Forest of Dean Energy Climathon

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1. Introduction

Climate KIC is a Knowledge and Innovation Community, working to accelerate the transition to a zero carbon, climate resilient society (Climate KIC, 2023a). They oversee the global Climathon movement, which empowers citizens to take action against climate change through collaborating with others in their communities, decision-makers and future leaders at independently organised events. Climathons are social innovation programmes (usually city-based) designed to promote an inclusive and participatory approach to problem-solving and to foster partnerships among different stakeholders. In so doing, partners from academia, businesses, NGOs and government bodies are brought together in an ecosystem of collaboration, knowledge sharing and co-creation (Climate KIC, 2023b).

The Climathon method has been adapted by the Countryside and Community Research Institute (CCRI) team at the University of Gloucestershire to better suit the needs of rural communities. Their work demonstrated that a Climathon approach can be effective in supporting rural communities, working previously for example with two livestock farming communities in England, to come together to generate locally relevant net zero solutions (Maye et al., 2022a).

Through trialling this approach, it was possible to provide seven adaptations to Climate KIC's playbook. The playbook is designed to provide guidance for organisers, including suggestions on finding funding, defining a challenge and practical tips to support planning and organising a Rural Climathon. Adaptations in Maye et al.'s (2022b) Rural Climathon Playbook include producing digital stories and offering an outdoor activity, which may provide an insight into local innovations or energy projects – thus serving an educational, as well as a social, purpose.

Figure 1 shows the resulting Rural Climathon Playbook used to develop and deliver the Forest of Dean Energy Climathon. A key part of any Climathon is organisation and engagement through co-design with local partners. This event was designed in partnership with Forest of Dean District Council. We are extremely grateful to the District Council for their time and help to design and run the Forest of Dean Energy Climathon, and the AURORA project and Innovate UK for their support in funding the event. The rest of this report provides an overview of the Climathon, including how the event was organised and an overview of climate action solutions that emerged from the event, as well as next steps.
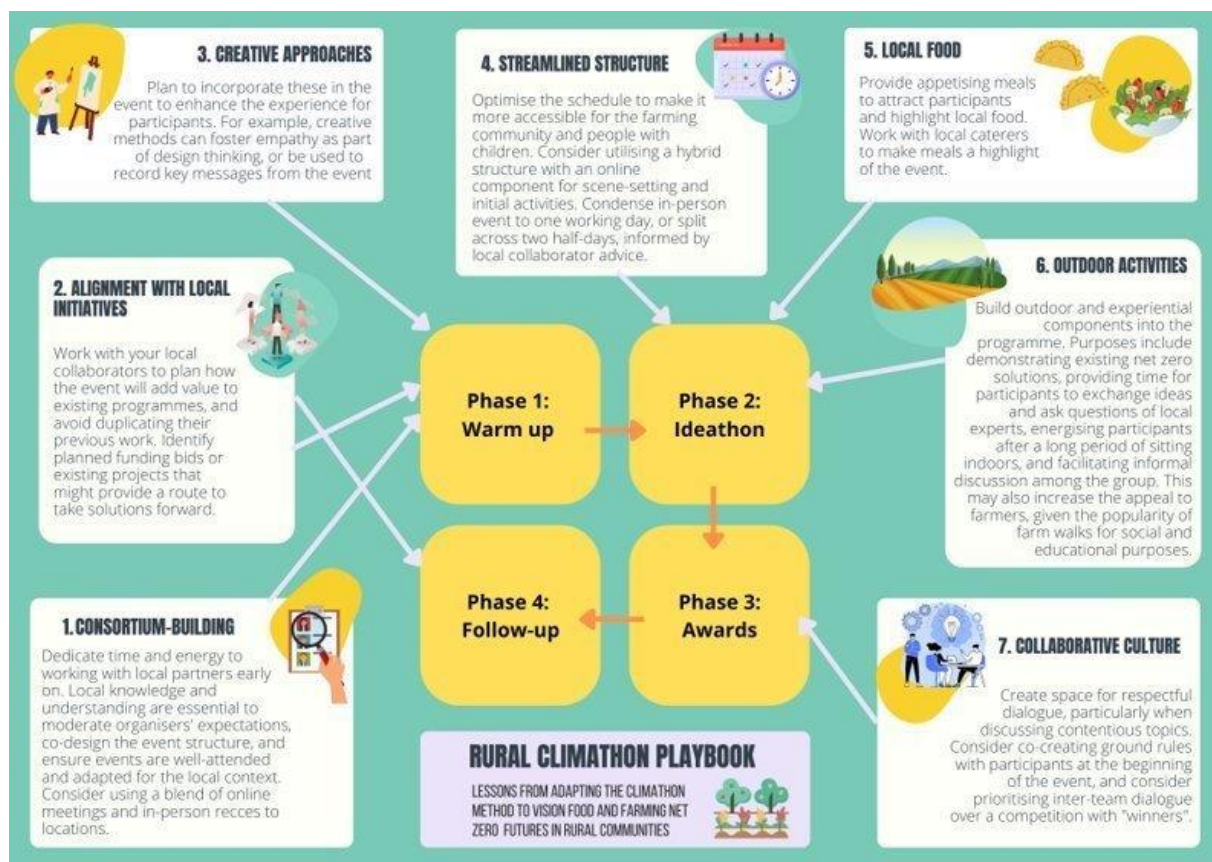
Figure 1: The Rural Climathon Playbook

The Forest of Dean Energy Climathon took place on 22nd and 26th April 2024, online and in Coleford, Gloucestershire. Participants were asked: How might we decarbonise electricity and heat at scale in Forest of Dean district? Participants first learned more about the building blocks and tools which could be used to inform their solutions, along with further information on the Forest of Dean context, before working together in teams to develop locally relevant solutions to support the district to decarbonise.

The event comprised two related components: a 90-minute webinar, which set the scene and allowed participants to begin identifying local priority actions; and the in-person event, where participants worked in teams to identify and design solutions for the Forest of Dean. The following sections summarise the outputs generated from each component.

2. Part 1: Webinar

The Forest of Dean Energy Climathon webinar was held in the morning of Monday 22nd April. After a welcome and overview of the Climathon approach from Damian Maye (CCRI), five speakers shared their presentations. The presentations were designed to set the scene in the Forest of Dean and provide context for the solution development element of the Climathon.

