innovation tool.

Relating to the green transition, the positive dynamic would result in the following:

- Quicker and more ambitious advancements in **green transition** policies lead to a higher need for organisations to innovate, thus increasing the degree of the energy sector's **competitiveness and leadership's openness to new ideas**
- A more **stable supply** chain decreases the sector's **competitiveness for resources and prices**. This creates more room for cooperation between organisations.

On the same level, in terms of the willingness to apply strategic improvisation, while the crisis and the regulatory rigidity might inhibit the need for organisational improvisation, the respective development would be illustrated as follows:

- The higher level of psychological safety in the workplace and leaders more open to new ideas, yield a fertile environment to utilise an improvisational approach in response to future risks.
- The more competition between organisations, the more likely leaders are to receive new ideas from team members and apply innovative approaches, driving a higher willingness to apply strategic improvisation.
- In order to foster innovation inside teams, psychologically safe environments are also fostered.

For the last point here, as a third level effect - psychological safe environment, a new connection was made in this scenario:

- Less **inflation** increases the overall sense of **psychological safety**.
- A new connection, driven by **collaboration** - in a **psychological safe environment** is open for workers to advocate for **diversity and inclusion** in the work environment. This, in turn, has positive effects on variables related to the workplace overall.

For further illustrating the scenario analysis, please see the workshop discussion points in the next chapter.

5.2. Scenario analysis workshop and socially robust orientations

The scenario analysis workshop took place on 05/04/2024, via Zoom. All members of the team, our supervisor and two practitioners attended. They are an energy markets expert working in the Netherlands and an ESG Manager based in London.

The meeting started with all attendees presenting themselves stating their name, nationality and a book, film or TV show recommendation, which created a friendly atmosphere. As an introduction to our newcomer participants, we introduced the concepts of transdisciplinarity, socially robust orientations, and strategic improvisation to deal with complex contexts. We outlined our project's timeline and the objective of the meeting was to present and validate the system model and scenarios, welcoming criticism (see the full agenda in the Annex E).

As we presented the worst-case scenario, the participants agreed on the variables and relationships, giving some examples from their point of view, such as:

- The more acute the *Energy Crisis*, the weaker the *Green Transition policy*, because green energy can be more expensive in the short-term. Also, as we have a higher *Degree of Competitiveness*, fewer options are available to generate energy, so, the Green Transition would generally be more expensive.
- If an organisation that supplies energy fails to do so, it affects the entire economy and population strongly, which explains the conservative approach many such organisations practice. This is what we have also observed through some of our own personal experiences. People are fearful if you're willing to apply strategic improvisation because, if

it goes wrong, it causes trauma. In light of this, we developed a new question for future consideration: “How can the sector be more flexible and innovative?”

Regarding the connections between factors, we identified a mistake in one of the connections’ signals that we should correct. In addition, the ESG Manager made a good point about considering the intensity of these connections to Psychological Safety and how they might differ depending on the type of company and the specific context.

The participants also acknowledged the importance of Psychological Safety and Leadership Openness to New Ideas in fostering a culture of innovation and adaptability, especially in response to crises. A participant questioned on who takes the risk of innovation when it comes to OI, and our supervisor responded that the idea was not to implement everywhere at every time, but to understand when, where and how would be ideal to implement it. Despite introducing new concepts at the beginning of the workshop, the participants started understanding, what they mean in practice over the run of the exercise.

Moreover, a participant who has working experience in a national organisation in Brazil stated that they see greater *Willingness to Apply Improvisation/innovation* in the Netherlands, compared to Brazil, which would go against common sense when looking at cultural differences (European cultures being more restrained and having lower tolerance for uncertainty, compared to South American cultures).

Another interesting contribution made by a participant was that, with the Russia-Ukraine war, some countries announced that they were postponing the decommissioning of their nuclear power plants. They suggested that this aspect could be part of a “mix” of our worst and best-case scenarios. The group responded that the Energy Transition itself was a variable in our first system model, and would depend a lot on the time, since the EU’s plan to drive away from Russian fossil fuels (RePowerEU) includes buying more fossil fuels from other countries, arguing that it is necessary in the short-term to transition to renewables later.

The best-case scenario was presented and a comparison between both scenarios was shown. It was interesting that we acknowledged how certain factors, like the *level of competition* or the *psychological safety of employees*, can have cascading effects throughout the system. Thus, the subsequent discussion had a particular focus on this topic. One participant shared that the

diversity of their company's workforce helps them to handle pressure situations, corroborating with the idea that diversity in the workforce is likely to enhance organisational resilience. The other participant stated that companies are recognising the importance of considering people as their most valuable asset, therefore, looking to integrate *psychological safety* into risk management and HR practices, especially during complex crises.

