




Article

Envisioning Climate Change Adaptation Futures Using Storytelling Workshops

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Abstract: Engaging people in preparing for inevitable climate change may help them to improve their own safety and contribute to local and national adaptation objectives. However, existing research shows that individual engagement with adaptation is low. One contributing factor to this might be that public discourses on climate change often seems dominated by overly negative and seemingly pre-determined visions of the future. Futures thinking intends to counter this by re-presenting the future as choice contingent and inclusive of other possible and preferable outcomes. Here, we undertook storytelling workshops with participants from the West Yorkshire region of the U.K. They were asked to write fictional adaptation futures stories which: opened by detailing their imagined story world, moved to events that disrupted those worlds, provided a description of who responded and how and closed with outcomes and learnings from the experience. We found that many of the stories envisioned adaptation as a here-and-now phenomenon, and that good adaptation meant identifying and safeguarding things of most value. However, we also found notable differences as to whether the government, local community or rebel groups were imagined as leaders of the responsive actions, and as to whether good adaptation meant maintaining life as it had been before the disruptive events occurred or using the disruptive events as a catalyst for social change. We suggest that the creative futures storytelling method tested here could be gainfully applied to support adaptation planning across local, regional and national scales.



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1. Introduction

1.1. Pre-Determined Futures

The U.K., and many other places, are already experiencing the impacts of climate change, which are expected to increase in range and severity over the coming decades [1]. While climate change will bring some opportunities, such as longer growing seasons and milder winters, many of the impacts will be hazardous, such as more frequent flooding and heatwaves. Adaptation is a response to climate change impacts that aims to maximise the opportunities while reducing the likelihood and severity of harm caused [2]. However, adaptation requires investment of finite resources of time, effort and money, as well as an acceptance that changes need to be made. Therefore, perceptions of the future need to both justify this investment, i.e., through sufficient perception of risk, and provide confidence that taking action is a credible and beneficial response.

Much of the current public discourse around climate change futures emphasises the risks but is arguably less clear on humanity's ability to adequately respond. For

example, a recent IPCC report was summarised in the media as “12 years to save the planet” (e.g., [3,4]). Increasingly frequent and severe wildfires, flooding and hurricanes have received significant media coverage in recent years, as have forewarnings of the imminent loss of the rainforests, the polar caps and a growing number of species. Some have sought to capture public attention by envisioning fearful future scenarios, such as David Wallace-Well’s think piece “The Uninhabitable Earth” [5] or Jonathan Franzen’s piece subtitled “The climate apocalypse is coming” [6]. Likewise, while recent protest movements such as Extinction Rebellion and the School Strikes for Climate have made important gains in raising the visibility of these issues, they have often done so by emphasising the imminence and direness of climate-altered futures.

While negative framings of climate change can be effective in grabbing attention, they can also be ineffective in securing personal engagement with the issues [7,8]. A recent survey found that residents are now much more worried about climate change [9] than they were even a few years ago [10], but that this has not yet translated into increased active engagement [11]. Additionally, disaster framings can oversimplify or even misinterpret the science; both of the think pieces mentioned above received significant criticism from the scientific community for not engaging with the complexity and uncertainty in projecting climate futures (e.g., [12]). However, disaster framings may be so attention grabbing exactly because of the singularity and vividness with which they present a seemingly definite vision of the future. Hulme [13] has phrased this as “climate determinism and reductionism”, defined as a phenomenon in which a small number of climate factors are over-weighted in imaginaries of the future, while the influence of human choice is heavily discounted. Hulme concludes that the most dangerous outcome of climate determinism is that “the openness, contingency, and multiple possibilities of the future are closed off” ([13], p. 249).

1.2. Futures Thinking

Yet, the future is “precisely the most important territory over which battles of beliefs, ideologies, and social values have to be fought” ([13], p. 265). Reimagining the future as open for debate may provide an alternative to climate determinism and reductionism, and thus an alternative to the perception of unavoidably bad outcomes. Further, considering the already significant scientific and technological knowledge, and yet the insufficient political response to climate change, our futures will be shaped more by our choices than by our capabilities [14]. This has become even more pressing in the Anthropocene as humans now have unique influence in shaping life on Earth, so creating a moral responsibility to be more conscious of our choices and their implications [15].

Futures thinking is an umbrella term for decision-making processes, which extend the range of choices under consideration beyond those which seem most probable to also include those that are possible and preferable [16]. It is in part a reaction to the positivist view of singular truths as it encourages engagement with the plurality and complexity of the future [17]. It also provides means of testing and evaluating a range of proposed ways forward ahead of time [16,18], encouraging more informed and intentional decision making.

Adaptation can itself be a form of futures thinking, if and when undertaken in response to an assumed or envisioned future. However, as with all futures thinking, adaptation planning needs options. For example, adaptation strategies based only on present circumstances might prove maladaptive in the future, while strategies that account for a greater range of futures are likely to be robust to uncertainty about the future [19,20]. Choices will need to be made in regard to what events necessitate an adaptive response, who should respond and how and what the intended outcomes should be [21]. Additionally, there are limits to the level of climate change to which we can adapt [22], and even successful adaptation will likely bring some unwanted loss and disruption [23], meaning there will also be choices to make in terms of who and what gets prioritised (or not). These decisions will be made using a number of approaches including, for instance, quantitative assessments of adaptive capacity and cost-benefit analysis. However, due to the complexity and

resonance of the decisions being made and the benefit of increasing engagement with these issues, it may also be advantageous to put in place procedures that facilitate the conscious consideration of additional options that are possible and even preferable [16].

1.3. Futures Research

Futures research for climate change can include trend spotting, scenario planning and data-based forecasting [17], as well as creative and artistic methods [24,25]. Recent examples include envisioning what kind of knowledge systems will be needed to facilitate the transformational level of change needed to adequately respond to climate change [26], while Bai et al. [15] proposed a research agenda to develop the “plausible and desirable futures” of the Anthropocene. Others have argued that futures thinking needs to become a more prominent part of climate change discourse, and they have undertaken research as to how communications might encourage this shift [27]. A number of creative approaches have been applied to imagining more sustainable futures. For example, McKay and Dickinson [28] developed a graphic novel incorporating visions of a sustainable future gathered through a series of participant workshops; Smith et al. [29] have used a series of story-based games to generate ideas around “energy utopias”; Rottman [30] asked her participants to write short fairy-tales as a means of explaining their views on energy futures. A larger project published a collection of fictional short stories envisioning the experience of climate change in the U.K. [31].