Jim Wrigley, South West Net Zero Hub, provided an overview of the Hub's work to increase the number, scale and quality of net zero projects across the region through providing advice and support to public and not-for-profit organisations. The Hub supports a range of net zero programmes, including community energy support. The Hub is supporting Climate Leadership Gloucestershire in developing its Local Area Energy Plan. Jim then focused on ways in which the Climathon challenge may be addressed, through providing information on the six building blocks in Figure 2. He explained that scenario planning is useful in ascertaining an end goal for the project and framing the vision, and emphasised that successful projects will involve collaboration between several partners and careful engagement with local communities.
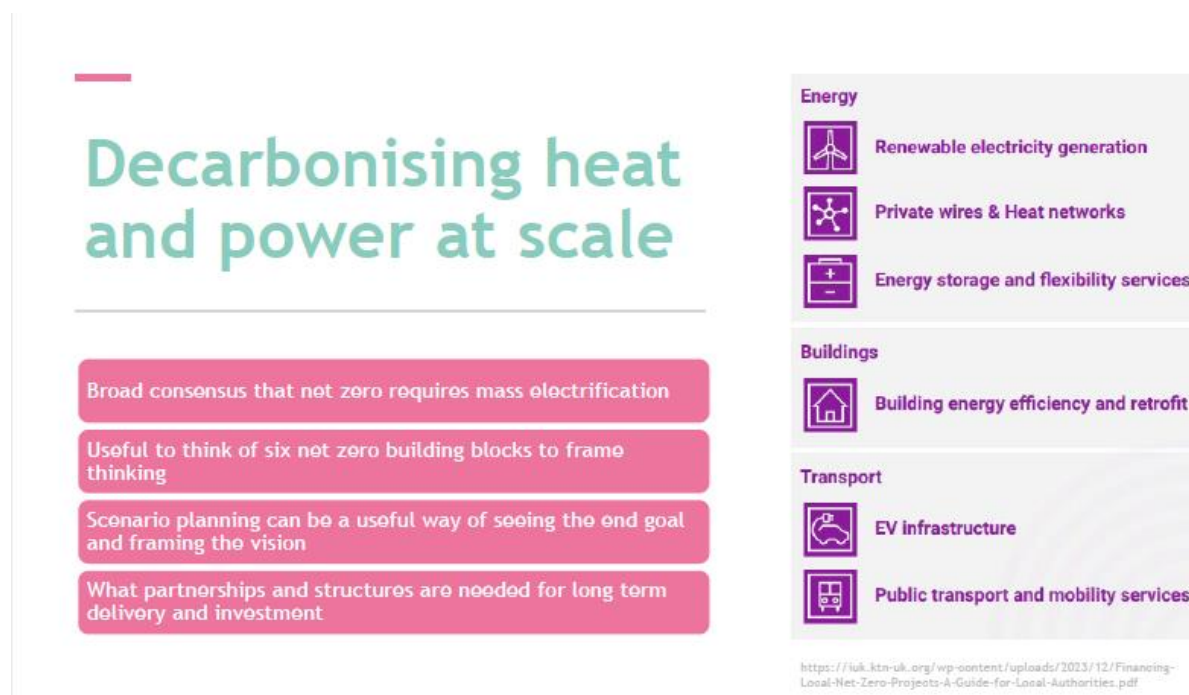

Figure 2: Jim Wrigley presented the building blocks for decarbonising heat and power.

Emily Taylor, National Grid Electricity Distribution, shared more information on National Grid's role across the region. Their vision is to enable net zero while continuing to safely operated a reliable network and ensuring that this is affordable for customers. She explained the difference between National Grid's role as Distribution Network Operator (repairing and maintaining the current network) and as Distribution System Operator (strategic, forward-planning). The DSO's role is to identify how customers will use the network in the future, analyse future network constraints, and assess how best to invest in the network to solve these constraints. The Distribution Future Energy Scenarios assist the DSO in understanding network use, and involve working with national forecasting and understanding plans at a local level (Figure 3).
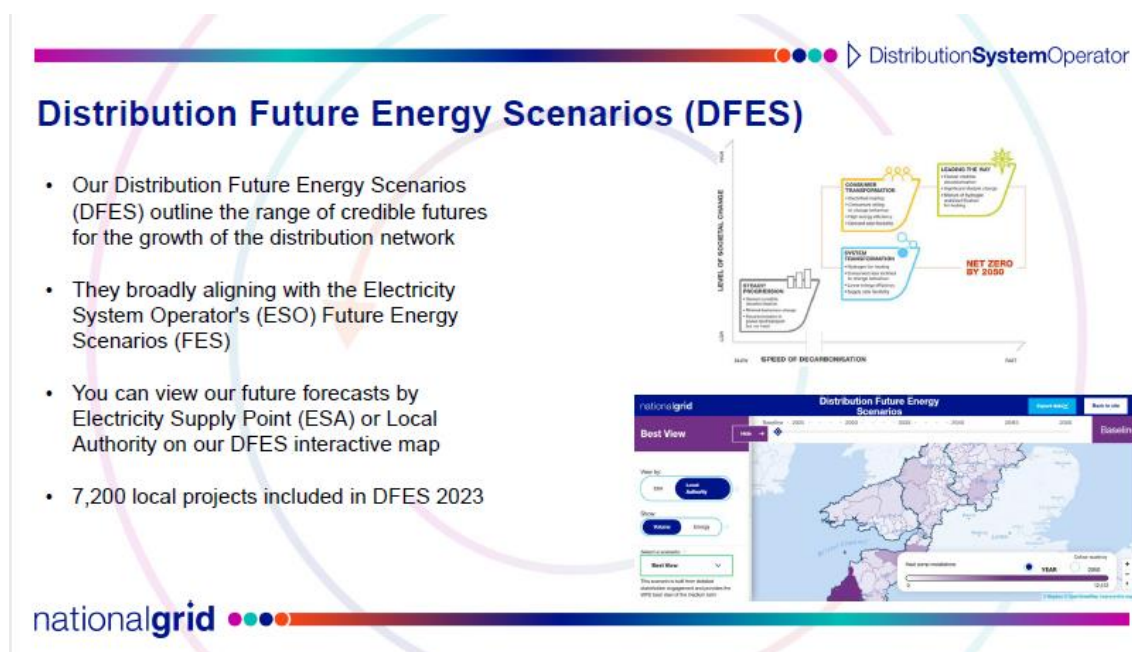

Figure 3: Emily Taylor shared more on the Distribution Future Energy Scenarios for the district.

The DFES process happens annually; this involves updating the underlying scenario data, stakeholder engagement and data validation. Updated documents are published every December.

