THE ACTION FOR CLIMATE EMPOWERMENT HACKATHON 2022 – REFLECTION REPORT

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Introduction

Event Overview

Recognizing the importance of fostering climate action and empowering young leaders to mobilize climate solutions, the ACE Hub together with the state NRW and ekipa organized the 2022 Action for Climate Empowerment Hackathon for three days from the 26th-28th of September 2022.
The ACE Hackathon was planned to achieve the following objectives:

1. To contribute to efforts to build the skills and competencies of youth to collaborate and co-create innovative solutions to tackle an existing climate challenge.
2. To identify short- to medium-term solutions for a transition to clean energy2 at the local level.
3. To provide an opportunity for local and international youth to connect, share knowledge and expertise and learn from each other.

Based on these objectives, the following 3-day agenda was developed and executed:

ACE Hackathon Agenda

Day 1 - 26th of September			Day 2 - 27th of September			Day 3 - 28th of September		
TIME	AGENDA	Location	TIME	AGENDA	Location	TIME	AGENDA	Location
09:00PM - 09:30AM	Participants Arrival & Registration & Coffee Break	Main Stage/Presenters Area	09:00PM - 09:30AM	Design Thinking: Define	Main Stage/Presenters Area & Adjoining Rooms	09:00PM - 09:30AM	Design Thinking: Test	Main Stage/Presenters Area & Adjoining Rooms
09:30AM - 10:00AM			09:30AM - 10:00AM			09:30AM - 10:00AM		
10:00AM - 10:30AM	Welcome Speech	Main Stage/Presenters Area	10:00AM - 10:30AM			10:00AM - 10:30AM	Coffee Break 1	
10:30AM - 11:00AM	Kickoff Challenge	Main Stage/Presenters Area	10:30AM - 11:00AM	Session SDG Action Campaign	Main Stage/Presenters Area	10:30AM - 11:00AM	Guest Speaker: UNITAR Presentation	Main Stage/Presenters Area
11:00AM - 11:30AM			11:00AM - 11:30AM			11:00AM - 11:30AM	Design Thinking: Pitch & Submission Template	Main Stage/Presenters Area & Adjoining Rooms
11:30AM - 12:00PM	Remarks Deputy Executive Secretary/Introduction Design Thinking Methodology	Main Stage/Presenters Area	11:30AM - 12:00PM			11:30AM - 12:00PM		
12:00PM - 12:30PM	Lunch Break		12:00PM - 12:30PM	Lunch Break		12:00PM - 12:30PM		
12:30PM - 13:00PM			12:30PM - 13:00PM			12:30PM - 13:00PM	Lunch Break	
13:00PM - 13:30PM	Speed Dating & Team Matching	Main Stage/Presenters Area	13:00PM - 13:30PM	Design Thinking: Ideate	Main Stage/Presenters Area & Adjoining Rooms	13:00PM - 13:30PM		
13:30PM - 14:00PM			13:30PM - 14:00PM			13:30PM - 14:00PM	Finalize	Main Stage/Presenters Area & Adjoining Rooms
14:00PM - 14:30PM			14:00PM - 14:30PM			14:00PM - 14:30PM		
14:30PM - 15:00PM	Guest Speaker - Bio Energy Park NRW	Main Stage/Presenters Area	14:30PM - 15:00PM			14:30PM - 15:00PM		
15:00PM - 15:30PM			15:00PM - 15:30PM	Coffee Break 2		15:00PM - 15:30PM		
15:30PM - 16:00PM			15:30PM - 16:00PM	Design Thinking: Prototype	Main Stage/Presenters Area & Adjoining Rooms	15:30PM - 16:00PM	Coffee Break 2	
16:00PM - 16:30PM	Coffee Break 2		16:00PM - 16:30PM			16:00PM - 16:30PM	Final Pitches: Better Together NRGie Keep it Clean PhiBage ISG Energy Solutions	Main Stage/Presenters Area
16:30PM - 17:00PM		Main Stage/Presenters Area & Adjoining Rooms	16:30PM - 17:00PM	Blocker: SDG Action Campaign Award Ceremony	TBD	16:30PM - 17:00PM		
17:00PM - 17:30PM			17:00PM - 17:30PM			17:00PM - 17:30PM		
17:30PM - 18:00PM			17:30PM - 18:00PM			17:30PM - 18:00PM	Presentation of Winning Teams & Final Speech	Main Stage/Presenters Area
18:00PM - 18:30PM			18:00PM - 18:30PM			18:00PM - 18:30PM		

25 local and international youths were selected and invited to the UN Campus in Bonn to work on 'Innovative Solutions for Clean Energy on the Local Level'. To empower them in their task, the agenda included expert keynote speakers internal and external to the UNFCCCs ACE team, a team matching session, workshops and working sessions for the participants. More information on the hackathons content will be discussed in detail in the following report, including reflections after each section.

Challenges

The aim of clean energy solutions on the local level calls for a grand-challenge and problem-oriented approach to innovation, which strives on clearly defined problems and challenges, often giving rise to local ecosystemic experiences and novel social-technological solutions (Gerli et al., 2020). Therefore, a challenge based on two distinct problem statements was developed for the 'Innovative Solutions for Clean Energy on a Local Level' hackathon.

Considering current geopolitical crises, the need to address climate and environmental issues as well as technological potential for increasing resource efficiency opens novel spaces for socially relevant innovations. In line with this, the topic of clean energy solutions is a focal point in current research and development around climate issues, confirming its status as a grand challenge. Therefore, the challenge front and center chosen for the ACE Hackathon has been the development of novel approaches to implementation of green energy solutions in North-Rhine-Westphalia through raising awareness, education as well as participation.

To make this grand challenge more tangible for hackathon participants, two concrete problem-statements have been developed:

> **Problem statement 1:** "*Incentivize the use of renewable energies in companies and private households as well as concepts to encourage these actors to install solar panels on buildings.*"
>
> **Problem Statement 2:** "*Cooperation models between large cities and local communities in order to implement renewable energies on a broad scale*."

For the elaboration of possible approaches, participants were given comprehensive challenge briefings including background information, guiding questions for inspiration as well as a comprehensive knowledge base, allowing them to fully comprehend the given problems.

Methodology

Considering the pace of change in current times, our capacity to learn and collaborate to approach the grand or 'wicked' challenges of our time will determine the impact of innovation (Wells-Papanek & Pecoraro, 2017). Co-creation leverages interdisciplinarity and the joining of different knowledge bodies and perspectives (Fleischmann, 2015; Leavy, 2012). Hence, successful innovation depends equally on both – our ability to amass new knowledge and our accomplishment to put multidisciplinary knowledge to

work. Therefore, we need to co-create the future through collaborative innovation. Based on these premises, a comprehensive methodological approach was developed prior to the event, aiming to create an environment in which participants could engage collectively and creatively to develop novel ground-breaking innovations. A combination of science-based team-matching, design thinking, and pitching () was chosen to enable successful co-creation and co-innovation.

Team Matching

Successful co-creation will critically depend on our ability to put the right knowledge to work, which translates to our ability of bringing the right people together. The two main approaches to team formation are skill-centered and relation-centered, with the former focusing on human capital and the latter on social capital (Fleischmann, 2015). To use one without the other will lead to the formation of groups, but fail to accomplish the formation of teams, who's motivation to accomplish depends on their willingness to work together – a team spirit. Hence, a combination of the two was chosen.

In line with the skill-centered approach, participants were selected prior to the event based on their diverse contexts, expertise, backgrounds, and localities, ensuring multidisciplinarity of human and social capital. For example, half of the participants were from NRW, while the other half came from countries outside Europe such as Africa, America, and X.

