An engagement framework for accelerating climate solutions

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Contents

Introduction

The challenge of climate action is not only a challenge of technology. It is a challenge of emotions and behaviours, beliefs and ideas, feeling and vision.

This project aims to support and accelerate climate action by addressing a key barrier. Despite progress on legislation and technology investments, the role of climate emotions in technology innovation and adoption remains largely unexplored. Climate anxiety, climate fear and climate distress can accelerate public engagement and political change, but conversely, fear and distress (sometimes masked by apparent indifference or apathy) can delay the implementation of policy and technology. The cultivation of positive climate emotions might be key to successful engagement strategies, helping to create a sense of community and connection, and building the shared purpose and vision that is required for effective climate action.

This project sets out to:

- **Scope and develop an initial framework that acknowledges and explores the complex interplay of climate emotions that can drive or oppose engagement.**
- **Explore and better understand the influence of these emotions, transforming them into strategies for change and plans for future development.**

This project explores the development of UK capabilities and expertise via international collaboration in the area of Energy & Environment Technologies, which is a priority area for the Department for Business, Energy and Industrial Strategy. This includes building research capacity and capability; producing collaborative research and innovation; and providing training and development and people exchange.

The project draws on and further develops complementary expertise at both Teesside University in North East England and the University of British Columbia (UBC) in Vancouver, Canada. The initial work took place between December 2022 and March 2023 and has established a robust working partnership that we will continue to develop in the future.

AT-A-GLANCE SUMMARY

This project develops a framework for generative change, helping people to work together to identify and acknowledge climate emotions and use them to plan, develop and implement technologies for a just transition to Net Zero.

We developed the framework through rapid scoping of existing literature together with input from a range of key stakeholders in both the UK and Canada. Initial work suggests that it is possible to provide both self-guided resources and resources for group work that will enable scientists and engineers, industry professionals, policy-makers, communities and individuals to develop skills, shared language and sense of purpose to generate change.

We also began work on an initial toolkit and sample materials that provide a starting point for further evaluation and research.

Background to the project

The selection of our two locations

Teesside University has its main campus in Middlesbrough in North East England. It hosts the £13m Net Zero Industry Innovation Centre (NZIIC), which plays a key role in regional and UK Net Zero delivery and an innovative industry-academic climate action ecosystem. UBC (University of British Columbia) is a global leader in climate action, industrial partnerships, and civil society engagement and hosts a CAD$24m (£16m) Hydrogen Energy District.

The respective regions where Teesside University and the University of British Columbia are located have further important parallels:

Hydrogen and carbon capture

Both regions are deploying carbon capture, use and sequestration (CCUS) technologies.

Largest national ports

Both regions host major ports. Both regions have economic/industrial sectors that require urgent action to achieve a just energy transition.

Use of Net Zero technology

Both regions have a unique opportunity to use Net Zero technology deployments to drive regional economic development.

There are complex and multi-layered socio-economic challenges specific to each region, which make equity and justice crucial aspects of the transition to Net Zero technologies. Despite technological innovation in both regions, many barriers still remain and this project seeks to establish ways in which the two regions can learn from one another, share resources and develop a clear framework for future progress.

Vancouver, Canada

- Significant Net Zero targets for 2040
- Largest port in Canada
- Largest concentration of cleantech companies in Canada
- Cradle of hydrogen and fuel cell technologies

Teesside, UK

- Significant Net Zero targets for 2040
- Teesside Freeport
- UK's largest hydrogen plant
- Almost 50% of the UK's hydrogen production

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What are climate emotions?

Just as temperatures are on the rise, so too are negative climate emotions.

The predominant discourse around climate emotions tends to be around anxiety, but there are a wide range of emotional responses that each of us experiences in relation to climate change, such as feelings of fear, dread, anger, grief, uncertainty, loss and shame.

A 2021 study of 10,000 children and young people (aged 16-25 years) in ten countries (Australia, Brazil, Finland, France, India, Nigeria, Philippines, Portugal, the UK, and the USA; 1000 participants per country)[1] found that climate anxiety is widespread. More than 45% of participants said that their feelings about climate change negatively affect their daily lives. Notably, these feelings of distress appear to be associated with respondents' perceptions of inadequate governmental response to climate change.

But what are climate emotions, exactly?

Pihkala[2] defines climate emotions as 'affective phenomena which are significantly related to the climate crisis,' but notes that our emotional responses at any one time will also be influenced by many other factors: 'the general situation in one's life, one's temperament, daily events, social dynamics, and climate change impacts.' In response to the rapidly growing research in climate or eco-emotions and related affect studies, Pikhala attempts to construct 'a preliminary taxonomy of climate emotions' that might highlight the wide range of these emotions, foster personal insight and inform development of both therapeutic interventions and public health policy.