Adaptation research has also used forms of futures thinking, particularly scenario planning, although this often focuses on the “probable” outcomes as shaped by existing social and governance frameworks [32]. It has been applied to specific impacts in specific locales (e.g., [33–35]), and to develop sets of socio-economic scenarios for climate impact, adaptation and vulnerability research and planning [36]. This type of work is particularly useful to inform policy and practice, as well as to provide a grounding for future research. However, as outlined above, adaptation also raises more open-ended questions applicable to all in society, such as what the overall ambitions of a well-adapted society might be, what things or values are considered essential to maintain and what trade-offs and compromises will be considered acceptable. These types of questions might be best addressed using more explorative and unbound forms of futures thinking, a challenge we intend to contribute to with this research.

1.4. Storytelling the Future

Storytelling has had particular focus as a means of exploring a wider range of futures and the transformations needed to get there (e.g., [37,38]) for a number of reasons. Firstly, storytelling can be a very accessible way to approach climate change [39,40]. The climate change topic can often seem dominated by science and other specialist discourses which might be off-putting [41]. In comparison, storytelling is an intrinsic human behaviour, and hearing or telling stories is part of daily life, making it a commonly shared area of expertise [18,42]. Secondly, as a creative and often fictional format, stories can be boundless as to what they include. This provides an important counter to the over-emphasis often placed on the narrow range of scenarios developed out of scientific modelling [13], or existing governance structures [43]. Fictional stories provide participants with a safe space in which to explore what might be, and not necessarily what they think should be or what they would be willing to do [29]. Stories also have an inherent plurality and interpretability that allows room for negotiation, which might not be available in more facts-based means of envisioning the future [44]. Finally, stories are always ultimately an exploration of meaning and values [42]. In practice, adaptation futures will be a series of decisions that will need to balance risk management against other unwanted compromises and losses [23]. Decision making in favour of adaptation will need to be perceived as sufficiently compatible with people’s other priorities and values to be considered overall beneficial [45–47]. Stories provide a way of identifying the meanings and values, which need to shape adaptation

decision making, and are a means to understand what the non-negotiable elements of the future are and where there are opportunities for change.

1.5. Research Questions

The goal of this research was to use creative futures thinking to understand how our participants envisioned adaptation and whether they raised ideas beyond the deterministic and at times disastrous futures often portrayed in public discourse. To do this, we ran 3 workshops with 12 participants who wrote fictional adaptation futures stories in which disruptive climate-related events occurred and were responded to. While the research objective was principally explorative, the following research questions were used to help guide the analysis:

1. When and where did the participants set their stories?
2. What disruptive events initiated the stories?
3. Who was described as responding to these disruptive events and how?
4. What were the outcomes of the narrated events?

In Section 2, we present the methods used including, in Table 1, the story writing instructions provided to the participants. In Section 3, the main findings for each of the research questions listed above are given with the 12 stories summarised in Table 2. In Section 4, we discuss what these findings contribute to our understanding of imaginaries of climate change futures. In Section 5, we review the process of using creative future methods within adaptation research.

Table 1. The writing instructions given to the participants.

Box Number:	Section Header:	Please:	Think about:
Session 1: The Beginning			
1	Once upon a time ...	Describe the world of your story.	Where in the U.K. is your story happening? Is the U.K. like it is in real life or do you want to make some changes? When in the future is your story happening? Who lives in your story?
2	Every day ...	Describe what makes this story world good to live in.	What do the characters in your story world like doing? What is considered important and valuable?
3	But one day ...	Describe a climate-related event(s) that disrupts the everyday life of this world.	Is the event a surprise or has it happened before? Is it a good or bad event? How does it affect those who live there? How do they feel?
Session 2: The Middle			
4	But then ... !	Describe an individual or group who decide to respond to the events.	How many characters get involved? Who are they? Why do they decide to act? Is there a leader?
5	So they ...	Describe the actions they take.	Is it a small or big action? Will it help immediately or in the future or both?
6	Because of that ...	Describe the immediate outcomes of the actions.	Did the planned actions go well or were there some problems?
Session 3: The End			
7	So finally ...	Describe what happens at the end of the story.	Are the disruptive events solved? Could they happen again?
8	And ever since then ...	Describe any changes to the future.	Has the world of the story changed? Have the things that made the world good to live in changed or stayed the same? Have any of the characters changed? Have they learnt anything?

Table 2. Summary of the principal plot points of the 12 stories.

Story	Set When	Set Where	Climate-Related Disruptive Events	Who Responds and How	Outcomes
S1	In 50 years' time	The U.K.	Drought destroys locally grown crops.	Local councils put water-saving regulations in place.	Greater sense of community and awareness of conservation. Less exposed to drought and loss of crops.
S2	2025	Large Yorkshire town	A heatwave forces people to stay indoors.	The local community campaigns for the government to impose measures to reduce greenhouse gas emissions.	Low-carbon lifestyles normalised and less exposed to extreme weather. Stronger community relationship.
S3	Not specified	The Complex and Earth	Complete ecological breakdown of Earth.	Some survivors are forced to live in the Complex until a rebel group leads the re-habitation of Earth.	Earth has healed. Humans have learnt to live in harmony with nature.
S4	2035	Leeds	Flooding of the family home forcing them to move to a hotel.	The government, the emergency services and charities help those in immediate need and put policies in place to reduce flood risk in the future.	Dangers of flooding decreased and people more conscious of climate change. Otherwise minimal change.
S5	2020	Leeds	Flooding severely damages farming and food.	The government leads the response to clean up the immediate impacts and better prepare for flooding in the future.	Communities are more prepared for future flooding and people more willing to live eco-friendly lives.
S6	Not specified	Coastal community	Flooding affects local fishing and farming and makes homes uninhabitable.	The government decides it is more economical to move the affected residents to a new in-land development and to turn the abandoned land into a nature reserve.	The community accepts the changes, but further coastal erosion and flooding are expected.
S7	Next week	North of England village	Extreme weather forces the local farm shop to close.	The community grows their own food and changes their diet; also initiates a public information campaign as to why and how people can live more sustainably.	Community is much happier with its new lifestyle and likes to promote how wonderful it is. Measures in place to manage extreme weather.
S8	2040	Fishing and tourist community	Flooding damages the local fishing and tourism industries.	The community works together to put a range of mitigation actions in place and lobbies government and business to help.	Community still struggling with impacts and how best to stop climate change. Greater awareness of dangers of prioritising profit.
S9	2050	Bradford	Flooding affects local farms and the community.	The community works together to learn from the experience and to become more resilient for future floods, e.g., having fewer houses in high-risk areas.	Measures in places to manage extreme weather and reduce climate change. Community has learnt to work together.