When discussing how leaders can promote a resilient workplace, one participant suggests granting autonomy to staff and embracing flaws, while the other participant advocates for clear communication, mutual support, and frequent feedback sessions to ensure a safe and open environment. The group brought up the possibility of internal platforms for communication as a way to tackle what was suggested, but the participant was referring to one-on-one interactions while acknowledging the value of a common digital space for collaborations. In sum, they emphasized the importance of creating a safe space where individuals feel comfortable sharing their perspectives and ideas.

We finalised the meeting acknowledging the value of the insights shared by the participants. Overall, there was a mutual appreciation for the opportunity to engage in meaningful conversation and a commitment to further collaboration. From this workshop, we derived the following socially robust orientations:

- **Diversity and Inclusion in the Workforce:** Organizations and institutions should implement policies and practices promoting diversity, equity, and inclusion. This increases an organisation's ability to handle pressure situations more effectively and should be viewed as a key element of an organisational strategy to increase its resilience in the face of polycrisis.
- **Integration of Psychological Safety in Organisational Practices:** leaders should promote psychological safety by granting autonomy, embracing flaws, ensuring clear communication, and facilitating frequent feedback sessions with their employees. Regardless of whether they are navigating a polycrisis or not, they should focus on creating a safe and open environment where individuals feel empowered to express their ideas and perspectives without fear of judgement or repercussion.

6. Discussion

Our research dwelled upon questions of organisational resilience in a VUCA-world marked by the emergence of polycrises. It delved into the critical topic of OI in the face of polycrisis, a complex and interconnected web of challenges defining our times, and furthered by contemporary malignant actors and global indecision regarding approaches to climate change. We focused on the energy sector to understand the specific constraints and meanings of OI and how it might enable strategic potentials for uncertain futures. The initial assumption that non-profit organisations might have a natural advantage in improvisation due to their mission-driven nature was broadened in the process to encompass the energy sector of the DACH-region. Overall, it must be highlighted that our findings are based on in-depth insights from a limited number of data and direct sources, and should thus be read as more exploratory than definite. Circumscribing the latter is an open task to future researchers.

We will describe some of the key takeaways and their limitations on a methodological as well as topical level. All in all, our interviewees highlight *leadership* and *organisational culture* as crucial factors for improvisation. Leaders with an openness to new ideas and diverse teams that foster inclusivity and innovation are better equipped to navigate the VUCA world. This finding aligns with the concept of psychological safety, where employees feel comfortable taking risks and experimenting without fear of repercussions. It should be added that the idea of “bricolage”, or the utilisation of whatever is at hand, fits well into this and might describe the on-the-ground situation in an eminent crisis. With the ethos of further researching this, we deem that *leadership*, *organisational culture* and an overall *resourcefulness* are key pillars of improvisation.

Voiced during our workshop, *resourcefulness* entered the spotlight of this research. Participants identified it as a critical factor influencing improvisation, and a necessary antidote to overcoming problems. Organisations with a *culture of resourcefulness* tend to be more adept at finding creative solutions with limited resources. This involves fostering collaboration across departments, promoting employees to make decisions based on their own judgement, and educating a "can-do" attitude. It becomes clear that all this should already be attempted ere a polycrisis affects the organisation in question, as no emergency training can substitute a thorough internal culture, as practised in everyday operations.

In terms of defining what this resourcefulness means, more research needs to be conducted. However, it seems intuitive that a culture of affirmation and empowerment serves to mobilise the creative skills needed to try and act out alternative, in-the-moment pathways and solutions. As a first departing point in theorising this, Donna Haraway's works (2016, 1988) of humans as relational, partial beings might be considered.

When such a stance is taken, it also becomes clear how regulations can play a dual role in either fostering or hindering OI. Strong regulatory frameworks can provide stability but might also stifle improvisation and hinder organisations' ability to respond swiftly to a crisis. Humans are heavily influenced, some researchers would even say “co-determined” (see, i.e., Latour, 2019, 1992), by objects and social institutions around them. Finding the right balance between stability and flexibility then becomes crucial, on an organisational as well as regional and national level. On a macro-perspective this, in a potential scenario, might entail cutting back on profits through laissez-faire guidelines, and prioritising future safety of the actors within an economy.