Taking a relation-centered approach, a team matching session involving a speed dating task was incorporated as one of the Hackathons first sessions. Participants focused on getting to know each other. A questionnaire was provided, the contents of which were supposed to serve as inspiration for participants to find out more about each other's interests, experience, and skillset. In groups of four, the participants were tasked to introduce themselves in 5 minutes. After the initial 5 minutes the groups switched to ensure everyone getting to know one another. This was repeated six times while interchanging the groups each five minutes. After getting to know each other, the participants were then tasked to form multidisciplinary and international teams of 3 to 6 people.

All in all, the team formation process has worked out well and as expected. However, due to time limitations, matching participants into teams might be done a priori in in online team matching sessions for coming hackathon events as this may enable a better focus on developing relevant solutions throughout the event. A less time intensive exercise might be incorporated in the beginning of the event to 'break the ice'.

Design Thinking

Introduction

The Design Thinking methodology goes back to creativity studies undertaken in the 1940s and 50s by psychologists, who over time developed creativity techniques from their results (Gordon, 1961; Osborn, 1953). Originally, design thinking was picked up by designers, who incorporated it into their product design process focusing mainly on aesthetics. Gradually however, design thinking has become well established in a wider context such as product and business model innovation, entrepreneurial idea development, and even strategic management topics (Magistretti et al., 2021). As a human-centered, team-based, and iterative approach to innovation, design thinking is often chosen as the mentality to approach the grand or wicked challenges of our time, successfully unlocking collective creativity to its full potential. Its ability to bring together multidisciplinary teams and instill within them a mindset problem and solution-exploration, has proven itself time and again in successful results. Therefore, design thinking was identified as the methodology of choice for the 2022 ACE Hackathon.

As mentioned above, transdisciplinary skill development is key to addressing the challenges facing us today such as clean energy transitions, combating climate change effectively. Thus, the following learning goals based on the application of design thinking have been anticipated:

ENTREPRENEURIAL SKILLS

1

Various studies have found design thinking to be effective in building entrepreneurship skills, which in turn have become more and more important in today's business worlds, where entrepreneurially minded people are needed to approach and solve wicked problems in innovative ways (Klenner, 2021).

COLLABORATION, INTERPERSONAL & PROJECT MANAGEMENT SKILLS

2

As an inherently collaborative method, design thinking has further been found an excellent method to build both collaboration and interpersonal skills as well as project management skills (Lynch, 2021; Lahiri et al., 2021; Magistretti et al., 2021) due to teaching empathy and teamwork. Participants will have to both put themselves into the shoes of others and understand problems that may – on the micro-level – not be their own, while navigating both problem- and solution space with team members

through a multitude of perspectives. For these reasons, design thinking as a method has been used increasingly in higher education in recent years.

PROBLEM SOLVING

3

As a third example, design thinking has been found to improve people's ability to solve problems across a range of domains (Luka, 2014). One reason might be that while working in multidisciplinary and multicultural teams, people might be confronted with more perspectives and are forced to explore many different opinions and direction in an iterative trial-and-error process, preparing them to take decisions based on a more solid knowledge base.

The hackathons first design thinking session introduced participants to the methodology and its broader understanding. Participants were being introduced to the importance of human-centered thinking and working as part of design thinking. Human-centered in today's digital world meaning the collection of data and knowledge about a certain stakeholder group, where organizations and institutions alike continuously attempt to improve themselves and the world, anticipating the future. Participants were also explained in detail about the significance of approaching the challenges presented as a team. Design thinkers often talk about the "myth of the creative genius" that supposes single individuals as big inventors through so called light-bulb moments, in which they single-mindedly develop the next big invention. This myth is revoked by the design thinking methodology and instead collaborative approaches are preferred, embracing broad views, transdisciplinary and transcultural perspectives mixed with local specifics creating a heterogeneous and holistic process - always both problem and solution-oriented. And lastly, participants were made familiar with the iterative nature of design thinking, which relies on going back and forth between the five steps (depicted in Fig.1 below) – fluidly moving between exploring problem- and solution spaces – to enable synergetic solutions that address the wicked challenges of our time.

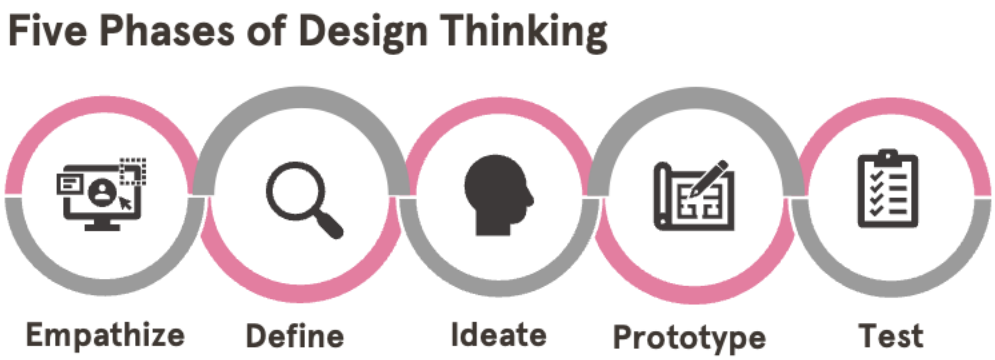

Fig. 1

Each of the five steps were subsequently explained to participants. For each a number of selected methods from the design thinking toolbox were selected and applied to the chosen challenges in 90-minute sessions over the three days of the hackathon. The following section will first outline and then reflect upon each of these sessions.

Empathize

Beginning with the empathize step, participants were introduced to the importance of empathetic research to fully grasp and understand problems that are not their own. Empathetic research lays the base for any successful innovation based on design thinking. It is a process of going broad, in which one zooms-out, taking on a bird's perspective to demarcate the boundaries of a given problem-space at hand. The questions supposed to guide the empathy process are "who are the relevant stakeholders?" and "What are their perspectives and pain points?". The different methods of the empathy toolbox serve as prompts, enabling the answers to the above questions over time. Serving as a low-threshold entry point for participants, stakeholder mapping was applied to the challenges at hand. The method serves to identify all stakeholders involved in a certain problem-space and prompts participants to both think and research their perspective and pain points as well as identify potentially enabling or disabling relations between the many different stakeholders involved in clean energy transitions at the local level. Thus, the outcome of the empathy step is building a comprehensive mind map identifying, clustering, and analyzing the key stakeholders within a certain problem space.

Throughout the session, the teams used provided knowledge base and started collecting the stakeholders from (renewable) energy industry, politics, institutions, organizations, and private households. Thereafter, they analyzed stakeholder's motivations, interests and (financial) dependencies.