Philosopher Glenn Albrecht is best known for his psychoterratic typology of 'earth emotions'[3], including neologisms such as *solastalgia*, a word he gives to a feeling of distress and desolation at negative environmental changes in one's home or territory. Solastalgia is 'the homesickness you have when you are still at home'.

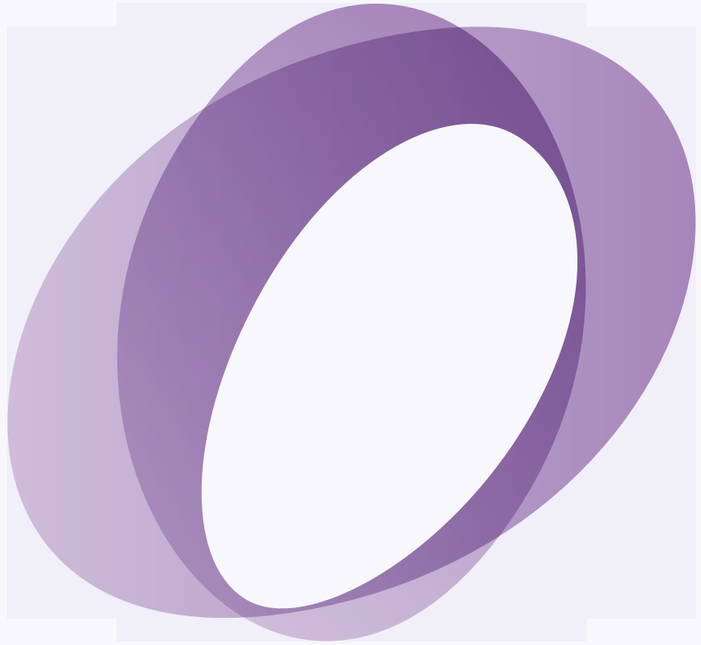
Building on previous work in the field of climate or eco-anxiety, Albrecht sets out to further investigate and refine particular emotions such as *Global Dread*, an extreme anxiety as a result of anticipating a terrifying future; *meteoranxiety*, anxiety connected to climate-related changes in weather such as extreme heat, drought or flooding; and *mermerosity,* anticipatory mourning related to future loss of landscapes that are familiar and beloved to us.

‘Meteoranxiety’

Anxiety connected to climate-related changes in weather such as extreme heat, drought or flooding.

Glenn Albrecht, 2019

Albrecht also emphasises the importance of *positive* emotions, which he believes can move us forward from the Anthropocene to the next epoch, a time he describes as the ‘Symbioscene’, in which we all live deeply connected with the earth and our feelings of pleasure and delight in the places of which we are a part. Examples of Albrecht’s neologisms for positive emotions are *eutierria*, a feeling of oneness with the earth and its life forces; and *soliphilia*, the feeling of commitment to the protection from desolation of one’s loved home places, at all scales, both local and global.

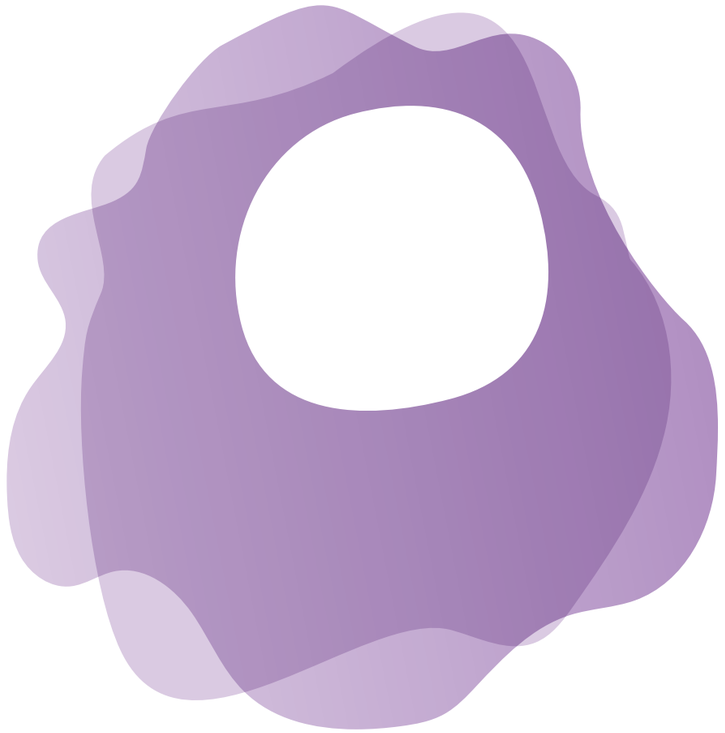


‘Eutierria’

A positive and good feeling of oneness with the Earth and its life forces where the boundaries between self and the rest of nature are obliterated and a deep sense of peace and connectedness pervades consciousness.