Central to this future-gear research is the narrativization of scenarios, of which we developed three. In a worst-case, best-case, and trending scenario, we explored potential impacts of polycrises on the energy sector. These scenarios provide valuable insights into how different situations might play out, considering factors like geopolitical instability, supply chain disruptions, green transition policies, and psychological safety within organisations. They further served as a basis for our workshop, in which we discussed two of them with our participants and asked for their feedback, mainly on feasibility. Such scenario-work is both an innovative analytical method, as well as a practical tool to gather and construct knowledge. The key lies in providing as many details as possible and getting into the less explored aspects of the cases at hand. The academic field of “futures studies”, for example, heavily relies on such hybrid approaches, and a closer integration with OI should be developed soon (see Hines et al., 2017).

The workshop discussions with energy sector experts further validated the research findings and unveiled less expected outcomes:

- **Psychological safety and leadership openness** were confirmed as crucial for fostering improvisation.

- **Cultural differences** in improvisation were noted. Interestingly, a participant from Brazil observed a higher comfort level with improvisation in the Netherlands, than in the home-country, thus also challenging potential stereotypes.
- **Diversity and inclusion** were a cornerstone of the collective discussion and emerged as key factors in organisational resilience. A diverse workforce is better equipped to handle the pressure cooker of a polycrisis.
- The importance of integrating **psychological safety** into organisational practices was further emphasised. Leaders were encouraged to promote autonomy, embrace flaws, and foster open communication.

All these insights were condensed in two key findings. These are the aforementioned “socially robust orientations”, which should inform the daily operations of organisations and relevant stakeholders, thus enabling resilience in the face of polycrises. First, **Diversity and Inclusion in the Workforce** are central. Organisations that actively promote diversity, equity, and inclusion are better equipped to handle the multifaceted challenges of a polycrisis. Second, **Integration of Psychological Safety in Organisational Practices** proves valuable. Leaders who create safe and open environments where employees feel comfortable sharing ideas and taking calculated risks foster a culture of resilience within their organisations. Surely these two orientations will not guarantee organisational resilience and only provide a partial perspective, yet should be taken as well-informed initiatives that were validated through various disciplinary perspectives and methodical angles. More research should be conducted on how these orientations tie into OI and the actual, strategic outlook of organisations.

All in all, this discussion itself demonstrates the value of this research. Limits and limitations of the findings of this report were made transparent and the valuable insights into the process itself generated. Many academic inroads were laid open and actionable, future research justified. By focusing on leadership openness, resourcefulness, a culture of improvisation, psychological safety, and diversity and inclusion, organisations in the energy sector, and beyond, can build the resilience needed to thrive in the face of complex and ever-changing realities. On a final note, the term “improvisation” is culturally rendered and often suffers from value-based connotations. Therefore, the correct approach to studying or applying OI is deeply sensitive to these cultural nuances. These terms must be situated and further researched to ensure the success of practical measures and relevance of the field.

7. Conclusion

While Transdisciplinary projects depart from the recognition of conventional ways of thinking, science and practical experience still have a seat at the table. The overall goal of the process is to integrate different types of knowledge, which culminate in socially robust orientations. The main effort of this project was directed towards this type of science/practice-grounded knowledge generation. Specifically, this research work aimed to understand how organizations in the energy sector apply what in the literature is referred to as “Organizational Improvisation” to navigate polycrisis. Originally, our interest was limited to the Austrian context, and in organizations, like oriented towards values rather than profit, like NGOs. We began with desk research, which provided clarifications on the theoretical underpinnings of OI, and helped us to identify the relevant stakeholders in the context we were interested in. With the relevant actors mapped, we were able to select potential candidates for our first “in field” activity, interviews with practitioners and scientists. This task was not easily accomplished, as we faced persistent obstacles to engage with the potential interviewees, but we were able to advance, nonetheless. What was identified in the interviews, and structured after a process of knowledge integration, helped us to sketch a system model, and, equally important, to redefine our guiding question. This system model was the base for the exploration of different scenarios, and fulfilled an important role of communicating the shared understandings in the context at hand, specially when engaging with stakeholders in the second “in field” activity. There, we facilitated a meeting with stakeholders from science and practice, aiming to discuss potential scenarios.