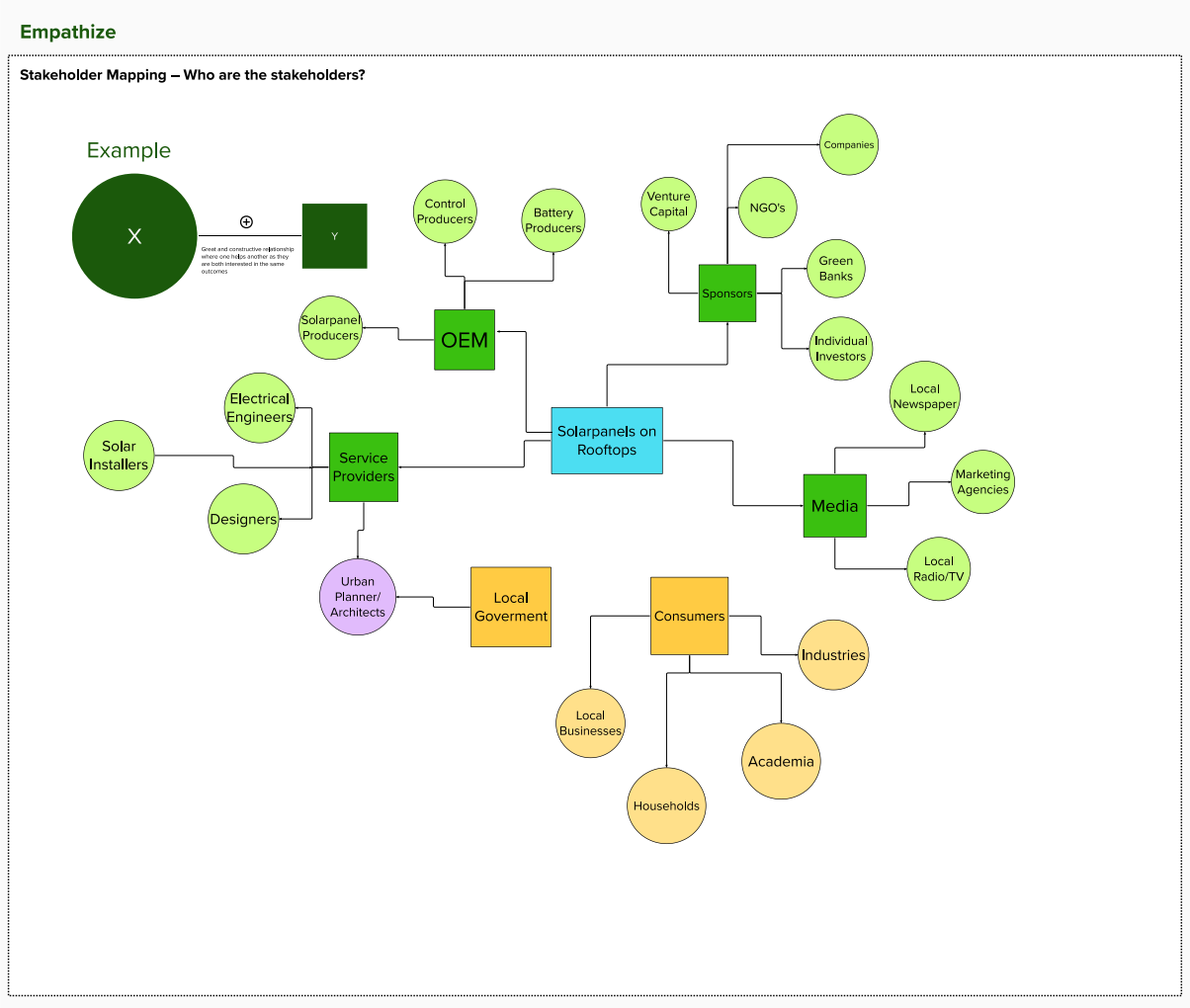

Fig.1 Example of a stakeholder map developed during the Hackathon.

To build a stakeholder map proper research is necessary for an in-depth analysis. The research time within the hackathon was limited, which led to a less comprehensive stakeholder map possible otherwise. However, the results of the session clearly showed that participants were able to develop a joint understanding of the chosen problem statement, acknowledged the central problems of different stakeholder groups and identified dependencies between individual stakeholder problems. Therefore, the teams established an excellent foundation for further elaboration. Considering the human-centered nature of design thinking, a notable limitation is the lack of field work undertaken to validate the research and assumptions about the different stakeholders. For future events of a similar kind, the provision of representatives of relevant stakeholder groups might be considered and arranged beforehand.

Define

After identifying a problem-space and its key constituents a clear problem definition within the boundaries of this space needs to be generated. Thus, participants were asked to synthesize and redefine their findings form the empathy mode into an actionable problem statement. The define step is one of, if not the most difficult in the design process. Often, problems are not clearly understood and defined before solutions are being generated, leading to less-than-optimal results. The reason for avoiding the dealing and defining of problems is because it can be quite difficult to fully comprehend the complexities and intricacies of wicked problems. This means that an actionable problem statement needs to be narrow yet broad enough to create a broad enough solution-space to be explored. Thus, a clear problem statement provides guidance and direction throughout the innovation process, defining a solution-space that is broad enough to enable creative thinking. Therefore, multiple methods have been developed to help design thinkers reach that goal.

A method suitable to decrease the complexity of information and tangibly redefine the more abstract-level information from the empathy step are personas. Personas are an amazing prompt to enable deep understanding of human's thoughts, feelings, and actions. Personas are fictional and always representations of certain stakeholder groups. Through personification of abstract information, the human brain is aided in understanding each other's problems. Thus, teams were tasked to create personas representing different stakeholder groups, enabling a human-centered approach to exploring the problem space defined more in depth. Questions they were supposed to ask themselves throughout were "What could a persona representing a stakeholder look like?", "How do they live?", "What are their personal motivations, problems and intentions?". Based on three different building blocks derived through the application of the first two methods (i.e., stakeholder group…needs/problems…key insight/learning), actionable problems were defined, and the teams had to jointly agree on an actionable problem statement to further guide their innovation efforts. Based upon these statements, they then developed "how might we…?" questions such as:

"How might we incentivize private household to invest in solar panels more effectively?" "How might we overcome the common obstacles in the clean energy transition for companies?" for problem statement 1, and

"How might we establish a collaboration model which connects key stakeholders?"
"How might we achieve an attractive collaboration model that encourages cities to work with municipalities?" for problem statement 2.

As expected, this step was quite challenging for participants as clean energy transitions on a local level present complex and intricate webs of issues and facets amounting to the bulk of a problem that is hard to grasp let alone define. We noticed that many teams aimed to find 'one stop shop' solutions, tackling all or multiple problems simultaneously and, therefore, came up with too broad problem statements, which may lead to more vague and less targeted solutions. Given the lack of in-depth analysis based on time pressures this was not surprising. All in all, and especially considering the timing issue, teams managed very well in identifying key problem. All problems were suitable to open a solutions-space for exploration.

Ideate

The definition of a problem opens a solution-space to be explored. Ideation as part of design thinking means the process of idea generation. Based on the previously defined problem statements, participants were now asked to switch from problems to solutions and develop ideas to solve the problems.

Considering the main critique of "group think" on the design thinking methodology, a combination of individual-level and collective-level methods was chosen for application: "Crazy 8", a core design sprint method and "visual brainstorming" to visualize ideas for collective ideation.

The crazy 8 method is based on the premise that the first ideas developed are most often the least inspiring or innovative ones, whereas further fast generation of ideas will unlock the crazy and truly innovative ones, which are often needed to release creativity to its full potential. The teams get eight minutes, to individually write down at least eight ideas. Hereby, the method encourages 'out-of-the-box thinking' by enabling every team member to be individually creative as it does not matter whether the developed ideas are practical, implementable, or realizable.

Depending on team size, each team ended up with 24 to 48 ideas following the crazy 8. They were now tasked to develop a mind map by visually brainstorming on their respective ideas, continuing the ideation process collectively. Thus, and comparable to stakeholder mapping, visual brainstorming makes use of visualization to capture ideas, organize information, and decrease complexity of information by using a sort of mind map. The teams were asked to write their problem statements in the middle of their mural boards and then collectively develop their ideas further. They revisited their ideas and wrote down thoughts that came up in relation to them as well as highlighted connections or correlations between them, and even elaborated further on particularly interesting ones. Using color, they were asked to finally highlight the ideas with the highest potential. In the final step the participants were supposed to reflect on these

preferred ideas by playing one of two scenarios: "How would you realize your idea with a budget of EUR 1,000?" and "How would you realize your idea look with a budget of EUR 1,000,000?"