Glenn Albrecht, 2019

Current shortcomings of the research in climate emotions noted by Pikhala[4] are that existing surveys tend to rely on self-recognition of emotions among respondents and that they are currently limited to a very narrow range of languages, geographies and socio-cultural environments. We do not know how ‘universal’ the language of climate emotions might be. Over time, our proposed framework and toolkit might help us to broaden research in climate emotions by taking a more equitable and accessible approach and enabling a wider group of people to name and gain agency over their own feelings (see 4. The Framework). A participatory artwork by artists Heid Quante and Alicia Escott invites people to find new words to express their climate emotions and experiences.[5]



‘Agualation’

A conflicted feeling when you see people, especially children, enjoying water liberally i.e. playing in water fountains, swimming pools, or sprinklers. A sense of fear and frustration that they are wasting a resource that is dwindling, paired with a desire for others - especially the youth - to enjoy the experiences, frivolities and resources that you have had or enjoyed access to as a child.

Sarah, 2016, from *The Bureau of Linguistical Reality*[5]

The relationship between climate emotions and climate behaviours

We are beginning to realise that climate emotions play a key role in shaping and influencing our climate behaviours, but further research is needed in order for us to begin to more fully understand this process. It is very likely that - just as is the case with emotions in general - each of us will experience climate emotions differently and this will also be shaped by cultural and circumstantial factors. Strong climate emotions such as guilt or anxiety may motivate one person to take firm pro-environmental action such as making lifestyle changes or campaigning for clean energy policies, whilst climate emotions may cause another person to feel overwhelmed, depressed or powerless.

Psychologist Renée Lertzman has explored ‘the myth of apathy’ [6] in relation to climate emotions, finding that apathy or indifference towards climate change may in fact be a kind of psychological or ‘environmental melancholia’.[7] Stoknes[8] suggests five psychological defences (‘the five D’s) that form barriers to climate action: Distance, Doom, Dissonance, Denial and iDentity. Albrecht considers that the emotion of *Global Dread* (terror or extreme anxiety)[9] may cause us to seek relief from our emotions through ‘Armageddon-like rapture’ and over-consumption; or alternatively, might trigger *ecoparalysis*, in which we feel overwhelmed and powerless, since nothing we could do individually (selling our car, retro-fitting our home) appears to be sufficient in the face of a global crisis.

As climate psychologists Kennedy-Woodward and Kennedy-Williams write:

> ‘Setting down strong emotional foundations can make the difference between a successful attempt at action and one that leaves us feeling dejected, with lower self-efficacy and a self-perpetuating sense of hopelessness and powerlessness.’ [10]

Our rapid scoping of the literature around climate emotions shows that it is important to look not only at emotions around climate change itself but also at the emotions evoked by proposed lifestyle or technological changes that we need to implement in order to move forward. Here, emotions are triggered in response to questions such as:

- How do I feel about the thought of not owning a car anymore?
- How do I feel about never again going to my favourite holiday destination or attending work conferences face-to-face because I would have to fly there?
- How do I feel about the proposed carbon capture project happening off the coast of my town?
- How do I feel about a wind farm being built in a landscape I’ve known since I was a child?

Our scoping has also shown that we know little about the climate emotions of those scientists, engineers and industry professionals working to develop climate technologies and projects, or the policy-makers and educators working to implement them. How do they feel about their work and the way that others respond to it?

In order to describe, express and share our emotions and inner conflicts about these new experiences, it is very likely that we will need to spend time working out together what is shared and what is different about the way that we feel.

- We will need to find ways of acknowledging and understanding one another’s climate emotions and languages and find a shared language that will help us to move forward.

The generative framework that we present here is designed to begin to address this need. It is in its early stages, but we hope that it will continue to evolve and grow as we continue to work together.