The outcome of the project might be inferred by the quality and depth of the key findings we narrated so far. That said, we were able to demonstrate the importance of diversity in companies. Rather than “just to show” characteristics, our research builds upon the existing evidence in the literature that diversity is an important factor to build resilience. However, in order for diversity to be adequately promoted, it must also be supported by leaders and an environment that is able to accommodate and recognize its value. Leadership, hence, plays an important part to promote appropriate settings in which ideas and innovative approaches can flourish. In this sense, companies can benefit from creating an organisational culture in which the staff can feel free to contribute and bring ideas to the table. Such an environment is the one which ensures the psychological safeguards of its collaborators and fosters the engagement of team members towards more autonomous and open forms of communicating and action.



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Finally, it must be noted that cultural aspects permeate every factor we highlighted here. Therefore, any course of action that aims to facilitate any of the identified drivers of resilience must account to this fact.

Overall, the transdisciplinary approach proved to be an interesting tool to build knowledge, a method that can transform the way stakeholders understand the aspect of reality upon which they are trying to act. It has the potential to generate a positive impact in the community as whole, provided all stakeholders are accurately identified and actively engaged, fostering a reciprocal process benefiting all involved. As future leaders, we see great value in applying the aspects learned in this training, both regarding the content and the methodology, to our future workplaces and projects.

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Annexes

Annex A - List of contacted people and organisations

| Name | Topical Focus | Short Description | CATEGORY | General Emails |
|--|-------------------------------------|--|----------|--|
| Climate Alliance Austria | Climate; Renewables | Climate protection and sustainable energy development; with program to for communities to switch to renewables. With several regional chapters, i.e., Niederösterreich . | NGO/NPO | Office Email: office(at)klimabuendnis.at Managing Director Norbert Rainer: norbert.rainer@klimabuendnis.at |
| Ökostrom AG | Energy; Renewables | Non-profit electricity provider, supplies renewable energy to customers in Austria. | Business | HR and Office Management doris.holzer@oekostrom.at |
| WWF Austria | Biodiversity ; Climate | They have a campaign on the issue of energy efficiency. Co-published with Global 2000 and Greenpeace a scenario-guideline to 100% renewable energy. | NGO/NPO | General Office Contact wwf@wwf.at Managing director: linkedin.com/in/andrea-johanides-b36534271 Head of HR linkedin.com/in/michael-mayer-42057524a |
| Global 2000 - Friends of the Earth Austria | Environment; Political Influence | They have campaigns on issues such as coal power and fracking, i.e., against environmentally detrimental energy-generation . | NGO/NPO | General Office Contact office@global2000.at |
| Energieinstitut | Science; Renewables | Research on energy systems and promotion of transition to | Academia | General Office Contact |

| | | | | |
|--|--|--|------------------|---|
| Vorarlberg | | renewable energy. They also offer consulting services to organisations, etc. | | info@energieinstitut.at Managing Director: martin.reis@energieinstitut.at |
| Verein für Ökologie und Umweltforschung | Science; Renewables | Sees itself as a link between the energy industry and experts in applied research. The aim is to promote a balance between ecological and economic requirements. | Academia | General Office Contact office@voeu.co.at Secretariat Contact, Judith Pallamar: linkedin.com/in/judith-pallamar-784835147 |
| Anti Atom Komitee | Atomic Energy | Petitions and awareness campaigns against the use of atomic energy in Austria. | NGO/NPO | General Office Contact office@anti.atom.at Office Administration: Sandra Wagner (Contact unknown) |
| EuroSolar | Energy; Renewables | Europe-wide union of energy-producers and institutions to advocate for a move to 100% renewable energy. | Business/Network | General Contact info@eurosolar.at |
| Atomstopp | Atomic Energy | Similar to Anti Atom Komitee, yet more known. | NGO/NPO | General Contact post@atomstopp.at |
| Forum Wissenschaft & Umwelt (FWU) | Science; Energy | Union of scientists that publish and research on environment-related themes. Several research projects to energy-related topics, such as atomic energy. | Academia | General Office Contact office[@]fwu.at |
| SOL - Menschen für Solidarität, Ökologie | Environment; Energy; Social Engagement | Union of individuals that conduct projects and campaigns that benefit the environment and humans in it. They have a task force on the intersection of energy and environment . | NGO/NPO | General inquiries, potential HR email: sol@nachhaltig.at |