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Our next presentation was from Toby Bridgeman, Friends of the Earth (FoE). Toby shared their recent work with the University of Exeter to produce an interactive onshore renewable potential map (Figure 4). The British Isles have one of the highest wind resources in Europe and onshore renewables are fast to build, but development is currently constrained, particularly in England. FoE wanted to identify reliable onshore energy targets for all local authorities, and in addition, identify the most suitable sites for onshore renewable developments.
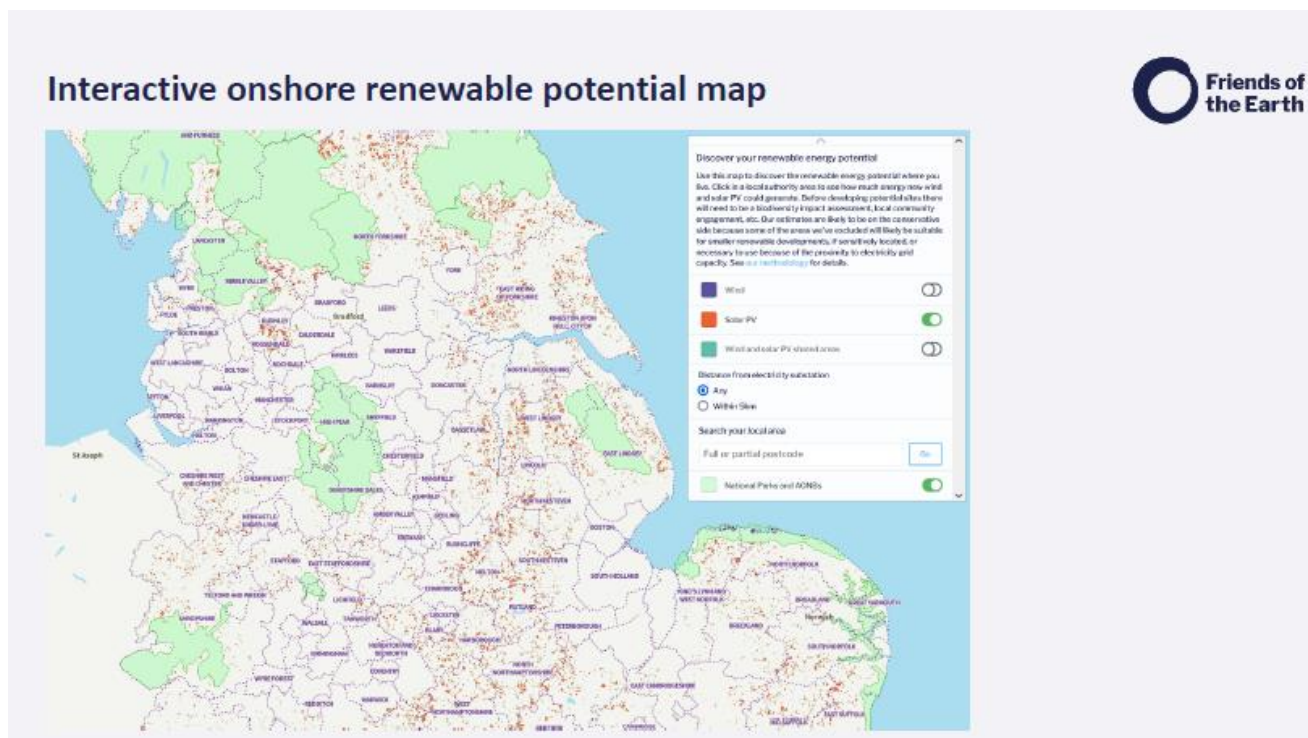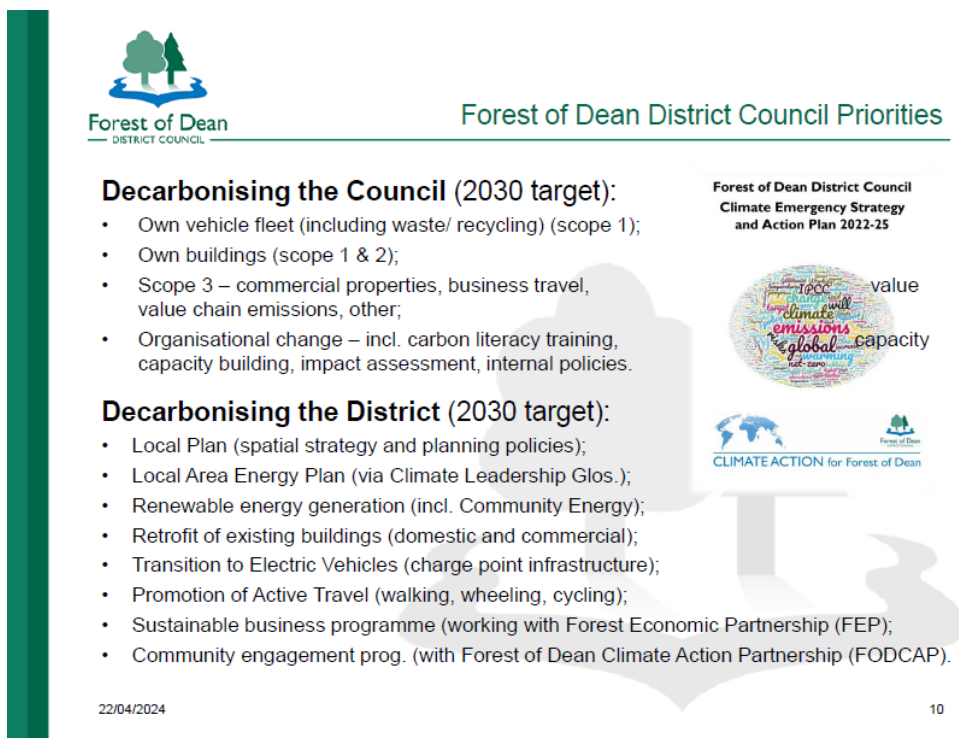

Figure 4: Toby Bridgeman invited attendees to use Friends of the Earth's new interactive onshore renewables map.

This process involved work with students from the UKRI Centre for Doctoral Training in Environmental Intelligence at the University of Exeter, expert planners and industry experts to sense check and refine the analysis. Toby explained how land was excluded based on certain attributes, such as land within National Parks and National Landscapes and land of high agricultural value. The resulting map shows areas suitable for wind, solar, and wind and solar developments; clicking on these parcels of land provides information on potential generation capacity. Friends of the Earth identified several benefits to investing in the renewables sites they have identified, including generating enough energy for all homes in England and using just 2.9% of land in England.

The webinar then focused on the local Forest of Dean context. Nick Murry reminded attendees of the national context and the challenges we are facing regarding emissions reduction, before explaining the District Council's priorities for decarbonisation. The Council has both direct control and indirect influence over emissions; council buildings, operations and travel are within direct control, whilst the Council is able to influence wider change through its procurement, Local Plan policies, demonstration activities, partnerships and engagement. The Council aims to decarbonise its own operations and activity across the district, by 2030 (Figure 5).

Figure 5: Nick Murry presented Forest of Dean District Council's priorities.

Nick provided an overview of work carried out so far, such as installation of solar panels and battery storage at its Coleford offices, as well as on-going activities and future plans, including decarbonising the remainder of the Council's estate; installation of solar arrays at Lydney Leisure Centre and the Dean Academy via the AURORA project; preparation of an Active Travel Strategy and grant scheme for the district; plans to install electric vehicle charge point infrastructure in its carparks; emerging low carbon business, domestic retrofit and community support programmes; and emergent Local Plan policies to promote sustainable construction and Net Zero development throughout the district.

The Council is also being supported by Innovate UK in identifying and overcoming the barriers to achieving Net Zero through the Forest Fast Followers project, led by its Net Zero Innovation and Delivery Officer, Simon Richards.

Next steps for the Council include commissioning a Carbon Reduction Pathways study to support a refreshed Climate Emergency Strategy for 2025-2030.