Table 2. Cont.

Story	Set When	Set Where	Climate-Related Disruptive Events	Who Responds and How	Outcomes
S10	Not specified	Welsh village	Flooding to a mining town affects the industry and forces workers and their families to move away.	A gentleman from out of town rebuilds the town so it can again be a buzzing hub of happy family life.	The problems are solved and will never happen again. Community life has been restored.
S11	2050	London	Subfreezing temperatures and regular earthquakes have made living above ground impossible.	A group of rebels defy the orders of the rich so as to redirect resources towards the masses, leading to war.	War rages, breaking down society. Elsewhere in space, a new planet is forming.
S12	2050	The U.K. as one large city-state	Overseas impacts damage U.K. food imports.	A rebel group leads a militarised campaign to move the country away from high-tech living towards sustainability, including locally grown crops.	Society and the rule of law are re-established under new leadership. Farming becomes an enjoyable community activity.

2. Methods

2.1. Location

While the imagination can be boundless, it will often be influenced by lived realities [48]. Our case study was based in the West Yorkshire region of the U.K. The U.K. is regarded as having some of the world's most developed adaptation policies [49,50], and recent surveys have found that U.K. residents perceive climate change impacts as of immediate concern to the country [9]. The Yorkshire region has experienced a number of extreme weather events, most notably major flooding in the winter of 2015, as well as recent periods of drought and heatwaves. Leeds, the biggest city in West Yorkshire, was the first place in the U.K. to launch a climate commission in 2017, while a number of councils declared climate emergencies in 2019. Nevertheless, a recent survey of Leeds residents found that household-scale engagement with adaptation remains low [51].

2.2. Participants

Twelve participants took part in one of three workshops (three to five participants per workshop). Research on in-depth interviews, a similarly explorative and qualitative research method, suggested that no new ideas were revealed (also referred to as "saturation") after interviewing 10–15 participants [52]. Moreover, approximately 80% to 92% of all identified topics tended to emerge within the first 10 interviews, and no more new topics were identified after 20 interviews [52]. Such sample sizes are sufficient because the goal of qualitative research is to identify *which* ideas emerge rather than *how often* ideas emerge. To assess how often ideas occur in a population, or who is more likely to share them, follow-up surveys with larger nationally representative samples are needed [53].

Participants were recruited using the Leeds University Testing Organisation (LUTO), which specialises in developing and testing public communications. The workshops took place at LUTO's facilities in the Greater Leeds area over a 3-week period in August 2019, and were led by the first author. The final sample had an even number of people aged 18–30, 31–50 and 51+, and had 7 women and 5 men (see the Supplementary Materials). During a screening call, all participants said they were at least quite interested in climate change. Moreover, 7 of the 12 participants said they thought about having to adapt to climate change at least fairly often, with the remaining 5 thought about it less frequently. Then, 11 of the 12 participants said they did not consider themselves to be living in an area at high risk of flooding. Participants were also screened for their willingness to take part in group discussions and creative activities so as to ensure a sample that would fully engage in the quite long and strenuous workshop. However, they were not screened for sociodemographic or geographical characteristics, and this small sample cannot be described as representative of the U.K. population. The participants were recompensed for their time; ethical approval was granted by the University of Leeds.

2.3. Workshops

Workshops offer a number of advantages to futures research: they usually include a small number of participants for a relatively long period of time, giving the participants an opportunity to explore their knowledge and opinions in detail, while also facilitating discussion between participants [54]. Pooling knowledge and experience can help deepen conversations, while the interactions between participants can start to stimulate the debate intrinsic to futures thinking. During the three-hour workshops, participants took part in a number of group discussions and activities (see the full workshop script in the Supplementary Materials). This paper reports on the main activity, which asked participants to write their own fictional adaptation stories.

Participants' story writing was divided into three sessions, with each writing session being preceded by group discussions. The discussions supported the story writing by introducing and exploring relevant topics that the participants could then develop in their own stories. For the writing, the participants were given a storybook with eight boxes to complete, each with a header, some instructions and space for the participant to write (see

Table 1). The “Section Headers” were based on those previously used by Rottman [30] in her work on developing energy stories. The additional instructions, shown under “Please” and “Think About” in Table 1, were added by us. Additionally, participants were asked to set their stories in the U.K. at some point in the future. The participants were informed that they would not be asked to share their stories with the group.

2.4. Analysis

For the analysis, we were interested in the choices the participants made when adding the detail to the basic structure that had been set (see Table 1). For example, we examined which impacts the story worlds experienced in Box 3 and who was described as responding in Box 4. The participants were instructed to write about a story world that was “good to live in”, to describe responsive actions that would “help immediately or in the future”, and to consider whether by the end of the stories what made life good “had changed or stayed the same”. In this way, we encouraged the participants to write positive adaptation stories and to explore what adaptation could and should look like.

The story workbooks were copied into qualitative data analysis software. We used applied thematic analysis to code and analyse the data [55]. As with other approaches to close text analysis, applied thematic analysis requires the researcher to draw out keywords, themes and ideas by reading and rereading the text, although it particularly intends to identify expressions of emotions, perceptions and experience [55]. This approach is useful when taking an explorative approach to a specific research problem for which understanding people’s likely complex responses is required.

3. Results

In what follows we present findings for our four research questions, which are: (1) When and where did the participants set their stories? (2) What disruptive events initiated the stories? (3) Who was described as responding to the disruptive events and how? (4) What were the outcomes of the narrated events? Table 2 provides a summary of each story.

3.1. When and Where Did the Participants Set Their Stories?

The majority of the stories were set by 2050, often within the next 20 years. Most of the stories were set in nearby locations, including Bradford, Leeds or other unnamed towns and villages in Northern England. They also tended to be familiar and somewhat quintessential British settings, such as a mining village, a coastal fishing village and a northern farming town. Two stories were set in dystopian cityscapes, and a third was set beyond Earth. When asked to describe what made their story world good to live in, participants wrote about spending time with family and friends, being part of a community, good locally grown food, reliable weather and seasons, spending time outdoors, living sustainably and with nature and being able to enjoy everyday life. In sum, a good life was described as “comfortable . . . and stable” (S4).