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|--|-------------------------------------|---|----------------------|---|
| ie, Lebens stil | | | | |
| IG Windkr aft | Wind Energy | Austrian Wind Energy Association. | Business/Net work | General Contact: igw@igwindkraft.at Office Organization Mata Shovkhalova m.shovkhalova@igwindkraft.at Managing Director, Stefan Moidl s.moidl@igwindkraft.at |
| Österre ichisch e Gesells chaft für Umwel t und Techni k | Energy; Science | Association that advocates for sustainable economic and social practices. Sees itself a competence centre that uses its network with the aim to implement innovative solutions for current challenges. Focus group on energy. | Network | General Office Contact office@oegut.at Office Management Irene Sudra irene.sudra@oegut.at Secretary General Monika Auer monika.auer@oegut.at |
| Erneue rbare Energie Österre ich | Energy; Social Engagemen t | The umbrella organization for the promotion of sustainable energy in Austria. | Business | General Office Contact office@erneuerbare-energie.at HANNAH HATOS Office management hannah.hatos@erneuerbare-energie.at Managing Director |

| | | | | |
|---|------------------------|--|------------|---|
| | | | | DI MARTINA PRECHTL-GRUN DNIG martina.prechtl@ern euerbare-energie.at |
| Stadt Wien “100 Projekt e Raus aus Gas” | Government; Energy | Initiative by Vienna to support successful organisations that advocate for a switch of gas-based heating systems to renewable energy. | Government | Initiative Email renewable-energie@ urbaninnovation.at |
| Klimaf ahrplan Wien | Government; Climate | Vienna wants to be climate-neutral by 2040. The Vienna Climate Roadmap sets targets for achieving climate neutrality. | Government | I guess see above ↑ |
| Energy | Energy; Renewables | A leading player in the renewable energy sector in Central and Eastern Europe. With a diverse and growing portfolio of large-scale projects, driving the transition from fossil fuels to cleaner and more sustainable power sources. | Business | Vienna Office, Beata Marton office.vienna@enery. energy Lenka Adamus, Head of HR linkedin.com/in/lenka-adamus-b3a20140 Richard Koenig CEO linkedin.com/in/richard-koenig-9739241 |
| Die Klimas chutzin itiative | Energy; Climate | This government program provides for the advancement of climate protection. Advocates for the conversion of energy systems to domestic, renewable energies. | Government | General Inquiry, Central point of contact: servicebuero@bmk.gv.at Environmental/Energy Related Contacts: Strategic Energy: |

| | | | | |
|---|---------------------------|--|--------------------|--|
| | | | | <p>vi-2@bmk.gv.at</p> <p>Renewable Energy Generation: vi-5@bmk.gv.at</p> <p>Dialogue on Energy Transition and Climate Action: Abt-VI-12@bmk.gv.at</p> |
| Green Energy Lab | Energy; Climate; Research | A research initiative for sustainable energy solutions and part of the innovation campaign "Vorzeigeregion Energie" of the Climate and Energy Fund. | Academia | <p>General Contact welcome@greenenergylab.at</p> <p>Admin Assistant, Rafael Richter rafaela.richter@greenenergylab.at</p> |
| Energy Innovation Austria | Social Awareness; Energy | Platform for energy innovation in Austria. | Government/Network | No Available Contacts |
| Österreichische Koordinationsstelle Energiegemeinschaften | Energy Communities | Central information platform on the subject of energy communities. Provides information, consulting and awareness sessions for energy communities. | Business/Network | <p>General Contact info@energiegemeinschaften.gv.at</p> <p>Mag. Katja Hoyer - Press and public relations 90-23katja.hoyer@klimagafonds.gv.at</p> |
| EU Energy Community | EU; Energy Communities | The Energy Community is an international organisation which brings together the European Union and its neighbours to create an integrated pan-European energy market. Has its secretariat in Vienna. | Government | <p>HR recruitment@energy-community.org</p> <p>General info@energy-community.org</p> |



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Annex B - Email invitation

Dear [[COMPANY] representative] OR [STAKEHOLDER'S NAME],

I hope this message finds you well. I would like to invite your organization to participate in a workshop on **Crisis Management in the Austrian energy sector**. In order for this to happen, I ask if you can identify a professional in your organization that does have affinity with the subject and is willing to take part in this activity.

OR

I hope this message finds you well. I would like to invite you to participate in a workshop on **Crisis Management in the Austrian energy sector**.

We are international student researchers in the European project TISE (Transition, Innovation and Sustainability Environments), supervised by Prof. Lukas Zenk at Danube University Krems. In our work, we investigate *how organizations in the Austrian energy sector deal with the current global crises*. For this purpose, we would like to invite you or one of your colleagues to participate in our online workshop in March.