In the ideate step of the workshop the overall goal is not only to come up with a broad variety of solutions but also to elaborate on them and connect them. By defining and then exploring solution-spaces for the respective two problem-statements, teams were able to permeate their complexities and intricacies, enabling them to move beyond the expected. This part is usually the most exciting for participants, since they finally get to "create" something new to solve a real problem. However, it is also challenging because using creativity to its full potential, requires design thinkers to stay open-minded. As mentioned above, it is common that once confronted with a problem, participants immediately focus on (im)possible solutions. Design thinking requires thinking about problems first and foremost to enable moving past the obvious solutions. Although the ideate step contains the application of multiple different methods, participants needed to constantly be reminded not to focus on one solution to early on to not limit their creative exploration of the defined solution-space. Accordingly, some of the teams were convinced of a particular idea at an early stage, which made it difficult for them to push their ideas as much as possible out of the box. However, all teams came up with viable ideas for possible concepts to be developed during prototyping.

Prototype

After developing the first ideas to solve a defined problem, the fourth step of prototyping focuses on the development of the first rough prototypes. Since design thinking is based on prototyping and testing in rapid succession, it assists the design thinkers in subsequently deriving superior prototypes that can be successful in the market. Thus, prototyping is a process on a continuum from low- to high-fidelity prototypes, the levels of which can be described as conceptual, physical, and looks-like-works-like. While the solving of wicked problem entails positive change for societies and environment, businesses and product ideas must be economical as well as ecological. The rapid succession of prototyping and testing aims to ensure exactly that.

The method of parallel paper prototyping was used during the hackathon, using the creation of a high number of rough prototypes on paper individually and in parallel. The biggest critique on the design thinking methodology being loss of voices throughout the process due to group think developments, ensuring the working on an individual level will allow every participant ideas and voices to be heard.

Additionally, the exploration of multiple design alternatives simultaneously, will prevent the focus on only one too early in the process. Additionally, it will enable the evaluation and combination of multiple features or elements into a more superior prototype as each individually might have been.

The participants were asked to use the chosen ideas from the ideate step and individually put pen to paper, visualizing a conceptual prototype. The focus of this session was not on the creation of a perfect prototype but on making the developed ideas tangible. This task was challenging for participants as it depended on lifting an idea to the conceptual level, thus, working from the abstract to the concrete. Again, some teams were already committed to a specific solution prior to prototyping, and so not every team took the opportunity to think outside-the-box. However, even though prototypes were mostly going in similar directions, there were subtle but important nuances in different prototypes. As a result, teams came up with general directions such as specific cooperation models, digital platforms, or even educational programs to test in the following step.

Test

To improve upon the developed concepts, they need to be tested. Testing is the process of putting the developed artifacts into the different relevant stakeholder's environments, real-world or fictional, to gather feedback and refine the developed concepts.

Considering the stage of the prototypes, a team internal method was chosen for application. The '4-Quadrant' method uses a feedback capture grid to identify remarkable, confusing, and negative things about a prototype as well as give room to just down new ideas that were sparked.

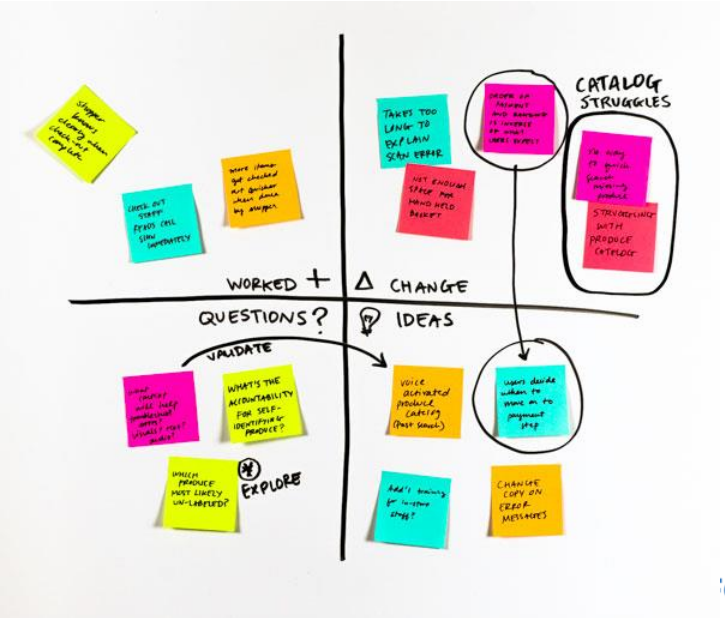

Fig. 3 Feedback Capture Grid for team internal testing

This step is designed to gather as much individual feedback as possible in a short period of time to develop the concepts further. Considering the time pressure, feedback was collected on the team-level and discussed openly. Since the testing fell on the same day as the final pitches, the pressure to have finished or at least have a solution visualized was high. However, talking to the different teams revealed that they the categories provided by the 4-quadrant method to provide feedback, helped participants to structure their joint discussion to finalize their prototypes for pitching.

Reflection

All in all, the design thinking process went very well. The obstacles that arose are common ones, commonly occurring when participants are new to the design thinking process. As design thinking is often referred to as a mindset, it takes time and practice to achieve. For inexperienced design thinkers, it is often difficult to trust the process and complete the tasks in the way they are presented as it pushes the participants to step out of their comfort zone by focusing on problems first and foremost. Accordingly, one shortcoming was the premature focus on solutions, as opposed to dealing with the problems complexities first. Since the key to problem-solving is to understand the problem in all its dimensions, this surely hampered the quality of final solutions.

Another shortcoming was the time pressure within the sessions. Working in a pressure environment is generally challenging but being expected to come up with viable solutions to grand or wicked challenges is even more so. Most design thinking methods have set time frames to avoid overthinking, which can lead to limiting one's creativity. The 'Crazy 8' method for example is limited to eight minutes, mindfully pushing the design thinkers beyond the expected by using time pressure, successfully eliminating overthinking. Considering Parkinson's law of 'work expands so as to fill the time available for its completion', it is to be said that if asked, there is always too little time to complete a task.

The third and last shortcoming was the pressure of coming up with a presentable solution that is supposed to be pitched in front of a panel of experts. Although to be expected in a hackathon where the over-arching goal is to come up with viable solutions in a short amount of time, this last shortcoming significantly hampered participant performance during the last two design thinking steps. Hence, the key takeaway being that it the design thinking process should be finalized before the last day or the day of the final pitches. Thus, clearly splitting the solution development

process from the final preparations swill ensure that participants have a clear focus on solution development and then solution presentation.
All in all, using the design thinking method, participants were able to approach innovation in a structured and well-thought through manner. Consequently, the methods used guided them through aspects of market research, target group definition, competitor analysis, business modelling, prototyping, and testing in a creative way, enabling them to finally present a variety of different solutions.

Pitching

Within our economy it is common to pitch ideas, concepts and solutions to a group of colleagues, pacemakers and transformation drivers. There are multiple different frameworks that allow you to structure and develop a successful pitch. A common and successful way of developing effective pitches, follows the structure of problem, goal focus, solution, vision, and team.

Starting with the presentation of a problem aims to build an immediate emotional connection to the audience. The question to be answered in a concise and easy manner is "What is the key problem and who are the affected/interesting stakeholders you defined in your process?". This is logically followed by explaining the goal focus, guided by the question of "What are the key benefits of the problem being solved and why is it important to do so?" best backed by valid facts and figures to strengthen the argument. Once the importance of the problem and the focus of its solution have been established, the team should explain the solution by asking themselves "What does the solution look like and how does it benefit solving the problem?". They should think about a value proposition, unique selling proposition, market entry or implementation strategies to concretize the contents of their pitches for their audience. To make the solution more tangible for the audience one should connect it to external circumstances by explaining the future vision guided by the question "How does the implementation strategy look like?" or "How can the solution adapt to market changes?" Lastly the team's skillset and motivation are to be presented to the audience, convincing of the team's qualifications, drive an inspiration to realize the solution. During a pitch, a clear narrative or 'red thread' helps not only to connect the different parts but also to take the audience on a comprehensible journey making to understand the amount of information presented in a short period of time. Therefore, it is recommended to end a pitch by circling back to the beginning, connecting opening, and closing in a coherent story.