3.2. What Disruptive Events Initiated the Stories?

Four of the stories described a flooding event and a further two described storm surges and/or sea-level rise causing flooding. Two participants wrote about heat waves. The following impacts were mentioned in one story each: complete ecological collapse, unpredictable weather, sub-freezing conditions, earthquakes and impacts to the U.K. from weather events overseas. Often, the things that had been identified as things of value in the opening description were disrupted by the events. For example, “crazy and unpredictable” weather caused the local farm shop to shut down (S7), one happy family was left feeling “stressed and depressed” (S4) when they were forced to move to a hotel after their home flooded and there was “complete destruction” of the local industries when impacts struck, affecting the overall viability and wellbeing of the community (S8). More than half of the stories mentioned secondary negative impacts on food, fishing and farming, while the loss of jobs and the negative emotional toll were additional recurring themes.

3.3. *Who Was Described as Responding to the Disruptive Events and How?*

The stories identified three groups of leaders of response actions. In some stories, the national government, local government or other governing bodies were in charge, leading the immediate cleanup and issuing legislation to prevent similar future events. A principal reason given for government leadership was its “position to raise awareness” (S1) and mobilise resources. In other stories, the community led and tended to focus on making the local community more sustainable, such as shifting away from car usage and installing renewable energy sources in homes. Communities also issued public information campaigns and lobbied the government for support. Self-efficacy was emphasised in these stories as communities met to discuss “what they can do differently—starting with what they can do as individuals” (S8). In general, those stories in which the government took the lead tended to describe more adaptive actions, whereas community-led stories tended to focus more on actions to reduce the emission of greenhouse gases. A final set of stories did not mention government or community. In these stories, rebel groups initiated war or revolution to reclaim power from authoritarian rule (S3), the big tech industry (S12) or the rich (S11). Here, the actions were broader than either mitigation or adaptation and instead aimed at a complete restructuring of society.

Independent of who was identified as taking the lead in response actions, there were suggestions that there will “always [be] one or two that will be discontented” (S6), and that not all in society would be willing to support the changes and would therefore need to be coerced or forced into action. This was most dramatic in the “rebel” stories in which splinter groups became so disillusioned with the status quo that they took violent actions to overthrow the existing power structures to make way for new ways of living.

3.4. *What Were the Outcomes of the Narrated Events?*

Several stories noted that similar climate-related events would likely happen again and that the benefits of change, such as a re-stabilisation of the climate, would often be achieved in the long term rather than the short term. However, many of the story endings focused on the story worlds being better prepared to face similar events in the future. They were also now more informed about the causes of climate change and how to mitigate it. Additional benefits included a more reliable, locally grown food supply, a greener environment and a shift of values towards simpler and more sustainable lifestyles. What was valued at the end of the stories tended to strongly reflect what was valued at the beginning, but the story worlds had learnt how precarious these things were and thus the need to take better care of them. For example, several stories narrated improvements in domestic food production, with one story even describing “people spend[ing] leisure time helping [to] grow crops” (S12). There were frequent suggestions that the events had made the communities stronger and better to live in, as “more people engag[ed] in conversations with one another” (S2) and had an increased sense of “working together” (S9) “towards [the] same goal” (S1). There was also a move away from globalisation towards increased community or national self-reliance.

3.5. *What Is Good Adaptation?*

Only one of the stories presented an ultimately disastrous vision of the future for humans. By the end of all the other stories, sizeable improvements had been made and/or the citizens were better equipped to protect existing things of value. Some of the stories presented what might be considered a traditional approach to risk management, i.e., an extreme event occurs, and a government-led response tidies up the damage, putting new legislation in place to prevent a reoccurrence. However, a number of stories sought to explore more transformational forms of response and did so by developing approaches based on community collaboration and a reconsideration of social values. Some stories described worlds that had been fundamentally changed by the experience of responding to the disruptive events, whereas in other stories, the process of adaptation was presented as a means of maintaining the status quo.

4. Discussion

In the Introduction, we argued that futures thinking can counter the influence of overly deterministic, often disaster-driven climate change narratives that can be disengaging, as well as remiss of the fundamentally choice-contingent nature of future outcomes. Using creative methods of futures thinking can be particularly appropriate when addressing more explorative questions, such as, “what will good adaptation look like?” We asked our participants to write fictional stories describing a future story world that experiences disruptive climate-related events and then responds to them in some way. Across the twelve stories, there are three key themes that we will discuss further below: adaptation as a here-and-now phenomenon; the potential for the experience of impacts and adaptation to strengthen commitments to what is most valued; differing perceptions in regard to who is responsible for adaptation and acceptable levels of change. In the Conclusion, we will reflect on using creative futures thinking in adaptation research.

4.1. *Adaptation in the Here and Now*

Despite having the freedom to set their stories at any point in the future and in a U.K. of their imagining, most of the participants set their stories temporally quite close to the time of writing and in highly familiar spatial and social settings. Therefore, one of the first things to note about the participants’ imaginings of adaptation is that they were set in the here and now. This somewhat contradicts previous research, which has found that U.K. residents tend to psychologically distance the threats from climate change by conceptualising it as a risk mainly for other places and future generations [56,57]. However, there is also some evidence that this perceived distance is starting to change. A national survey taken in 2019 found that a growing number of residents now think the U.K. is already experiencing climate change impacts and consider it as a priority issue for the country [9]. Even more recent surveys have found similar results, suggesting that climate concern is not being entirely “crowded out” by the COVID-19 pandemic [58,59]. These trends are also being replicated elsewhere, as a recent global survey found that 58% of 1.2 million participants from 50 countries agreed that climate change should now be considered a global emergency [60].

Our findings might be further evidence of this shift in public opinion. It should also be noted that fiction offers its own psychological distance, and so our story-writing participants might have been more willing to envision climate change in the here and now than survey respondents. However, a third explanation for this difference might be the effect of the participants being the authors of their own stories. While they were asked to describe disruptive climate-related events, they were also asked to describe the response and possible resolution. One of the principal purposes of storytelling is that it gives order and meaning to experiences [42]. As such, the negative, disruptive experiences of the climate-related impacts became part of meaningful stories about learning and changing. Additionally, current research emphasises the importance of perceived self-efficacy if people are to be willing to engage with climate-related risks [61,62]. In this exercise, the participants had full control, limited only by their imaginations, which might have encouraged the participants to engage with a “close” framing of climate change. One conclusion that might be drawn from this is that, when developing alternative, more engaging climate futures as a counter to the apparent inevitability of disaster scenarios, there may be further benefit in putting citizens not just as central characters in climate change narratives, but in positions of control in defining and shaping those narratives.