WHAT WE OFFER

In the workshop, around 5-10 selected experts from practice and science will take part to discuss the topic of crises together. You will not only be able to share your knowledge and experience, e.g. how you have dealt with the pandemic, but also learn how others coped with it. This will provide you with further insights into crisis management during the workshop, and you will also receive a report of the project afterward.

HOW IT WORKS

You do not need any preparation and the workshop is free of charge. We would only conduct a 30 minute online-interview with you in the next two weeks, to gain the first insights into your experiences. The workshop will take place on **Friday, March 15th, from 9.00am to 11.30am** via zoom. Here, we will discuss your perspective and co-create together a first system model to understand relevant factors and their interactions in the response of crises. Notice both the interview and the workshop will be held in English.

In case you are unable to attend, we would be grateful if you could recommend a colleague or employee of yours.

Please let us know at your earliest convenience if you are available to participate or if you require any further information.

Warm regards,



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Master students of Transition, Innovation and Sustainability Environments (TISE) - Organizational Improvisation and Polycrisis group.



NOTE: This is a transdisciplinary research project, bridging the gap between theory and practice by involving experts from both academia and industry.

The interviews, workshop, and final report will be conducted by master students enrolled in the [M.Sc. in Transition, Innovation, and Sustainable Environments](#) program, under [Prof. Dr. Mag. Lukas Zenk](#)'s supervision, from Universität für Weiterbildung Krems.

Annex C - Whatsapp and LinkedIn invitations

[EN]

Hi Kingsley, my name is Elissa Tokusato, I am a master student of Transition Innovation and Sustainability Environments (TISE), an Erasmus mundus programme. My friend Jorcianne, also from Brazil, shared your contact with me, I hope it's ok. I really like your work with easysustainability and I am currently looking for contacts in the energy sector in Austria to conduct a group project on how they deal with current global policrises. Would you know anybody involved in the Austrian energy sector?

I can send you more details of the work afterward.

Thank you so much for your attention! 🙏😊

[PT]

Olá mulheres, tudo bem? Meu nome é Elissa, sou estudante de mestrado em Transition, Innovation and Sustainability Environments, um programa financiado pela União Europeia, e trabalhei com algumas brilhantes mulheres presentes aqui no grupo, pelo CDP e CEBDS 😊

Meu grupo de trabalho e eu estamos buscando profissionais do *setor de energia na Austria* para conduzir um trabalho transdisciplinar em gestão de crises. Vocês conheceriam alguém trabalhando na Áustria com a temática de energia? A participação consiste em uma breve entrevista e um workshop de 2h, em inglês.



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Agradeço muito se puderem compartilhar algum contato comigo, no privado posso passar mais detalhes também.

Muito obrigada pela atenção!

[LinkedIn]

We, a team of international student researchers from the EU master's @TISE (Transition, Innovation and Sustainability Environments), are excited to invite you to our upcoming workshop on **Crisis Management in the Energy Sector**. Under the guidance of Prof. Lukas Zenk, expert on organisation improvisation, at Danube University Krems.

The workshop is a part of the process of exploring how organisations within the Austrian energy sector are tackling the current global crises. This is a unique opportunity for you to share your experiences and knowledge on crisis management, particularly after the COVID-19 pandemic, and the ongoing wars.

Join us on **Friday, April 5th, from 10.00am to 12.00pm CET via Zoom** as we delve into insightful discussions and collaboratively develop a system model to understand crisis management factors and interactions.

RSVP at <https://forms.gle/rTHpyDBvt09iDHS1A>

Looking forward to your participation and feel free to extend this invitation to your colleagues who might be interested.



How do organisations in the Austrian energy sector respond to polycrises?

Join us in a participative workshop and benefit from transdisciplinary knowledge!

15.03.2024

With YOU, we are trying to find out:

- **Which values make an organisational culture resilient to polycrisis?**
- **How does value-based organisational culture enable higher resilience?**

15.03.2024 FROM 09:00-12:00 (GMT +1)

Annex D - Practitioner interview transcript

Interview 08/03/2024:

former Energy & Operations at *decarbon1ze GmbH*, Assistant to CFO and CEO

Transcript

1. Can you please introduce yourself and briefly describe your professional and academic activities in the energy sector?

Complete MA. in Industrial Engineering and Energy Economics. Sustainable Electric Grids and Market Design of Fossil-Free Power-Sector. Working Student at decarbon1ze, a start-up in Berlin that specializes in enabling flexibilities in the electricity sector and maximizing efficiency in energy-usage, also low-voltage areas.