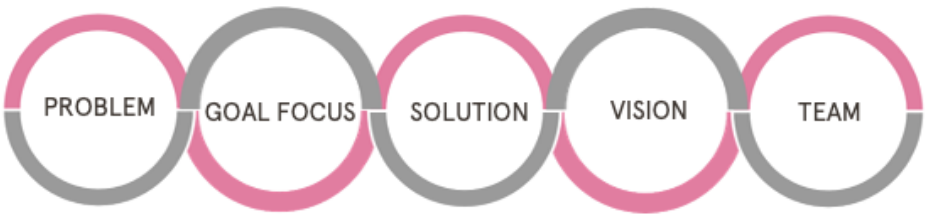

Fig. 4 Framework structure for 5-minute pitches to a specific audience.

Keynote Speakers

Several keynote speakers were invited to the 2022 ACE Hackathon to contextualize the event and share knowledge with participants. The keynote speeches were conducted over the course of the hackathon. The following section will give an overview of the speakers and the content of the respective keynotes.

The hackathon was officially opened by the Action Empowerment Unit Lead for the UN Climate Change, Fleur Newman who welcomed all the participants on behalf of the ACE Hub.

The Program Officer of the Action for Climate Empowerment Team, Laura Vinuela then gave a keynote on the Glasgow Work Program on Action for Climate Empowerment (ACE), which is driven by the overarching goal of ACE to empower all members of society to engage in climate action through its six elements (Education, training, public awareness, public access to information, public participation, and international corporation). She further elaborated on the past Conferences of Parties, the four thematic priority areas of the ACE for the COP26 2021 in Glasgow and the actions the ACE Hub is taking.

During topic kick off Jung Lin, Project Manager NRW.Energy4Climate introduced the state NRW including background information on current levels of energy consumption as well as current efforts for the implementation of clean energy solutions. Thereafter, she presented both problem statements in detail and explained specific solution requirements.

The next impulse on day one was given by the Deputy Executive Secretary, Ovais Sarmad, who welcomed the participants on behalf of the UNFCCC and elaborated on the need to actively take climate action to fight climate change.

The last keynote speech of the first day was given by Guido Wallraven, Project Manager Community of Saerbeck 'Bio Energy Park NRW'. During his keynote, Guido Wallraven presented the solution of the Klimakommune Saerbeck. Its goal is to establish a self-made energy supply using renewable energies by the year 2030, by following a strict agenda of 150 small to large scale projects and using the 2009 Integrated Climate Protection and Action Concept.

On the second day of the hackathon the UN SDG Action Campaign was invited to conduct a workshop with the participants. They introduced the SDG Action Campaign to the participants and organized speed networking session for exchanges.

On day three the Partnerships Consultant of the Office of Executive Director at UNITAR, Afroditi Anstasaki, introduced the participants to the SDG Innovation Canvas, which outlines a step-by-step guide to innovate for sustainable development. Within the guide a framework was presented that elaborated on the value proposition, scope, key support resources, innovation sustainability, scaling strategies, revenue models and limitations to SDG Innovation.

Reflection

The keynote speakers offered a lot of useful information both on the work of the UN as well as the defined challenge and problem statements. Overall, information input was well-balanced between input for the working sessions and additional information. The schedule integrated the respective keynote speakers well into the course of the hackathon.

Jury Members

For the evaluation of the final solution pitches an external panel of experts was invited to chair the jury with the goal to evaluate and challenge them. The jury consisted of four members from different backgrounds, representing a variety of different interests and expertise. The following section introduces each jury member of the hackathon.

Tina Voelker is the Head of the Unit of Climate Protection Policy and Municipal Climate Protection at the Ministry of Economic Affairs, Industry, Climate Action and Energy of the State NRW.

Mitzi Jonelle Tan is a Convenor and Youth Advocate for Climate Action Philippines.

Claire Kiss is an Associate Program Officer at the International Renewable Energies Agency (IRENA).

Justin Gemeri is a Co-Founder and Co-CEO of the ekipa GmbH.

Final Pitches

During their final pitches, the teams had the opportunity to present their solutions in five-minutes to the jury, a selected panel of experts. The following will outline the final solutions of the five teams.

Better 2gether

The first team 'Better 2gether' worked on a solution to the second problem statement.

The team's problem definition focused on the lack of cooperation models between urban and local areas. Specifically, it framed that while cities need lots of energy especially from renewable resources villages or rural areas have the land to produce such energy on a local level. Therefore, their approach focused on the given key question of how solutions for better cooperation between cities and municipalities could look like under consideration of individual needs.

At the core of their approach stands a human-centered clean energy transition focused on security, justice, and independence between and with all involved stakeholders. The solution of the team is called 'equal rural-urban energy cooperative' that divides the ownership of PV systems and other renewable energy solutions into city government (10%), rural municipality (10%), rural residents (40%) and urban residents (40%), and, therefore, splits both investments and risks. The solution aims to tackle current hurdles within the economic, social, and environmental sector by offering a platform that establishes a rural-urban-coop and connecting people to collectively take climate action. Their vision is to connect individuals from urban areas with individuals from rural areas via profiles on a platform, using a 'rural-urban match' function that enables direct contact and transparency on energy usage and production. Additionally, the platform serves an educational purpose by offering knowledge on clean energy solutions.

NRGie

The team NRGie worked on an approach to the first problem statement. Their concept focused on the guiding question of how to incentivize the use of renewable energies, specifically the installation and maintenance photovoltaic systems, both for private households as well as companies.

The team identified three problems that might prevent private households and companies from the switch to clean energy solutions:
Firstly, they identified a lack of knowledge that causes both a missing understanding of carbon footprint and energy consumption and misconceptions on renewable energy efficiency. Secondly, they realized that the inaccessibility to service providers

and original equipment manufacturers is problematic. Lastly, they found out that in comparison to other investment opportunities high upfront costs make investing in PV systems not a lucrative endeavor. Accordingly, a complex combination of these three problems leads to discouragement and unused potential.
The team presented a solution called 'Solar Energy as a service' with the vision to incentivize the switch to renewable energies by connecting people from different stakeholder groups. More specifically, the idea is to enable energy sharing through a connected community to achieve energy security.
Therefore, a platform which connects investors, private households, partners within a community and offers both a knowledge base with easy access to statistics and regulation as well as maintenance services is to be implemented.

Keep it clean

The team 'Keep it Clean' worked on the second problem statement.

Following an extensive analysis of common obstacles which hinder collaborations between cities and municipalities, the team focused on a mixture of success stories from German collaboration models and novel approaches on improving these.

The team presented the reasons for necessity of cooperation models between cities and municipalities and defined several key problems, identifying the potential if combined in a collaboration model. The team showed how the current trend of increasing populations in urban areas correlates to increased demands of energy source. Therefore, growing cities have an increasing demand yet altogether lack surfaces for clean energy solutions. Along with this goes a decreasing population in rural areas due to decreasing quality of life within. Although rural communities might have the necessary surfaces for clean energy solutions the overall energy demand is lower than the one in urban areas. Additionally, they pointed out that long-term sustainability of projects depends on their maintenance. Lastly, they concluded that both in urban and rural areas there is a general lack of knowledge on clean energy alternatives.

Their goal is to help rural communities to sustainably produce renewable energy for urban areas, while benefitting financially from these energy projects and improving rural area's quality of life. The team reflected their goal focus by conceptualizing climate smart communities following a three-step program as their solution.
In phase one they want to improve education and raise awareness, offering a feasibility site visit with an environmental impact assessment, and market and financial research. These should be followed by community outreach campaigns (i.e., by offering townhall meetings) and specific stakeholder engagements. Their Education and awareness

phase also included an economic valuation and the increase of community transparency of energy usage and an open communication regarding the project.
Within the second phase of the solution the team elaborated on how an implementation of climate smart communities might look like. They talked about both the intakes for such an implementation (e.g., contractors, land use, jobs, publications, and research) as well as the output of their Integrated Renewable Energy Project (short: IREP), selling the produced surplus to bigger cities which brings in money for the maintenance, being the focus of phase three.