Emma-Jayne Williams (Forest of Dean District Council) and Amy Staff (Centre for Sustainable Energy) delivered our final presentation on the AURORA project and Forest Community Energy. The AURORA project is EU-funded, with partners from various types of organisations across Europe (Figure 6). The purpose of the project is to create a blueprint for community energy projects across Europe. The Forest of Dean is a UK case study site.
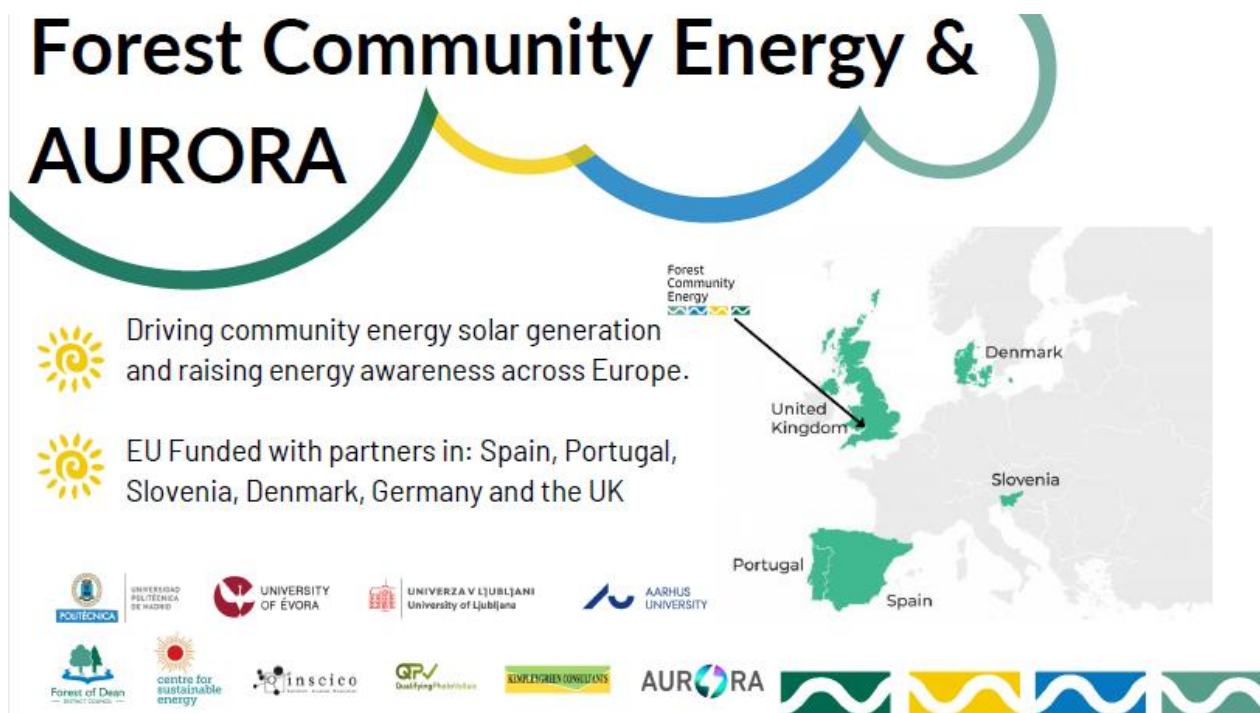
Figure 6: Emma-Jayne Williams and Amy Staff shared more details about their work in the Horizon Europe AURORA project.

Their work has involved three core activities: installing solar photovoltaics on community buildings in Lydney , in collaboration with Big Solar Co-op; exploring solar feasibility across the district; and loaning thermal imaging cameras out to residents. The solar installations will generate approximately 285,000 kWh per year, delivering approximately 36 tonnes of CO2e savings per year. This provides significant energy bill savings, aiding ongoing financial viability; however, there are also challenges, including the complexity of working with multiple stakeholders; developing legal documents; ensuring those working on the projects have the right knowledge and experience; and the process of gaining planning permission and approvals. The thermal imaging pilot also presented some challenges, including building understanding of the technology, and high demand for home energy efficiency and grants. Forest Community Energy needs volunteers to ensure the long-term viability of the project, once the European funding ends, but this can be challenging due to individuals' availabilities.

The final element of the webinar comprised an exercise designed to support participants to identify initial ideas for solutions, with four breakout groups each tasked with discussing potential climate actions for Forest of Dean district. These ideas were collected by the CCRI team on a Miro board and clustered following the webinar (Figure 7).
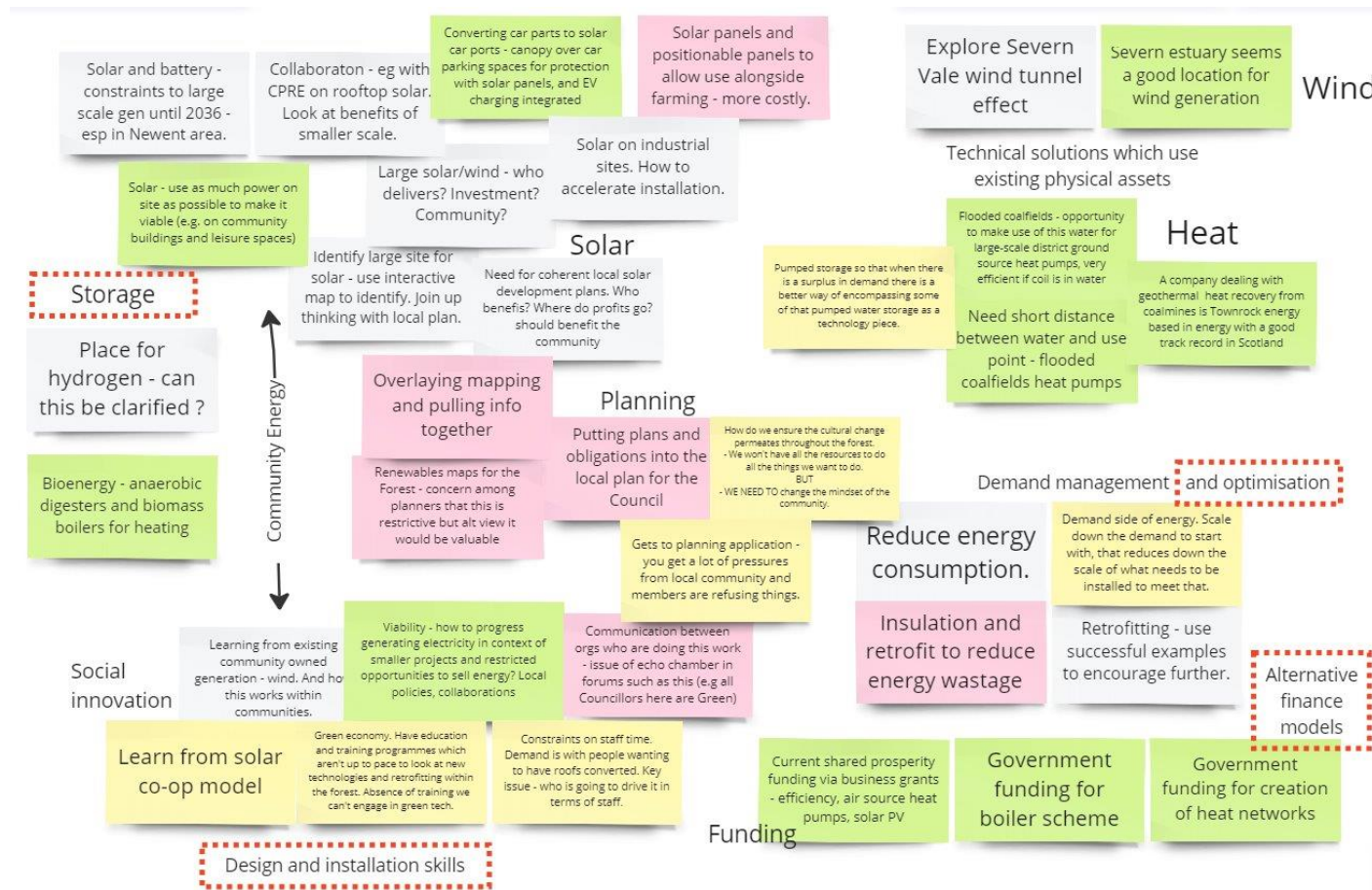

Figure 7: Initial ideas from the webinar, clustered by the CCRI team. Gaps were also identified in collaboration with the Forest of Dean team, and added to the board in red boxes

3. Part 2: In-person event

Phases 2 and 3 of the Rural Climathon Playbook are the focus of the in-person workshop. This day-long element sees participants developing collaborative relationships with others and engaging in participatory solution development. The day's agenda can be found in Appendix 2.