4.2. *Commitment to Things Most of Value*

One of the most notable themes of the stories was the extent to which they centred on a fairly short list of “things of value”. These included family, friends and community, being able to make a livelihood and having some enjoyable leisure time, good-quality, locally grown food and greener environments. These items were identified as being of value by their inclusion in the opening descriptions of the story worlds, by their prominence in the

narration of the disruptive events and by the extent to which changes made at the end of the stories were intended to safeguard these things against future disruptive events. Additionally, some stories described how, thanks to experiencing these events, the story worlds were now more aware of what they really valued and intended to re-prioritise lifestyles to optimise these things. At times, these things of value came to shape the revised social values of the story worlds. This was most often the case for community, from which came the value of shared effort to achieve mutually beneficial goals. Similarly, great appreciation for greener spaces and good-quality food led to values of sustainability and living in harmony with the natural environment. Some stories also suggested a shift away from some values, particularly materialism and individualism.

These findings emphasise the importance of taking values and things of value into account when planning adaptation. This has been stated elsewhere in the literature [46,47,63] but is arguably still not fully integrated as a minimal requirement in adaptation planning, so there is some worth in reiterating this point. Of further interest are those stories in which good adaptation was presented as having additional positive outcomes beyond the immediate aim of managing climate change risks, i.e., by re-focusing attention on things of most value and by re-shaping social values. These stories extended thinking beyond what bad things adaptation can limit or prevent to include what good things might be achieved by this opportunity for collective, deliberative decision making. This provides a stark point of contrast to the public discourse narratives introduced in Section 1, in which the occurrence of climate change impacts lead to disastrous outcomes with minimal human agency. This might be instructive in regard to stated ambitions to “build back better” from the COVID-19 pandemic [64], including in regard to adaptation [65], as well as calls to develop a social mandate for climate change action through citizens’ juries and assemblies [66]. Based on these findings, we suggest that these aims could be bolstered by the creative futures approach used here, as it facilitates the consideration of climate change questions within broader questions of social wellbeing and development.

4.3. Responsibility and Change

There were also some differentiators between the stories of good adaptation futures, and these were principally in regard to who was presented as responsible for responding to the events and the level of change that was described as an acceptable outcome of adaptation. In some stories, the national government led the response, mostly undertaking adaptive actions, while in other stories, it was the local community who took action, usually initiating carbon reduction and increased sustainability. The level of change that the communities had adopted by the end of the stories tended to correlate with the split in responsibility: in government-led stories, there was a maintenance of the status quo, while in community-led stories, there were significant shifts in behaviours and lifestyles.

Previous studies on the public perceptions of adaptation in the U.K. have found the question of the appropriate location of responsibility to be a main point of contention between views [10,67]. We are not aware of studies that have explicitly asked participants what they would consider acceptable levels of change when adapting to climate change. This is somewhat surprising as categorisations of adaptation based on differing levels of change are well established within the literature, such as the distinction between “incremental” adaptation, which maintains the essence and integrity of a system, and “transformational” adaptation, which changes the fundamental attributes of a system [2,68]. Further, there is an understanding that transformational change to structures and/or locations of power requires broad social buy-in if they are to be equitable and accepted [69–71]. However, both of these points need to be further explored to understand how they might be acting as barriers or motivators to adaptation engagement. For example, our stories suggest that perceived community efficacy might be a motivator for engaging with more transformational levels of change.

Our findings also suggest that for some, “good” adaptation is in fact the mitigation of greenhouse gases. This might be because individuals are generally more knowledgeable

about how they can become more sustainable, rather than how they might be able to adapt [72], thus making these ideas easier to include in the stories. However, it might also reflect a preference for limiting climate change rather than adapting to it. Considering that the U.K.—and elsewhere—is already experiencing the impacts of climate change [1,73], there is a need to communicate the necessity of adaptation alongside mitigation without relying on the disaster narratives such as those mentioned in the Introduction.

5. Conclusions

In this study, we asked participants to write adaptation futures stories. We set the story structure to guide a narrative arc from disruptive climate-related events to response and resolution, and we included instructions that encouraged participants to write “good” adaptation futures. In the set of imaginaries that were produced, adaptation was presented as a here-and-now phenomenon, and good adaptation centred on identifying and protecting things of most value. However, there were expressed differences as to who should lead adaptation and what level of societal change is an acceptable outcome of adapting to climate change impacts.

There is growing interest in using creative approaches in climate change research as a means of encouraging futures thinking [25,37,38]. Here, we wanted to test the use of storytelling to develop adaptation futures other than disaster scenarios. Although our research was undertaken in northern England, and the results are likely to be to some extent shaped by that, we hope our approach and learnings can be used elsewhere. During the workshops, participants expressed their interest and enjoyment in thinking about climate change in this way. Several also commented on how much they liked being creative, with one participant commenting that they had not written a story since they were in school, several decades previously. We therefore suggest that this can be a very engaging way to approach climate change research with residents and likely other stakeholders (e.g., [30]). Furthermore, the use of the shared skill of storytelling can start to break down the perceived “expertness” of the topic and introduces the idea that all contributions are valid and valuable. In regard to our specific research objective, that so many of the stories were positive in tone suggests that creative futures thinking is a productive means of extending imaginaries beyond those of disaster. At the same time, there were some notable differences between the stories, re-emphasising that adaptation will necessitate choosing and decision making. This recognition in itself is a useful way to counter the perception of pre-determined climate futures. More generally, the process of writing futures stories onto a page makes the possibility of alternative futures seem more tangible and so more possible [30].

There are also some limitations to this approach. Firstly, due to the in-depth and time-intensive nature of this type of research, sample sizes are likely to be small and unrepresentative, as was the case here. Consequently, any findings need to be generalised with caution. Secondly, while fiction can allow participants to be more explorative, it might also be that some participants explore ideas that are not related to the real-world challenges the researcher is hoping to address, or the participants put forward ideas that do not reflect their own views or put forward suggestions that are not feasible or otherwise desirable. As with any research, the findings from this type of study would most usefully be combined with findings from other methods, such as more quantitative adaptive capacity assessments. For example, referring again to Miller’s [16] categorizations of futures that are probable, possible and preferable, an adaptive capacity assessment might conclude what is currently most probable, while creative approaches might identify more preferable future outcomes. The combined findings could be used to develop the pathways needed to get from the former to the latter. However, these categorizations of probable, possible and preferable do present a challenge to the researcher when analysing the data, as it is not known which of these types of future the participant was intending to communicate. Here, we drafted the instructions so as to encourage imaginaries of preferable outcomes, and the stories were

analysed accordingly. However, that one of the stories was nevertheless dystopian in its outcome flags the caution that needs to be applied.