PhiBaGe

The team 'PhiBaGe' worked on a solution to the second problem statement.

Within their problem definition and solution elaboration they concentrated on the obstacles that are currently hindering collaboration models between cities and municipalities in North-Rhine-Westphalia.

To define their problem, they analyzed the energy market in NRW and found out that the Rhenish lignite mining area is one of the main CO2 pollutants in Europe. Lignite mining, with one lignite mining area called Neurath (part of the RWE group) being the second highest pollutant in Europe. The team pointed out that these facilities produce a lot of energy while consequently profiting financially.

Within their conceptual model they defined internal stakeholders, like government agencies (LGUs), private and public educational institutions, business establishments, climate activists and the youth as well as external stakeholders, i.e., RWE International investors, UNFCCC, and other climate-change related organizations to take action. Local investors from RWE as well as the named stakeholders are called upon to shift investments to renewable energies, raising climate change awareness and decrease GHG emissions within NRW.

Defining the potential involvement of the different stakeholders more in-depth, the team presented a local framework in which they clarified goals, outcome, output, and planned activities. By bringing together the different stakeholders, they want to contribute to behavioral change counteracting climate change issues. They also want to spread awareness and build resilience using positive and negative impact recognition mechanisms. Here, the collaborative action between the stakeholders should have a positive educational impact on moving towards climate information.

Solar for NRW

The team 'Solar for NRW 2030' worked on a solution to the first problem statement.

The team developed approaches focusing on the second guiding question and investigated stakeholder specific incentives for the installation of solar panels to maximize uptake.

They started elaborating on their key problem, which is the current installed PV systems energy capacity of 6 gigawatts (GW) hampering the uptake of rooftop solar systems that is still lower than planned and needed. The problem they identified within this space is the EU target of a capacity of 18 to 34 GW until the year 2030.

With the mission to incentivize uptake of PV systems for both private households and companies the team's solution was to offer 'business development desks for solar'. Their solution is divided in three specific steps. They want to create awareness, give access to financial accelerator, and offer incentives for their three target locations of public buildings, commercial buildings and private households.

The result is a list of incentives and action points for each target group. For example, they aim to provide interested stakeholders from private households with matchmaking solutions for financing an installation of PV systems. For commercial buildings they want to focus on eco-marks or green certificates, specific technical assistance, interest proofing on loans or subsidizing operations and maintenance. While several incentives were listed for both target groups, the team concluded that the installation of rooftop solar panels should be mandatory for public buildings.

Jury Evaluation and Result

The jury members were briefed about the agenda of the final pitch session: five-minute pitch presentation, three-minutes for questions and answers, followed by around two minutes to write down their evaluation of the presenting team. The following section outlines evaluation criteria and methodology of the jury session as well as its outcome – identification of the most likely to be implemented solution of the hackathon.

Evaluation criteria

Since the support of socially impactful and sustainable innovation is essential to ekipas mission, a set of evaluation criteria from industry-practice has been developed, which is applied to select preferred solutions. The different dimensions are listed in the following and are to be rated with a number from 1-10 (1 being poor and 10 being excellent). These evaluation criteria have been adapted to fit the purpose of the 'Innovative Solutions for Clean Energy on a Local Level' hackathon.

The first criterion is the level of sustainability and impact of the solution. This criterion Should allow evaluators to think about the impact specific solutions generate for the environment and society. Additionally, it should encourage to think about whether and how the created impact is measurable.

The second criterion is the relation to the identified problem. Here, evaluators are encouraged to determine the problem-solution fit, thus, the closeness between a given challenge and the solution's impact on the stated problem.

The third criterion is the strategy and feasibility of implementation. Here, evaluators are supposed to reflect on the extent to which the solution could realistically be implemented in practice, considering if a market entry strategy or step-by-step implementation is existent and workable, and whether the presented solution is profitable and would survive in a market setting.

The fourth criterion is the degree of innovation, focusing on creativity and originality of thought. Here, the uniqueness and relevance compared to existing solutions is to be established and evaluated. How is the solution different to those that already exist and how is it different?

The fifth and final criterion is the quality of presentation. This criterion focusses on quality of the pitch, its structure and how easy it was to follow the information presented, with specific focus on the opening and closing of the pitch. Stylistic methods in body language, mimic, voice, and tone are to be considered as well.

Methodology and outcome of the jury session

The methodology to identify the solution most likely to be implemented stands on two pillars: quantitative and qualitative means of evaluation. Thus, jury members evaluated the team's pitches and solutions based on the before defined dimensions (find the Jury Evaluation Sheet in Appendix B below).

Based on quantitative measurements of performance, a qualitative deliberation session was planned and executed. Thus, the jury was accompanied into a quiet space to deliberate their final decision. The base for the deliberation were the evaluation forms individually filled in by each jury member throughout the pitches. Before discussing the results from the individual evaluations, the results were gathered, and an overall ranking of the teams was developed and shared with the jury. This way, one offsets the limitation of qualitative methods, ensuring jury members impartiality.

In an open discussion every presented solution was discussed in detail according to the evaluation form. Throughout their discussion, the jury pointed out pain points as well as potentials of each solution, while mostly focusing on the feasibility of implementation, the relation to the identified problem statement and the sustainability approach and impact. Two solutions of the presented solution were in close competition with each other. Therefore, both solutions were discussed in-depth, jointly examining their respective degree of innovation. This way, the most original solution with the highest potential to be implemented was identified. The team **Better 2gether** came up with a novel approach to a potential collaboration model, which differentiated itself from existing approaches by including both rural and urban governments as well as rural an urban residents into an ownership model. Their solution represented a broad variety of stakeholder groups that each were considered in an incentive scheme. The simple yet clear approach is novel and innovative and consequently was the most original and most likely to be implemented solution for the jury members.

Conclusion

What happens when different people from diverse contexts, backgrounds & localities come together in a fruitful & conductive environment to work intensively towards a common goal? You get broad views, transdisciplinary and transcultural perspectives mixed with local specifics to collectively explore problem- and solution-spaces, because everyone has the same goal in mind. You can call it "synergy" – the bonus or extra energy that is achieved when we work together.

During the Action for Climate Empowerment (ACE)* Hackathon in Bonn at the ACE Hub from September 26 – 28, 2022, innovators from 11 countries around the world came together for three days to exchange their ideas and develop solutions to foster clean & green energy at the local level. Thanks to ACE for bringing people together and enabling co-creation, so much gathered interdisciplinary expertise, concentrated in time and space, and focused on one topic, means lots of output. But it takes proven methods and intensive support to unleash the potential of the teams, accelerate the development of groundbreaking ideas, and generate innovative solutions. One goal-oriented method is the design thinking process, a human-centered, team-based approach to innovation. Very effective, especially when dealing with wicked problems such as holistic energy transitions in NRW, because it explores a wider problem and solution space before narrowing down and because it understands innovation as a collaborative and interdisciplinary process.

It is thus a reality that co-creation events such as the hackathon initiated by the ACE Hub are shaping! Together we can generate and implement sustainable solutions to create a livable and future-proof planet. The ACE Hackathon and the developed solutions are great evidence that we can make the difference and combat climate change by bringing together different local knowledge and interdisciplinary expertise, creating alliances and collaborations between organizations, institutions, and innovators and above all with the right spirit & will for change to co-create the future. Therefore, co-creation of knowledge, understanding, and solutions is key when aiming to successfully change the world for the better.