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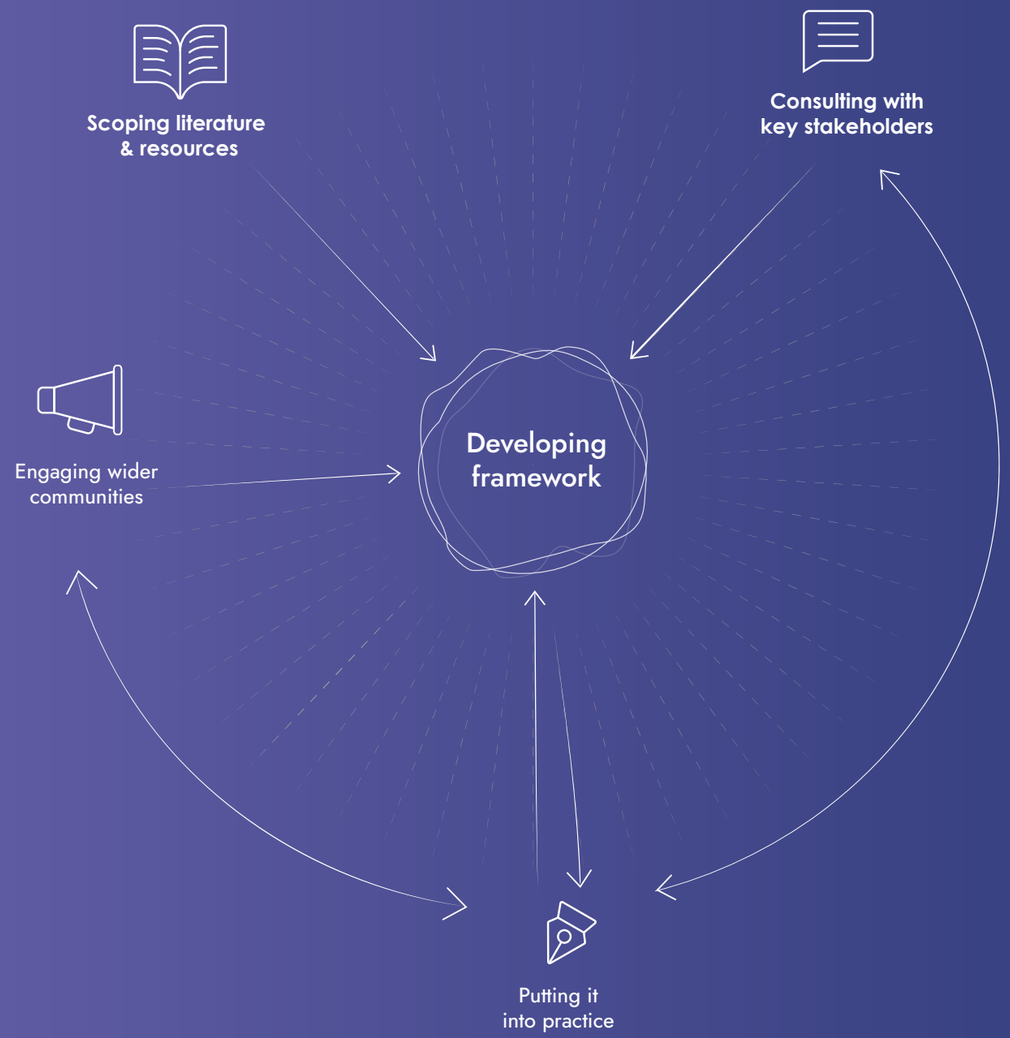
Figure 1. The developing framework process



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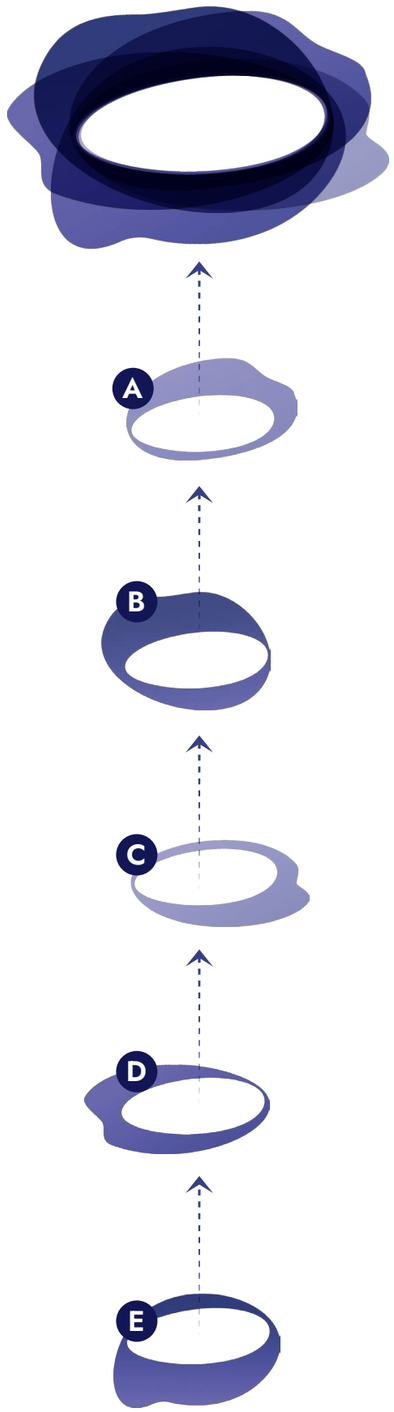
What we did