Ideally, an opportunity to engage in creative futures thinking would be extended to all citizens so as to reaffirm the choice-contingent nature of our climate futures. While this is unlikely to be achieved through research, it could nevertheless become a more standard part of adaptation research and planning. For example, those being asked to develop adaptation pathways in response to a specific, localised threat could first develop priorities through some preliminary creative futures thinking exercises. To build on the work done here, these could be produced through iterative group work, rather than individual work, ensuring that there is a shared set of values established before the detail of adaptation planning begins. It could also be used more frequently in engagement scenarios, such as when seeking to raise awareness of the career opportunities and wellbeing benefits that transition to a green, resilient society will likely bring. The relevance of this approach could even be extended to the national scale, such as in future climate assemblies and policy development.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/su13126630/s1>, Table S1: Participant demographics, Table S2 Script used for interviews.

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References

1. Committee on Climate Change. UK Climate Change Risk Assessment 2017 Synthesis Report: Priorities for the Next Five Years. Available online: <https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Synthesis-Report-Committee-on-Climate-Change.pdf> (accessed on 15 June 2018).
2. IPCC. IPCC Fifth Assessment Report Working Group II Contribution: Glossary. 2014. Available online: <http://www.ipcc.ch/report/ar5/wg2/> (accessed on 11 September 2017).
3. Watts, J. We Have 12 Years to Limit Climate Change Catastrophe, Warns UN. 2018. Available online: <https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report> (accessed on 19 October 2019).
4. Mcgrath, M. Climate Change: 12 Years to Save the Planet? Make that 18 Months. 2019. Available online: <https://www.bbc.co.uk/news/science-environment-48964736> (accessed on 18 October 2019).
5. Wallace-Wells, D. The Uninhabitable Earth. *New York Magazine*. 2017. Available online: <https://nymag.com/intelligencer/2017/07/climate-change-earth-too-hot-for-humans.html> (accessed on 4 May 2020).
6. Franzen, J. What If We Stopped Pretending? The Climate Apocalypse Is Coming. To Prepare for It, We Need to Admit that We Can't Prevent It. *The New Yorker*, 2019. Available online: <https://www.newyorker.com/culture/cultural-comment/what-if-we-stopped-pretending> (accessed on 16 January 2020).

7. O'Neill, S.; Nicholson-Cole, S. "Fear Won't Do It" Promoting Positive Engagement with Climate Change Through Visual and Iconic Representations. *Sci. Commun.* **2009**, *30*, 355–379. [CrossRef]
8. Chapman, D.A.; Lickel, B.; Markowitz, E.M. Reassessing emotion in climate change communication. *Nat. Clim. Chang.* **2017**, *7*, 848–852. [CrossRef]
9. Steentjes, K.; Demski, C.; Seabrook, A.; Corner, A.; Pidgeon, N. British Public Perceptions of Climate Risk, Adaptation Options and Resilience (Resil RISK): Topline Findings of a GB Survey Conducted in October 2019. 2020. Available online: <http://orca.cf.ac.uk/129452/> (accessed on 20 April 2020).
10. IPSOS MORI. Prepare—Climate Risk Acceptability Findings from a Series of Deliberative Workshops and Online Survey. 2013. Available online: http://randd.defra.gov.uk/Document.aspx?Document=11261_PREPARECA0513Publicclimateriskacceptability-Finalreport.pdf (accessed on 15 October 2017).
11. Corner, A.; Demski, C.; Steentjes, K.; Pidgeon, N. Engaging the Public on Climate Risks and Adaptation: A Briefing for UK Communicators. 2020. Available online: <https://www.ukclimateresilience.org/wp-content/uploads/2020/03/resilrisk-briefing-ONLINE.pdf> (accessed on 20 April 2020).
12. DESMOG. Q&A: Michael Mann on Coverage since 'Climategate'. 2019. Available online: <https://www.desmogblog.com/2019/09/21/michael-mann-climategate-deniers-franzen> (accessed on 12 February 2021).
13. Hulme, M. Reducing the Future to Climate: A Story of Climate Determinism and Reductionism. *Osiris* **2011**, *26*, 245–266. [CrossRef]
14. Fazey, I.; Moug, P.; Allen, S.; Beckmann, K.; Blackwood, D.; Bonaventura, M.; Burnett, K.; Danson, M.; Falconer, R.; Gagnon, A. Transformation in a Changing Climate: A Research Agenda. *Clim. Dev.* **2016**, *39*, 351–362. [CrossRef]
15. Bai, X.M.; Van Der Leeuw, S.; O'Brien, K.; Berkhout, F.; Biermann, F.; Brondizio, E.S.; Cudennec, C.; Dearing, J.; Duraiappah, A.; Glaser, M.; et al. Plausible and desirable futures in the Anthropocene: A new research agenda. *Glob. Environ. Chang.* **2016**, *39*, 351–362. [CrossRef]
16. Miller, R. Futures literacy: A hybrid strategic scenario method. *Futures* **2007**, *39*, 341–362. [CrossRef]
17. Gidley, J.M. Understanding the Breadth of Futures Studies through a Dialogue with Climate Change. *World Future Rev.* **2016**, *8*, 24–38. [CrossRef]
18. Fisher, W.R. Narration as a Human Communication Paradigm: The Case of Public Moral Argument. *Commun. Monogr.* **1984**, *51*, 1–22. [CrossRef]
19. Dessai, S.; Hulme, M. Does climate adaptation policy need probabilities? *Clim. Policy* **2004**, *4*, 107–128. [CrossRef]
20. Barnett, J.; O'Neill, S. Maladaptation. *Glob. Environ. Chang.* **2010**, *20*, 211–213. [CrossRef]
21. Harcourt, R.; Bruine de Bruin, W.; Dessai, S.; Taylor, A. What adaptation stories are UK newspapers telling? A narrative analysis. *Environ. Commun.* **2020**, *14*, 1061–1078. [CrossRef]
22. IPCC. Global Warming of 1.5 °C. An IPCC Special Report: Headline Statements. 2018. Available online: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Headline-statements.pdf (accessed on 12 January 2021).
23. Tschakert, P.; Barnett, J.; Ellis, N.; Lawrence, C.; Tuana, N.; New, M.; Elrick-Barr, C.; Pandit, R.; Pannell, D. Climate change and loss, as if people mattered: Values, places, and experiences. *Wiley Interdiscip. Rev. Clim. Chang.* **2017**, *8*, e476. [CrossRef]
24. Yusoff, K.; Gabrys, J. Climate Change and the Imagination. *WIREs Clim. Chang.* **2011**, *2*, 516–534. [CrossRef]
25. Veland, S.; Scoville-Simonds, M.; Gram-Hanssen, I.; Schorre, A.; El Khoury, A.; Nordbø, M.; Lynch, A.; Hochachka, G.; Bjørkan, M. Narrative matters for sustainability: The transformative role of storytelling in realizing 1.5 °C futures. *Curr. Opin. Environ. Sustain.* **2018**, *31*, 41–47. [CrossRef]
26. Fazey, I.; Schöpke, N.; Caniglia, G.; Hodgson, A.; Kendrick, I.; Lyon, C.; Page, G.; Patterson, J.; Riedy, C.; Strasser, T. Transforming knowledge systems for life on Earth: Visions of future systems and how to get there. *Energy Res. Soc. Sci.* **2020**, *70*, 101724. [CrossRef]
27. Coulter, L.; Serrao-Neumann, S.; Coiacetto, E. Climate Change adaptation narratives: Linking climate knowledge and future thinking. *Futures* **2019**, *111*, 57–70. [CrossRef]
28. McKay, J.; Dickson, B. *Dreams of a Low Carbon Future: A Graphic Novel*; University of Leeds: Leeds, UK, 2013.
29. Smith, J.; Butler, R.; Day, R.; Goodbody, A.H.; Llewellyn, D.H.; Rohse, M.; Smith, B.T.; Tyszczyk, R.A.; Udall, J.; Whyte, N.M. Gathering around stories: Interdisciplinary experiments in support of energy system transitions. *Energy Res. Soc. Sci.* **2017**, *31*, 284–294. [CrossRef]
30. Rotmann, S. "Once upon a time . . ." Eliciting energy and behaviour change stories using a fairy tale story spine. *Energy Res. Soc. Sci.* **2017**, *31*, 303–310. [CrossRef]
31. Saint, A. *Resurrection Trust: A Collection of Short Stories about Climate Change UK*; Retreat West Books: UK, 2019.
32. Rickards, L.; Ison, R.; Fünfgeld, H.; Wiseman, J. Opening and Closing the Future: Climate Change, Adaptation, and Scenario Planning. *Environ. Plan. C Gov. Policy* **2014**, *32*, 587–602. [CrossRef]
33. Shaw, A.; Sheppard, S.; Burch, S.; Flanders, D.; Wiek, A.; Carmichael, J.; Robinson, J.; Cohen, S. Making local futures tangible—Synthesizing, downscaling, and visualizing climate change scenarios for participatory capacity building. *Glob. Environ. Chang.* **2009**, *19*, 447–463. [CrossRef]
34. Barnett, J.; Graham, S.; Mortreux, C.; Fincher, R.; Waters, E.; Hurlimann, A. A local coastal adaptation pathway. *Nat. Clim. Chang.* **2014**, *4*, 1103–1108. [CrossRef]