2. Are there differences between the cultures in the companies you worked for?

First working experience in a medium-size company with 150 working people, based in the medical technology sector. An established company and slow, bureaucratic structure. Also experience at Institute of Energy and Thermodynamics. Familiar.

Then at Deloitte in Auditing in a complete different field. Culture very toxic and forcing employees work many hours and high performance culture. 50 hours per week. Would never go back to this environment.

decarbon1ze very innovative culture and fast-adoption company. Present at all strategic decision making meetings. His word had value and an inclusive culture. Very cool experience because they are proficient and he learned much. Many hours of work but because he chose to do it and it was diverse and not repetitive. This led to him becoming self-driven.

3. Do you perceive any changes in the organizational culture and governance throughout the past 5 years? Do you see them related to an adaptation towards previous crises?

He was there one year and the Ukraine war had already started and then inflation hit but he didn't really recognize a change. All the company did was R&D and develop projects, so that was the focus. The funding was set and so were the goals. As it was basically a software company it didn't hit them. On the contrary, it was beneficial since the product they had was electric heating that was used to substitute carbon-based heating, and the

inflation in fossil-based prices boosted their product. They are green-tech and would have profited anyways but this was faster. The gas crisis kind of benefitted them and increased social impact.

4. How would you describe your experience with crisis management, i.e., as more academic or first-hand, dealing with crises in the corporate environment?

Actually no. The crises didn't really affect the companies that they had to manage the crises actively. Or he didn't know about it.

5. Can you identify what are the polycrisis affecting Austria/the energy sector?

*I can talk about the German energy sector. German industry is dependent on fossil fuels, especially gas and oil. Very dependent on **autocratic countries** to provide resources. Always the possibility like with Russia that a change in political regime changes drastically, as in 2022, when industries that were close to the energy sector couldn't produce anymore: Glass, paper, copper, steel etc., because it was too expensive to produce. This is one big factor.*

Energy-crises-triangle. One corner is "security". One deal, i.e., is with Qatar until 2025 because equally unstable, also from a value-perspective since Qatar kicks human rights with its feet. This might increase the shocks in the industry, and this is exactly what the industry doesn't like.

*Another example: According to **inflation**, ECB bumped up interest rates by 4%, which is really bad for financing for renewable because they have very high up-front costs. High capital costs to build them thus become even higher. Compare this to fossil-based powerplants costs that have low up-front costs and high maintenance costs. This makes the business case of renewables worse.*

A major factor in this is the possibility of price shocks that are very bad for economy.

6. If you had any professional experience dealing with a crisis in a corporate environment, can you give examples, and tell us how did you and the company navigate this moment?

No experience. Keep working.

7. Which crisis could affect the energy sector in the next 5 years, in your opinion?

China attacking Taiwan would be very bad because more than 90% of solar panels are from China. Similarly Taiwan produces 95% of semi-conductor chips by TSMC, which are needed for energy transition. Further, the Germany and Austrian governments have to react to such a crisis and maybe have to cut imports.

Also Trump's possible re-election is a constant source of insecurity, since this might lead to Ukraine losing the war and unknown international deals. He will force more nationalism and less cooperation, also within NATO. He openly said that all members must pay 2% of GDP as defense expenditure. This has implications as it puts pressure to spend money on military that could be spent otherwise, and especially the resources and working power that are diverted. Military sector is the least value-based sector as it produces nothing of social importance.

8. Do you think some organizations are more prone to improvise than others? Which?

Who will not react fast are the grid-operators, they are the slowest people. They have natural monopolies and thus are regulated in a way that they get money, no matter what they do. Taxes and bills will pay them regardless, thus no incentive to be fast.

A really good example would be the economic ministry of Robert Habeck, from when it reacted to gas crisis in 2022, they build many LNG terminals in North Sea and now provide much electricity to people. Good example of how state is a major driver, maybe the only one who can make such big investments and react to changes.

9. Is there any difference regarding organizational culture that impacts how companies deal with crisis?

A good thing about the energy sector is that they try to tackle many crises, for example the climate crisis. They are on the good side.

Hierarchical structures are less resilient than more open, participative, horizontal cultures, because in a crisis it's good that everyone can participate. We need all in the company to help and adapt because the change needs to go through the whole company. A bottom-up approach is good because it motivates people to be part.