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Appendix A

THE ACTION FOR CLIMATE EMPOWERMENT HACKATHON 2022

CHALLENGE

CHALLENGE - Innovative Solutions for Clean Energy at the Local Level

BRIEF

The increasing geopolitical crises, the urgent need to address climate and environmental issues as well as technological potential for increasing resource efficiency, open new spaces for socially relevant innovations. For decades, the importance of clean energy to fight climate change and the number of measures taken both by industry and politics to research clean energy alternatives and innovations increased drastically. However, problems still exist. The number of private households with running clean energy solutions is still too low. And while there are various clean energy technologies available today, fears about complex installation and maintenance procedures as well as doubts about their profitability still prevail, significantly hampering uptake by citizens and ultimately the transformation process. Emerging innovations to drive clean energy transitions too seem to bear new challenges when it comes to ensuring effective and successful multi-stakeholder collaboration. For example, the lack of structures and cooperation models between relevant stakeholder groups such as rural communities and large cities, prevents the widespread implementation of green energy solutions at the local level. While one group has plenty of resources to install and expand green energy systems, the other relies heavily on their use. Therefore, adequate collaboration frameworks, accommodating the various stakeholder needs are essential.

Thus, and bearing in mind the German three-stage emergency plan for natural gas supplies, the 2022 ACE Hackathon "Green energy transitions at the local level" wants to empower you to address these challenges and develop clean energy solutions and implementation strategies.

OVERARCHING QUESTIONS

Which new concepts and solutions would increase awareness, education and participation in climate action?

Which novel technologies can be useful for green energy transitions at the local level?

How can we sustain and future proof our energy systems?

NOTE: In order to help you develop your solutions, the NRW State Energy Agency has developed two more concrete problem statements, from which you should choose one as a starting point to develop your solutions and concepts.

PROBLEM STATEMENT 1

"Incentivize the use of renewable energies in companies and private households as well as concepts to encourage these actors to install solar panels on buildings."

Background

In order to achieve global, national and local climate goals, it is urgently necessary to move away from fossil and environmentally harmful energy. The intensive expansion of renewable energy is a key measure in this regard. Cities are of great importance in this context, since over 70% of both energy consumption and greenhouse gas emissions occur in cities. The roofs of buildings offer enormous potential for installing more photovoltaic systems to produce renewable energy. This green energy can be used both for traditional electricity supply and, as part of sector coupling, for other applications such as climate-neutral heat supply for buildings (e.g., electric heat pumps) or electromobility (supply for charging stations). The demand for renewable electricity, climate-friendly energy for buildings and zero-emission vehicles will continue to grow in the coming years.

The state of NRW has set its climate goal in 2045 to reach climate neutrality, which is in line with the federal goal. By 2030, NRW plans to completely phase out coal. The goal for solar energy installation is to reach 18-34 GW by 2030 (in 2020: 6GW). As can be seen, NRW still has a long way to go to reach its climate goal. Renewable energy only accounted for 20% of the total electricity consumption in 2021, while solar energy contributed to only about 6%. Around 95% of the solar energy is produced by rooftop PV systems and only 5% is from the ground-mounted systems. There is still a massive potential for the growth of PV systems.

The city governments in Germany usually have a direct influence on their own municipal buildings (e.g., school buildings, administration buildings, sports halls) where PV-installation can be directly implemented. However, most buildings are owned by private individuals and businesses. In 2020, only 3.6% households installed solar panels on their roofs nationwide.

To encourage more installation of rooftop solar panels, a variety of financing schemes for business and private households are available in NRW and Germany in general. However, the effect is still limited. In 2020, only 3.6% of households installed solar panels on their roofs nationwide. Regulatory measures are recently at the center of public focus. The state government of NRW has introduced a mandatory PV installation regulation (Solarpflicht) in their new coalition treaty this year. Step-by-step, all new buildings and existing buildings in NRW will have to install solar panels only if it is considered economically reasonable and technically possible by 2026. However, more a detailed regulation is yet to be decided.

In order to reach more private building owners and companies and convince them of the use of photovoltaic systems, further measures and solutions are necessary on site.

PROBLEM STATEMENT 1

"Incentivize the use of renewable energies in companies and private households as well as concepts to encourage these actors to install solar panels on buildings."

Problem Statement

Through which measures and initiatives can cities and municipalities increase the uptake of rooftop solar PV systems to expand the adoption and use of renewable energies, which contributes to national energy independence and reduces the impact on the environment? Please consider which concepts, ideas and measures a municipality could do in urban areas. This challenge affects different stakeholders differently. For households and companies, it might generate additional costs for installation, maintenance and additional paperwork. However, the electricity generated by rooftop solar PV systems could be used for self-consumption. The electricity is in this case much cheaper in the face of the energy crisis. The surplus could be sold to the grid and generate profits. The higher the scale (such as factories with large spaces), the more economic efficient it will be. However, note that the revenue for selling surplus electricity to the grid has been reduced over the years due to the change of policies and law (EEG) in Germany. Through innovative solutions of this challenge, the cities and municipalities could encourage citizens and companies to install more solar panels in a more effective and efficient way, which increases the renewable energy uptake and eventually reduces the harm to the environment. In the face of high energy prices, more solar energy could also reduce energy costs and dependence on foreign fuels, which grants citizens and business in Germany more energy autonomy in the long term.

Guiding Questions

• What are the common obstacles for households and private entities to install solar panels on their roofs?

• What are the incentives for different stakeholders to install them and how can they maximize the use?

To solve this problem, the key questions to consider might be:

• What are successful stories from elsewhere that could inspire you?

• What measures or initiatives could the municipalities and city governments implement to effectively encourage more people to install rooftop PV systems?

• In what format would your ideas be the most suitable? E.g. policy paper, business models, technical applications such as websites or apps, establishing a new organization, organizing events....

• How do you analyze the cost-benefits of your solutions?

PROBLEM STATEMENT 1

"Incentivize the use of renewable energies in companies and private households as well as concepts to encourage these actors to install solar panels on buildings."

Resources for background research

Mandatory PV installation: https://www1.wdr.de/nachrichten/landespolitik/solarpflicht-nrw-schwarz-gruen-100.html

Energy supply strategies in NRW: Energieversorgungsstrategie Nordrhein-Westfalen | Wirtschaft NRW

Databank of energy mix in NRW: Energieatlas NRW

Energy news of Germany (in English): Clean Energy Wire

PROBLEM STATEMENT 2

"Cooperation models between large cities and local communities in order to implement renewable energies on a broad scale."

Background

The state of NRW has set its climate goal by 2045 to reach climate neutrality, which is in line with the federal goal. By 2030, NRW plans to completely phase out coal. Several targets are set for developing renewable energy. By 2030, renewable energy should account for 65% of the production of electricity, which was about 20% in 2020. By 2040, this target is expected to increase to 88%. The capacity of the solar power systems should reach 18-24 GW and wind power systems should reach 12 GW by 2030 (in 2020 it was 6 GW for both). As can be seen, NRW still has a long way to go to reach its climate goal.

At the global level, cities consume approximately 80% of energy and produce 70% of carbon emissions. Reducing carbon emissions and transitioning to cleaner energy solutions for cities is therefore crucial to combat the global climate crisis. In Germany, more than 60% of the population live in middle- or large-sized cities. This trend is predicted to grow. However, currently-established renewable energy technologies such as wind power, hydropower and ground–mounted PV systems, require substantial land usage to scale up and become economically efficient. However, larger cities have a lot of impervious surfaces (artificial structures such as roads, sidewalks, parking lots) and limited space, which makes it difficult for them to be energy self-sufficient through renewables. One solution is that more rural municipalities could produce a climate-friendly energy surplus locally, primarily through the expansion of wind energy in the future. This surplus could also be used to supply energy to large cities in the region. However, the expansion of large-scale renewable energy projects changes the landscape in the countryside. Residents near large scale projects in the countryside are more affected by the expansion of renewable energies compared to those in large cities. This makes equal cooperation and energy partnerships between municipalities in the countryside and larger cities increasingly necessary.