35. Oteros-Rozas, E.; Martin-Lopez, B.; Daw, T.M.; Bohensky, E.L.; Butler, J.R.; Hill, R.; Martin-Ortega, J.; Quinlan, A.; Ravera, F.; Ruiz-Mallén, I.; et al. Participatory scenario planning in place-based social-ecological research: Insights and experiences from 23 case studies. *Ecol. Soc.* **2015**, *20*, 20. [[CrossRef](#)]
36. Pedde, S.; Harrison, P.A.; Holman, I.P.; Powney, G.D.; Lofts, S.; Schmucki, R.; Gramberger, M.; Bullock, J.M. Enriching the Shared Socioeconomic Pathways to co-create consistent multi-sector scenarios for the UK. *Sci. Total. Environ.* **2021**, *756*, 143172. [[CrossRef](#)] [[PubMed](#)]
37. Van Der Leeuw, S. The role of narratives in human-environmental relations: An essay on elaborating win-win solutions to climate change and sustainability. *Clim. Chang.* **2019**, *160*, 509–519. [[CrossRef](#)]
38. Mangalagiu, D.; Bisaro, A.; Hinkel, J.; Tàbaral, J.D. Transformative narratives for climate action. *Clim. Chang.* **2020**, *160*, 495–506.
39. Dahlstrom, M.F. Using narratives and storytelling to communicate science with nonexpert audiences. *Proc. Natl. Acad. Sci. USA* **2014**, *111*, 13614–13620. [[CrossRef](#)]
40. Howarth, C.; Parsons, L.; Thew, H. Effectively Communicating Climate Science beyond Academia: Harnessing the Heterogeneity of Climate Knowledge. *One Earth* **2020**, *2*, 320–324. [[CrossRef](#)]
41. Lejano, R.P.; Tavares-Reager, J.; Berkes, F. Climate and narrative: Environmental knowledge in everyday life. *Environ. Sci. Policy* **2013**, *31*, 61–70. [[CrossRef](#)]
42. Gottschall, J. *The Storytelling Animal: How Stories Make Us Human*; Houghton Mifflin Harcourt: New York, NY, USA, 2012.
43. Swyngedouw, E. Apocalypse Now! Fear and Doomsday Pleasures. *Capital. Nat. Social.* **2013**, *24*, 9–18. [[CrossRef](#)]
44. Bruner, J. The Narrative Construction of Reality. *Crit. Inq.* **1991**, *18*, 1–21. [[CrossRef](#)]
45. Adger, W.N.; Dessai, S.; Goulden, M.; Hulme, M.; Lorenzoni, I.; Nelson, D.R.; Naess, L.O.; Wolf, J.; Wreford, A. Are there social limits to adaptation to climate change? *Clim. Chang.* **2009**, *93*, 335–354. [[CrossRef](#)]
46. O'Brien, K.L.; Wolf, J. A values-based approach to vulnerability and adaptation to climate change. *Wiley Interdiscip. Rev. Clim. Chang.* **2010**, *1*, 232–242. [[CrossRef](#)]
47. Corner, A.; Markowitz, E.; Pidgeon, N. Public engagement with climate change: The role of human values. *Wiley Interdiscip. Rev. Clim. Chang.* **2014**, *5*, 411–422. [[CrossRef](#)]
48. Milkoreit, M. The Promise of Climate Fiction: Imagination, Storytelling, and the Politics of the Future. In *Reimagining Climate Change*; Wapner, P., Elver, H., Eds.; Routledge: Oxford, UK, 2016.
49. Massey, E.; Huitema, D. The emergence of climate change adaptation as a policy field: The case of England. *Reg. Environ. Chang.* **2013**, *13*, 341–352. [[CrossRef](#)]
50. Lesnikowski, A.; Ford, J.; Biesbroek, R.; Berrang-Ford, L.; Heymann, S.J. National-level progress on adaptation. *Nat. Clim. Chang.* **2015**, *6*, 261–265. [[CrossRef](#)]
51. Otum, U.C.; Onah, O.; Adeosun, K.P.; Nnamdi, O.C.; Ihedioha, N.N.; Onyia, C.; Orie, I.E. Unpacking the Levels of Household and Individual Climate Change Adaptation: Empirical Evidence from Leeds, United Kingdom. *Weather Clim. Soc.* **2020**, *12*, 501–513. [[CrossRef](#)]
52. Morgan, G.M.; Fischhoff, B.; Bostrom, A.; Atman, C. *Risk Communication: A Mental Models Approach*; Cambridge UP: Cambridge, UK, 2002.
53. Bruine de Bruin, W.; Bostrom, A. Assessing what to address in science communication. *Proc. Natl. Acad. Sci. USA* **2013**, *110*, 14062–14068. [[CrossRef](#)]
54. Gameiro, S.; De Guevara, B.B.; El Refaie, E.; Payson, A. DrawingOut—An innovative drawing workshop method to support the generation and dissemination of research findings. *PLoS ONE* **2018**, *13*, e0203197. [[CrossRef](#)]
55. Guest, G.; Macqueen, K.M.; Namey, E.E. *Applied Thematic Analysis*; Sage Publications: Newbury Park, CA, USA, 2011.
56. Pidgeon, N. Public understanding of, and attitudes to, climate change: UK and international perspectives and policy. *Clim. Policy* **2012**, *12*, S85–S106. [[CrossRef](#)]
57. Taylor, A.; Dessai, S.; Bruine de Bruin, W. Public perception of climate risk and adaptation in the UK: A review of the literature. *Clim. Risk Manag.* **2014**, *4–5*, 1–16. [[CrossRef](#)]
58. IPSOSMORI. Two Thirds of Britons Believe Climate Change as Serious as Coronavirus and Majority Want Climate Prioritised in Economic Recovery. 2020. Available online: <https://www.ipsos.com/ipsos-mori/en-uk/two-thirds-britons-believe-climate-change-serious-coronavirus-and-majority-want-climate-prioritised> (accessed on 18 May 2020).
59. Evensen, D.; Whitmarsh, L.; Bartie, P.; Devine-Wright, P.; Dickie, J.; Varley, A.; Ryder, S.; Mayer, A. Effect of “finite pool of worry” and COVID-19 on UK climate change perceptions. *Proc. Natl. Acad. Sci. USA* **2021**, *118*, e2018936118. [[CrossRef](#)] [[PubMed](#)]
60. UNDP. Peoples’ Climate Vote Results. 2021. Available online: <https://www.undp.org/content/undp/en/home/librarypage/climate-and-disaster-resilience-/The-Peoples-Climate-Vote-Results.html> (accessed on 6 April 2021).
61. Grothmann, T.; Patt, A. Adaptive capacity and human cognition: The process of individual adaptation to climate change. *Glob. Environ. Chang.* **2005**, *15*, 199–213. [[CrossRef](#)]
62. Van Valkengoed, A.M.; Steg, L. Meta-analyses of factors motivating climate change adaptation behaviour. *Nat. Clim. Chang.* **2019**, *9*, 158–163. [[CrossRef](#)]
63. Adger, W.N.; Barnett, J.; Brown, K.; Marshall, N.; O'Brien, K. Cultural dimensions of climate change impacts and adaptation. *Nat. Clim. Chang.* **2013**, *3*, 112–117. [[CrossRef](#)]