3.1. Introductory phase

The day started with an introductory talk outside the Forest of Dean District Council offices in Coleford. This talk was designed to give participants an overview of current climate action in the district, and consider areas in which they would be developing solutions.

Following the talk, participants walked over to The Main Place to recommence solution development.

Damian introduced the CCRI facilitation team and further information on the Climathon approach. A key element of the Climathon process is the development of ground rules, which ensure solution discussions are constructive, positive and respectful. The ground rules for the Forest of Dean Climathon were as follows (Figure 8):
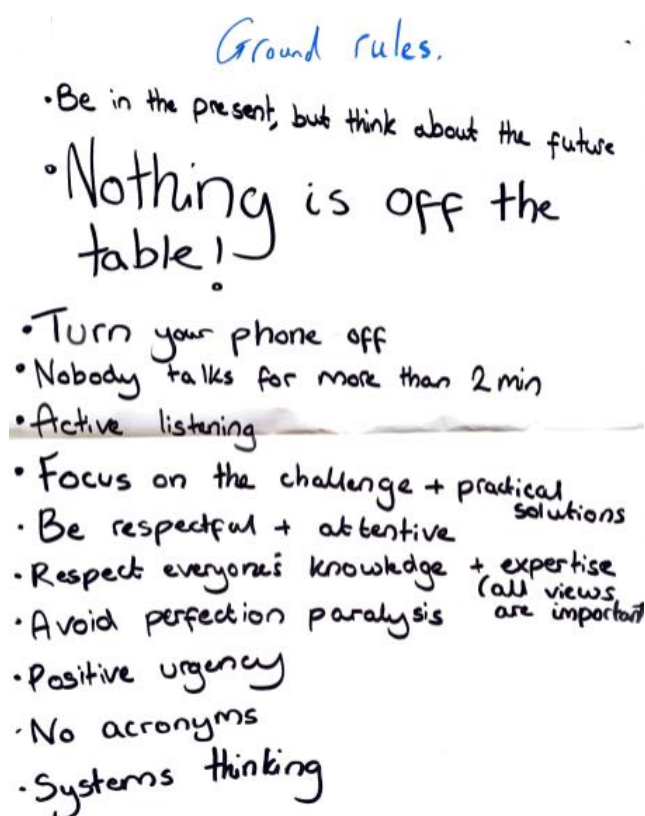

Figure 8: The co-produced ground rules for the workshop.

Following this introductory session, participants were invited to revisit the ideas suggested in the webinar, and discuss further solutions on their tables. Each table provided feedback on their preferred ideas to the rest of the group, and their post-it notes were added to a shared flipchart. Following this, everyone was invited to vote on the ideas they thought should be developed in the afternoon session. Each person received two votes, which they added to the flipchart (Figure 9).

Figure 9: The results of the voting process.

The voting process, and subsequent discussion with all participants, saw the earlier ideas refined into six popular themes (Figure 10); these themes closely followed those discussed in the webinar, and also covered some additional areas identified by the Forest of Dean District Council team.
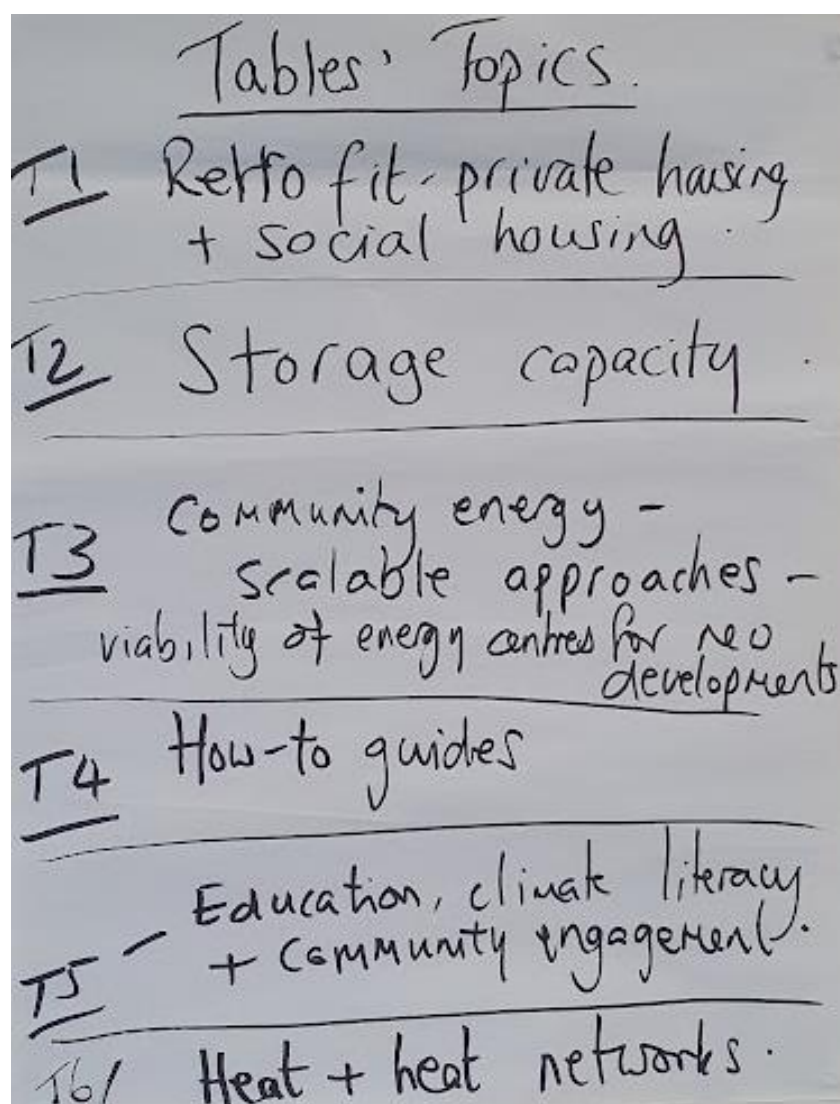
Figure 10: The key themes that emerged from the webinar and in-person discussions.

3.2. Team formation and idea development

Participants were invited to join one of six tables, each of which had a thematic focus, taken from Figure 10.

Following some time for further introductions, teams began working on a 'How might we' statement relating to their solution. They were encouraged to consider three forms that the solution might take: Most rational, most exciting and the long shot.

After completing this process, each team presented their team name and the problem which they planned to address through their solution. Table 1 shows the teams and their proposed solutions.