PROBLEM STATEMENT 2

"Cooperation models between large cities and local communities in order to implement renewable energies on a broad scale."

Problem Statement

In the context of North Rhine-Westphalia, how could large cities support and contribute to affected municipalities facing the expansion of large-scale renewable energy projects (especially wind energy and ground-mounted PV) in the countryside? How could both sides collaborate in a fair and sustainable way in the development of renewable energy? Please consider how such cooperation could look like in the interest of all parties involved. How could the willingness / acceptance of inhabitants in the countryside be strengthened in terms of the expansion of wind energy in favor of large cities? This challenge involves many stakeholders. The city governments and citizens have strong incentives to support renewable energy infrastructure in the countryside. External renewable energy companies would welcome more support for projects of large scale, as they are often selected to implement these projects and receive financial gains in the long run. The municipal administration in the countryside is facing the conflict between sustaining the quality of living of their own residents and the achieving the climate goals. Residents in the affected countryside, local business, local energy cooperatives and some initiatives for the environment might be against an expansion of these projects considering their impact on the quality of living, the landscape and nature.

The innovative solutions from this hackathon could contribute to the development of a sustainable and effective collaboration between the municipalities and cities in North Rhine-Westphalia to establish more renewable energy projects and infrastructure. It will not only accelerate the process of reaching the climate goals and German energy independence, but also contribute to more individual participation in climate action.

Guiding Questions

- What are the common obstacles hindering the collaboration between cities and municipalities in the countryside for more renewables in NRW?
- How do renewable projects in the countryside affect different stakeholders?

Why are some locals and certain civil initiatives against large-scaled renewable energy projects?

To solve this problem, the key questions to consider might be:

- What are successful stories from Germany or other countries (maybe your home country!) which could inspire you?
- What solutions could you develop for better cooperation which consider the needs of cities, municipalities, citizens and other stakeholders while not compromising the environment?
- In what format would your ideas be the most suitable? E.g. policy paper, business models, technical applications such as websites or apps, establishing a new organization, organizing events....
- How do you analyze the cost-benefits of your solutions?

PROBLEM STATEMENT 2

"Cooperation models between large cities and local communities in order to implement renewable energies on a broad scale."

Resources for background research

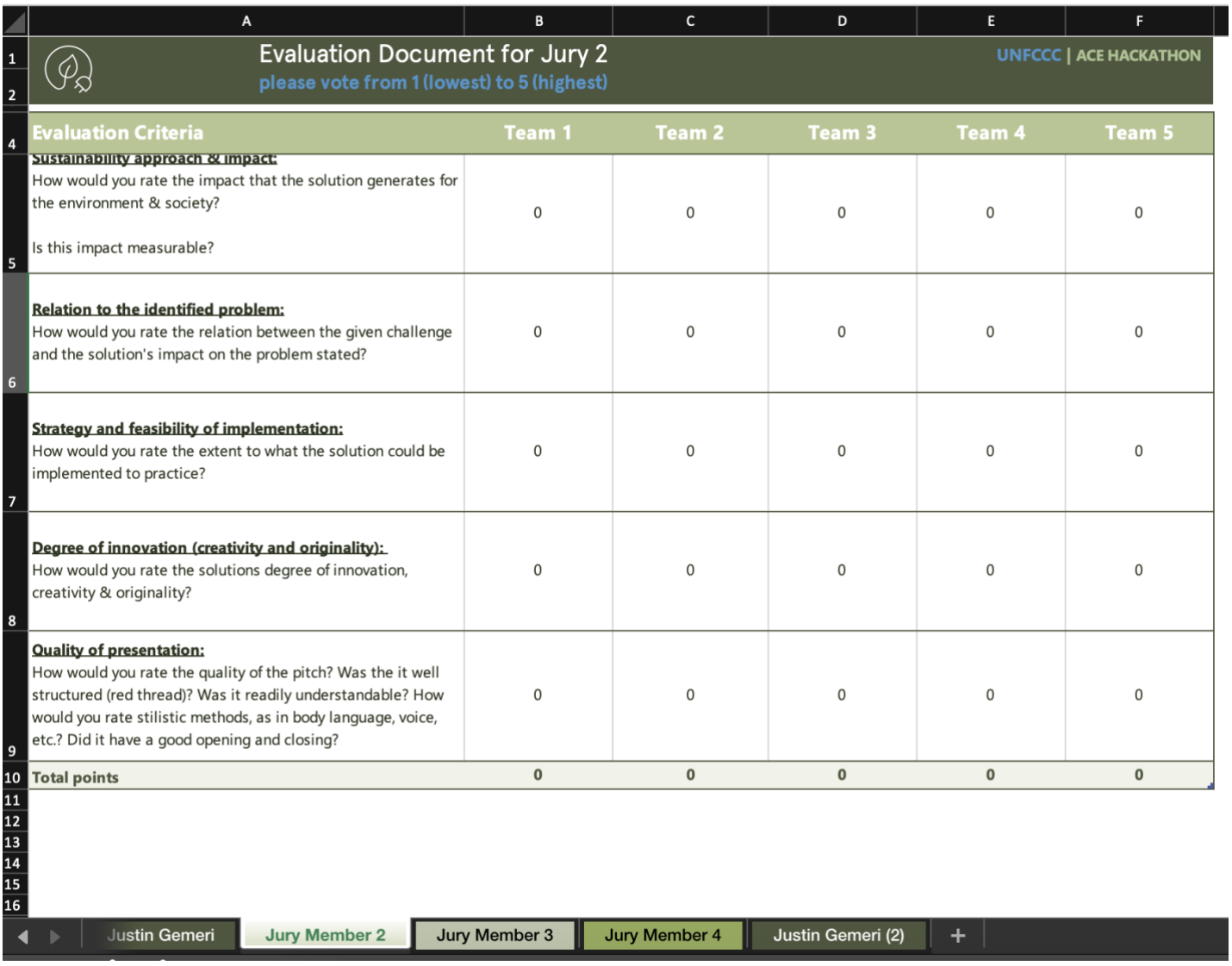
Mandatory PV installation: https://www1.wdr.de/nachrichten/landespolitik/solarpflicht-nrw-schwarz-gruen-100.html

Energy supply strategies in NRW: Energieversorgungsstrategie Nordrhein-Westfalen | Wirtschaft NRW

Databank of energy mix in NRW: Energieatlas NRW

Energy news of Germany (in English): Clean Energy Wire

Appendix B



	A	B	C	D	E	F
1	Evaluation Document for Jury 2				UNFCCC | ACE HACKATHON	
2	please vote from 1 (lowest) to 5 (highest)					
4	**Evaluation Criteria**	**Team 1**	**Team 2**	**Team 3**	**Team 4**	**Team 5**
5	**Sustainability approach & impact:** How would you rate the impact that the solution generates for the environment & society? Is this impact measurable?	0	0	0	0	0
6	**Relation to the identified problem:** How would you rate the relation between the given challenge and the solution's impact on the problem stated?	0	0	0	0	0
7	**Strategy and feasibility of implementation:** How would you rate the extent to what the solution could be implemented to practice?	0	0	0	0	0
8	**Degree of innovation (creativity and originality):** How would you rate the solutions degree of innovation, creativity & originality?	0	0	0	0	0
9	**Quality of presentation:** How would you rate the quality of the pitch? Was the it well structured (red thread)? Was it readily understandable? How would you rate stilistic methods, as in body language, voice, etc.? Did it have a good opening and closing?	0	0	0	0	0
10	**Total points**	**0**	**0**	**0**	**0**	**0**
11						
12						
13						
14						
15						
16						

Justin Gemeri | Jury Member 2 | Jury Member 3 | Jury Member 4 | Justin Gemeri (2) | +