64. UNITED NATIONS. COVID-19, Inequalities and Building Back Better. 2020. Available online: <https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/10/HLCP-policy-brief-on-COVID-19-inequalities-and-building-back-better-1.pdf> (accessed on 1 March 2021).
65. Global Center on Adaptation. State and Trends in Adaptation Report 2020, Building Forward Better from Covid-19: Accelerating Action on Climate Adaptation. 2020. Available online: <https://gca.org/reports/state-and-trends-in-adaptation-report-2020/> (accessed on 1 March 2021).
66. Howarth, C.; Bryant, P.; Corner, A.; Fankhauser, S.; Gouldson, A.; Whitmarsh, L.; Willis, R. Building a social mandate for climate action: Lessons from COVID-19. *Environ. Resour. Econ.* **2020**, *76*, 1107–1115. [[CrossRef](#)]
67. Cotton, M.; Stevens, E. Mapping discourses of climate change adaptation in the United Kingdom. *Weather Clim. Soc.* **2019**, *11*, 17–32. [[CrossRef](#)]
68. Pelling, M. *Adaptation to Climate Change: From Resilience to Transformation*; Routledge: London, UK, 2011.
69. Adger, W.N.; Quinn, T.; Lorenzoni, I.; Murphy, C.; Sweeney, J. Changing social contracts in climate-change adaptation. *Nat. Clim. Chang.* **2013**, *3*, 330–333. [[CrossRef](#)]
70. Pelling, M.; High, C. Understanding adaptation: What can social capital offer assessments of adaptive capacity? *Glob. Environ. Chang.* **2005**, *15*, 308–319. [[CrossRef](#)]
71. Adger, W.N. Social Capital, Collective Action, and Adaptation to Climate Change. *Econ. Geogr.* **2003**, *79*, 387–404. [[CrossRef](#)]
72. Harcourt, R.; Bruine de Bruin, W.; Dessai, S.; Taylor, A. Investing in a good pair of wellies: How do non-experts interpret the expert terminology of climate change impacts and adaptation? *Clim. Chang.* **2019**, *155*, 257–272. [[CrossRef](#)] [[PubMed](#)]
73. Carbon Brief. Met Office: A Review of the UK's Climate in 2020. 2020. Available online: https://www.carbonbrief.org/met-office-a-review-of-the-uks-climate-in-2020?utm_campaign=Carbon%20Brief%20Daily%20Briefing&utm_content=20210113&utm_medium=email&utm_source=Revue%20Daily (accessed on 13 January 2021).