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Table 1: Team names and chosen solutions

Team name	Solution
Decent Homes	Leveraging funding for retrofit for social housing; mapping EPC ratings across housing association properties.
We Store More	Storing excess energy in kinetic systems in old mine shafts, for release in periods of high demand.
Sunkissed	Co-generation on existing renewable sites, to make use of existing grid connections; energy centres in new developments.
Grid KISS	Developing an accessible resource to support renewables projects looking for grid connections.
Forest Futures	Retrofitted community hub and bus offering climate change, energy and net zero advice to residents.
The Hot Team	Install community heat networks to reduce energy bills and carbon emissions.

3.3. Solution development and presentations

After lunch, teams were given an hour to develop their solutions. After a final coffee break, they were invited to present their solutions to their colleagues and a panel (Figure 11). The panel of Nick Murry (Forest of Dean District Council); Emily Taylor (National Grid Electricity Distribution); and Andrew McKenzie (Gloucestershire Growth Hub) provided feedback on the feasibility of the teams' solutions and potential areas of improvement should the solution be adopted.

Figure 11: The Forest of Dean Climathon panel of (L-R) Nick Murry (Forest of Dean District Council); Emily Taylor (National Grid Electricity Distribution); Andrew McKenzie (Gloucestershire Growth Hub).

The six presentations are summarised in the following section, and in Amanda Steer's visual notes (Figure 12). Amanda's illustration captures the ideation stage of the Climathon in the lower section. Examples of the notes Amanda made on the day to inform the final design are available in Appendix 3.
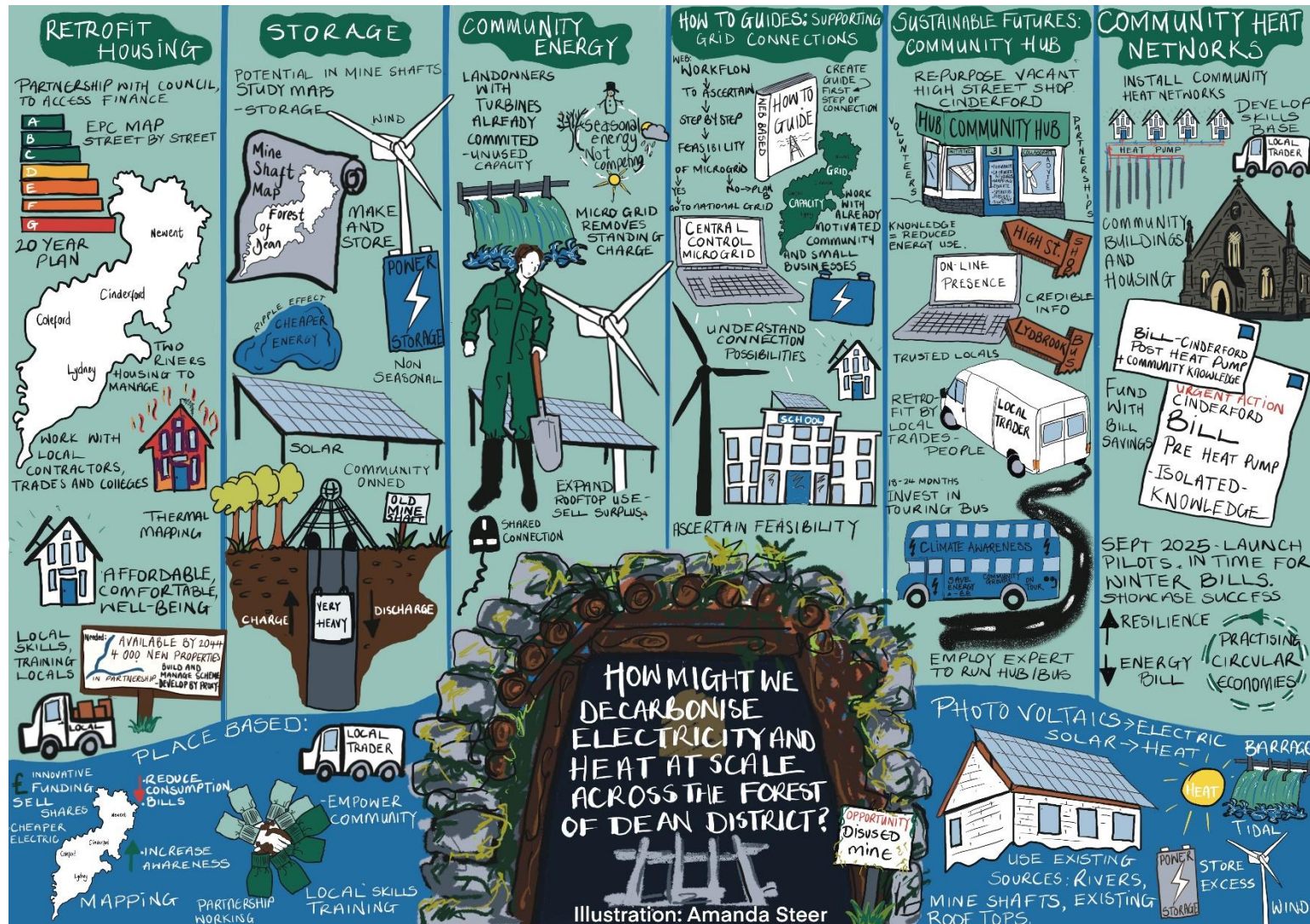
Figure 12: Visual notes of the discussion and solutions developed at the Climathon © Amanda Steer

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3.3.1. Decent Homes

Decent Homes focused on making housing retrofit more deliverable, specifically how funding could be leveraged for the retrofit of social housing. This would be a partnership between the District Council and social housing providers in the district, such as Two Rivers Housing. There would also be an opportunity to work with local education providers to address a skills gap in this area, training local individuals to build or retrofit houses in the district. Finally, the team suggested that there is an opportunity to map the EPC ratings of properties street by street, which would allow for the prioritisation of areas with lower performance ratings. They recognised that this project would be a longer-term solution, over approximately 20 years; however, it could also be considered as a pilot for private homes in the shorter-term.
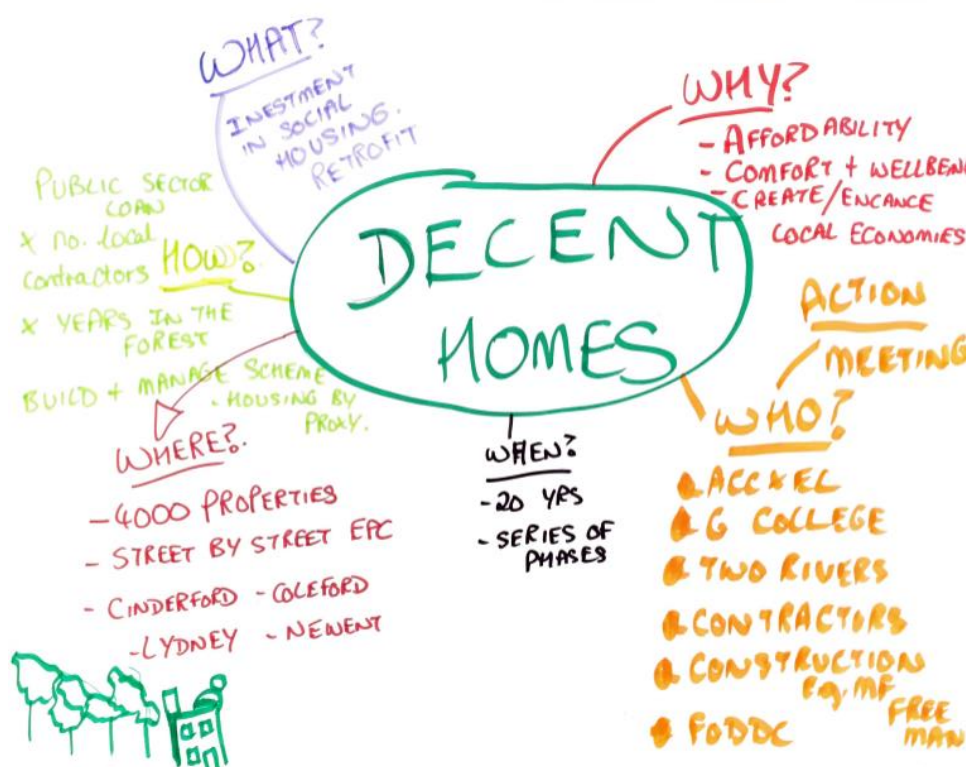