10. Is there anything you want to add we didn't covered with our questions?

Nope.

Annex E - Workshop's agenda

05/04–Friday - Meeting with Victor and Danilo - 10:00 am to 11:30 am - Zoom meeting

10:00 Intro to the call - 10 min

Everyone present yourself - Name, country, organization and position

Ask if it's OK to record.

10:10 Intro to our project - 10 min

- Our objective (answer the guiding question and co-create orientations).
- Screen: slide with a timeline of our work.

Tell them about the report and ask if they would like to be anonymised.

Welcome feedback and criticism.

10:20 Presentation of Status Quo - 10 min

- Definition Polycrisis & Improvisation.
- Guiding Question.

How do organizations in the energy sector respond to polycrises?

- ❖ *Which values make an organizational culture resilient to polycrisis?*
- ❖ *On what should management build to foster high resilience in polycrises?*

10:30 System Presentation - 15 min

- Slide
- Overview of the factors, classification (global, regional, organisational), connections, main loops (identified as dimensions).
- Questions

10:45 Scenarios and discussion

11:25 Closing Remarks

Final considerations and thanking the participants

Annex F - Trending Scenario

Trending scenario: Some progress in the workplace, relating to the energy crisis, and policy variables, but not enough.

Assumptions:

- Slow to react regulatory environment, in the context of stagnant progress resolving global instability and the energy crisis
 - 1)
 - Cumulatively slow progress solving the energy crisis: developed states are securing energy supplies at the detriment of developing states
 - Current rate of global destabilization expected to continue in face of lackluster efforts to maintain rules based order
 - Insufficient regulatory incentives to promote expedient green transition.
 - Cooling, yet high inflation
 - Many states have rigid energy related regulations, creating consolidation and lack of flexibility in the sector
 - Leads to decrease in competition in the field
 - Organizations are gradually becoming more diverse and inclusive
 - Leadership is gradually becoming more open to new ideas
 - Experience with improvisation during COVID makes more organizations familiar and comfortable with that process
 - Degree of psychological safety uncertain, however: workers are less engaged and more stressed, but also working from home and have better access to mental health resources

2) Second-level effects

2.1. Green transition

- Delayed advancements in green transition policies lead to less need to innovate and, thus, less leadership's openness to new ideas and the degree of the energy sector's competitiveness in general.
- On the other hand, more supply chain instability and inflation increase the sector's competitiveness for resources and prices.

2.2. Strategic improvisation

- Energy sector regulations discourage organisations' willingness to apply strategic improvisation. The less strategic improvisation, the less innovation, which leads to less competition between organisations.
- The less competition in the sector, the lower the probability of organisations' leaders being open to new ideas. This, in turn, affects the workplace environment in two ways:
 - People in leadership positions are less likely to listening to their team members, negatively affecting the psychological safety in the workplace. This is compounded by generally high employee stress, and lower engagement with ones work environment.
 - Less exchange of ideas and information lowers the willingness to apply strategic improvisation. However, increased movement of workers between organizations as workers seek higher engagement make actually increase the exchange of ideas,
- Currently in a more or less normalized economic environment following the improvisation frenzy of COVID and conflicts in Ukraine and the Middle East, pressure to continue implementing improvisation may be diminished
- If successful, However, after the improvisation experience in the prior years, organizational leadership now has experience with improvisation and may be more comfortable and open to its continued implementation. This may lead to more innovation, which leads to more competition between organizations.
- The more competition, the higher the probability of organizations' leaders being open to new idea affecting the workplace environment in two ways:

- People in leadership positions are more likely to listening to their team members, positively affecting the psychological safety in the workplace.
- More exchange of ideas and information increases the willingness to apply strategic improvisation.

If the strategic improvisation outcomes are unsuccessful, the reinforcing loop will be negative.

Third-level effects - Psychological safety and Workplace Inclusion

- An acute energy crisis affects generates inflation, and negatively affects wages and the overall sense of psychological safety.
- A hectic global political and economic environment resulting from polycrisis often has negative effects on individual psychological safety, which can impair organizational PS as well
- Sudden lower levels of psychological safety might lead people to be more cautious and averse to innovative management approaches such as strategic improvisation.
- Another factor that affects a psychologically safe workplace is the

Steady improvements in workplace diversity and inclusion of the team members can improve psychological safety as more workers of various backgrounds fit in and feel more accepted. This inturn changes how leaders promote a collaborative approach: a more diverse workforce generally leads to a more diverse, open and collaborative leadership.