Figure 13: Decent Homes' presentation

The panel responded positively to the team's focus on training and skills. They asked whether there might also be an educational element for tenants whose homes are involved in retrofit projects. The team responded that there is an opportunity to demonstrate the benefits of retrofit to current tenants, and that tenants' specific needs could be accounted for during the retrofit work. The panel also asked for clarification on the proposed funding mechanism. Decent Homes recognised that central government funding would be insufficient to retrofit all properties in the district, thus additional support would be required at the district level.

3.3.2. We Store More

This team focused on energy storage, and options that would allow energy generated in the district to remain in the district, for use by residents. Energy produced by renewable sources would be transferred to kinetic structures in disused mine shafts, stored as potential energy until required. This infrastructure is being piloted in the UK, and has been successful in Switzerland, although a feasibility study would be required to understand whether the mechanism would work safely in the mines. Each storage mine could be owned by the local community, allowing present and future generations to care for and bring new life to the district's heritage.

Figure 14: Team We Store More present their energy storage solution.

The panel liked that this solution was place-based, and considered the district's mining heritage. They asked whether the team had any locations in mind for this form of energy storage. The team replied that this would require the analysis of mines across the district to ascertain which are large enough for this infrastructure. A comment from the room captured the importance of assessing the technical specifications of the storage system, to ensure it was fit for purpose and would not lead to power cuts or shortages.

3.3.3. Sunkissed

This team focused on the potential to rapidly install new solar developments at wind and micro-hydro sites in the district. The solution would take advantage of the spare connection capacity at existing sites; for example, a wind turbine with a 150-kilowatt connection would be unlikely to generate the maximum capacity, thus there is the potential to supplement this with solar generation. This would also allow for seasonal variations in each type of renewable energy generation. This approach has the potential to be both faster and cheaper, as no new grid connection is required.
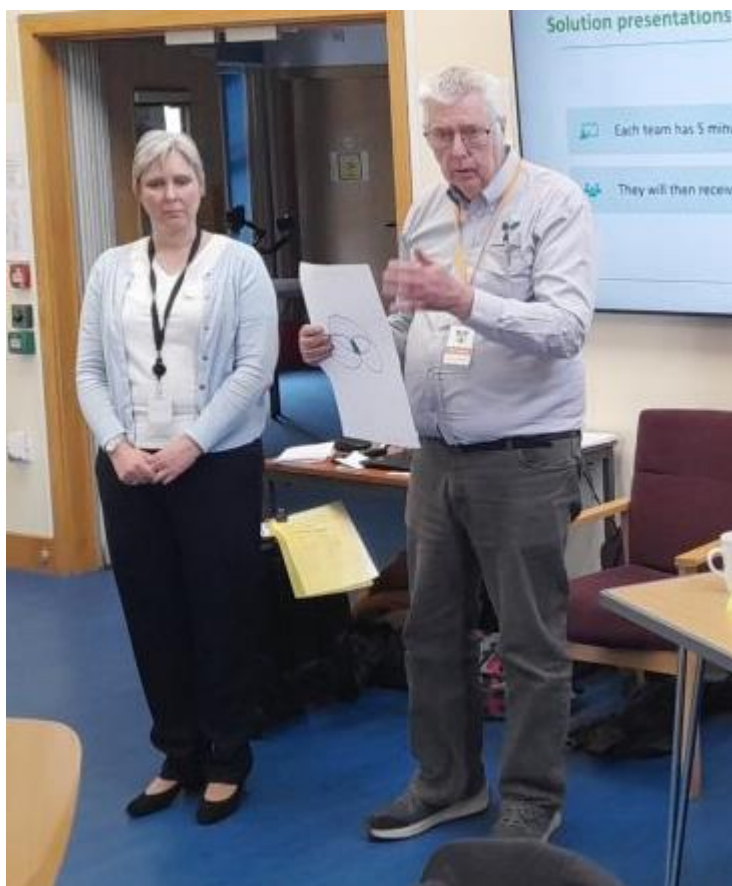

Figure 15: Team Sunkissed present their co-generation solution.

The panel asked about the ownership model for such a development. Sunkissed responded that this would most likely be a Community Interest Company or a Community Benefit Organisation. Their creative approach was complimented for making the best use of existing capacity, meaning expensive infrastructure upgrades would not be immediately required, nor would planning issues be as likely to occur. There was also a discussion about whether it may be possible to co-locate battery storage on existing sites, although the economic feasibility of this was questioned.

3.3.4. Grid KISS

Grid KISS (Keep it Stupidly Simple) focused on supporting new projects' journeys to securing a grid connection. Their aim is to map the workflow of this process for projects of various sizes, so that organisations have all the information they require throughout the connection survey process. The team have agreed a date for their first meeting, in which they will discuss a new page on the National Grid website which will include these details. In addition to a national tool, the team plan to create a guide for the Forest of Dean, which will interpret this data at the local level. This guide would be shared with people and projects across the district to ensure it was as accessible as possible.
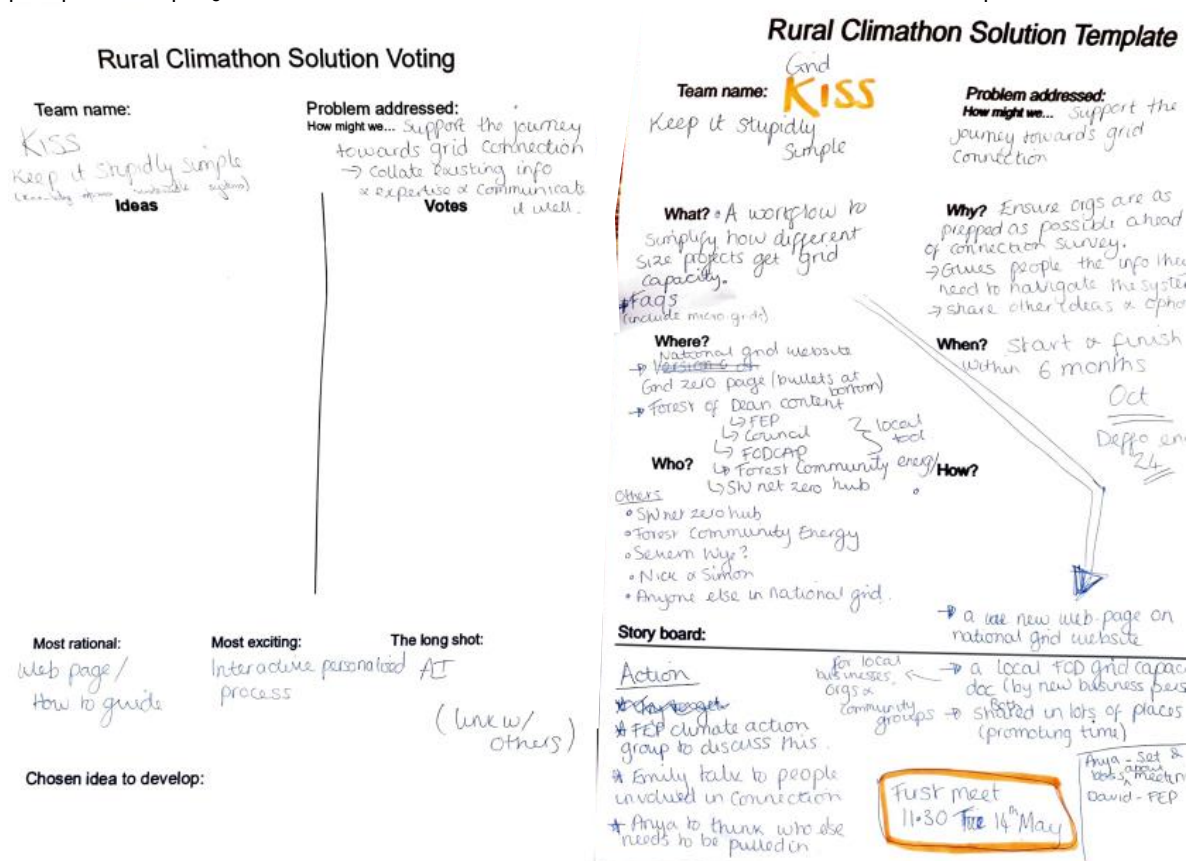

Figure 16: Grid KISS' solution development process

The panel enquired about the audiences for this work. Grid KISS responded that the main audience would be small businesses and community groups across the district, who are enthusiastic about seeking a grid connection, but may need support through the process. Another key question was resourcing the development of the webpage; this could be covered by National Grid. Finally, the panel added that the resource could usefully combine information from other sectors, such as the government's MAGIC map, to allow projects to conduct feasibility studies. Comments from the room included a suggestion that the guide could go beyond the written word and become a training course for those exploring the potential for a grid connection. The team responded that their proposal was an initial phase, in which they would focus on the key building blocks, before exploring opportunities to expand their vision.

3.3.5. Forest Futures

This team's solution consisted of two phases. The first was to bring a retrofitted community hub to Cinderford High Street. This hub would offer support to residents across the district on a range of climate and energy issues; this would include promoting existing materials from organisations across the district. The project would also act as a pilot for retrofitting vacant commercial or retail spaces. Following the launch of the hub, the second phase of the project was to purchase an electric bus, which would visit towns and villages across the district.

Figure 17: Forest Futures' solution.

The panel asked the team to provide an anticipated timeframe for this project. The team responded that the hub retrofit and business planning for the hub would take place within 18 months, with a bus bought within two years. The process would ideally be overseen by a funded member of staff. Forest Futures went on to explain that they felt it was important to build trust in the community, providing a space in which people could meet to access and discuss credible information. The panel asked whether there was an organisation who might be able to help run this without creating another Community Interest Company. The team responded that the Forest of Dean Climate Action Partnership may be the best organisation for this. The panel also suggested the team seek funding from manufacturers and corporate entities through their Environmental, Social and Governance agenda. The team were asked a question from the floor, regarding the benefits of a physical hub over an online hub. Forest Futures responded that this would allow people to connect with one another as well as the information, which could play an important role in community development.

3.3.6. The Hot Team

The Hot Team's solution focused on reducing carbon emissions from heat and reducing energy bills through the development of community heat networks, primarily using ground and geothermal sources. This would be piloted in two areas of Cinderford, and the lessons from these pilots transferred into further projects across the district. This would include an analysis of the funding models developed, including demonstrating the non-financial values of warm homes. The savings made through these models would be used to fund the initial installation costs of the heat networks. These pilots would ideally be delivered within the year, as the team stressed the need for urgency in our response to climate change.

Figure 8: The Hot Team's proposal for community heat networks.

The panel asked how the team would guarantee the pilots would not cost communities any more money than they currently pay. The team responded that the first pilot would be on public and community buildings, and the second, which would include residential dwellings, would be fully funded. The team also considered carbon offsets as a funding model; this would allow the pilots to access funding from organisations which are looking to invest in decarbonisation activities. Feasibility funding for the pilots could be provided by the District Council, as the proposed area includes several buildings open for the public.

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3.4. Closing Remarks

The Forest of Dean Energy Climathon asked: How might we decarbonise electricity and heat at scale across the district? Six teams worked to develop solutions to this question, which were then shared for feedback from a panel. It was clear from these solutions that there are several positive routes forward for Forest of Dean District, which align with the Council's priorities. Outputs from the event focus as much on social innovation as they do technical solutions. As highlighted in Nick Murry's webinar presentation, engagement and partnerships will be crucial in meeting the Council's targets. It was positive to see all solutions engage with these issues.

Follow up work is ongoing, and the CCRI team will continue to engage with Forest of Dean District Council colleagues to see how the solutions developed during the Climathon inform plans in the district going forward. The work will also be extremely valuable and support wider stakeholder strategic work, particularly as part of climate action at local and county levels.

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Appendix 1 – Forest of Dean Climathon Webinar Agenda

The webinar took place from 09:30-11:00 on Monday 22nd April 2024. The agenda was as follows:

- Introduction to Forest of Dean Energy Climathon –Damian Maye, CCRI
- Jim Wrigley, South West Net Zero Hub
- Distribution Future Energy Scenarios, Emily Taylor, National Grid Electricity Distribution
- Onshore renewables, Toby Bridgeman, Friends of the Earth
- The Forest of Dean context, Nick Murry, Forest of Dean District Council
- AURORA and Forest Community Energy, Emma-Jayne Williams, Forest of Dean District Council and Amy Staff, Centre for Sustainable Energy
- Friday's meeting: structure, challenge, objectives (CCRI team)
- Initial round of ideas for decarbonising energy and heat in Forest of Dean
- Summary and Q&A session
- Webinar close

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Appendix 2 – Forest of Dean Climathon Workshop Agenda

The in-person Climathon workshop took place on Friday 26th April 2024. The event started with an introductory talk outside the Forest of Dean District Council offices in Coleford, before participants gathered at The Main Place for the solution development activities.

09:30 – meet at Forest of Dean District Council Offices for an introductory talk
10:30 – workshop begins at Main Place, Coleford, with recap of objectives
11:15 – idea selection and development
13:00 – lunch
14:00 – solution development time
15:15 – coffee break
15:30 – teams present their solutions and feedback is provided
16.45 – thanks, and event close

Appendix 3 – Draft Visual Notes

Amanda Steer is an alumna of the University of Gloucestershire's MA Illustration course. Throughout the in-person workshop Amanda took comprehensive notes (see example below), which informed the final design for the visual notes.