Through rapid scoping of literature, together with input from a range of key stakeholders in both the UK and Canada, we developed a generative framework and guiding principles that can be used to engage people in climate change projects.

Our approach



A

Rapid scoping

We carried out a rapid scoping study of the academic and grey literature in three areas that provide the context for this project. These are: (i) climate emotions; (ii) climate emotions and pro-environmental behaviours; and (iii) current practice in climate technology engagement strategies and projects. Our scoping included academic peer-reviewed articles but also reports from government bodies, research institutes and third-sector organisations; online resources provided by climate change and mental health networks and organisations; resources and case studies on the websites of professional bodies (e.g. Royal Academy of Engineering and Engineers Canada); materials on industry web sites (e.g. Equinor, Shell, ExxonMobil). The purpose of this scoping exercise was to identify, within the tight time constraints of the project, the following:

(i) What we know and do not know about climate emotions and the ways that they influence the adoption of climate change technologies.

(ii) Whether and/or how climate emotions are taken into account in existing engagement strategy and practice.

We wanted to find out what we could learn from current practice in order to inform the development of our framework. The results of the scoping study are discussed in Section 3: What we learned.

B

Consulting with key stakeholders

In addition to the rapid scoping exercise, we consulted a range of stakeholders in three main groups, including tech developers, scientists, researchers, policy-makers, and publics. See 3. What we learned for a full definition. Through one-to-one conversations (virtual and in-person) and three group workshops (UK, Vancouver and online), we tested our findings from the scoping exercise and sought input into the development of a conceptual framework and toolkit. This will form the basis for an evaluation of our framework and toolkit in Phase 2 of this project. See 5. Next Steps. We had originally planned to elicit input through group workshops alone, but we quickly realised that many of our stakeholders felt more comfortable discussing their own emotions and experiences, and the way that they feel emotions affect their work with others, on a one-to-one or small, informal group basis.

D

Development of the Framework and initial Toolkit

Based on our findings we developed our framework, and materials for an initial toolkit. These are set out in 4. The Framework.

C

Collaboration and exchange between UBC and Teesside

We worked with a doctoral student in the UK, who helped to facilitate the group workshops in the UK, Vancouver and online. This was a useful pilot for training in the framework and toolkit materials and will enable us to begin to develop online resources for further training in the future.

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E

Planning future evaluation and further research

In response to feedback from our consultation and workshops, which confirmed to us that this work is needed across the sector, we have begun to plan ways in which the framework and toolkit can be further evaluated. See 5. Next Steps for how we plan to develop this work further.

* The research about climate emotions and how they affect our behaviours is still fragmentary and emerging.
* Climate emotions as they relate to climate action are often framed in terms of ‘the public’, ‘the community’ or lay individuals.
* There are many gaps in our knowledge about how climate emotions affect the behaviour, decision-making and wellbeing of scientists, engineers, researchers, industry professionals and educators working on ‘the front line’ of climate solutions.
* Language is emotional.
* We need to find a shared (emotional) language around climate change, climate technologies and climate policies.

3

What we learned

In this section, we present key findings from our rapid scoping and consultation with stakeholders.

The research about climate emotions and how they affect our behaviours is still fragmentary and emerging.

Our understanding of climate emotions is still fragmentary, limited by where research has been carried out so far. This is mainly in Western, educated, industrialized, rich and democratic (WEIRD)[11] societies. There are also many gaps in the literature (as we discuss in 1. What are climate emotions?)

Climate emotions as they relate to climate action are often framed in terms of ‘the public,’ ‘the community’ or lay individuals.

Our scoping found that climate emotions are increasingly the subject of discussion and public interest in relation to general mental health. There are many informal resources now available through networks such as Climate Mental Health Network, school and university websites and social media postings. Many of these comprise reading lists of self-help literature, lists of linked resources and collections of exercises (e.g. audio tracks for meditation, journaling and creativity prompts). Although often helpful, these can also be sources of misinformation. For example, we noticed that there was little consideration given to mitigating against possible contraindications in some of the self-help methods suggested, which could be of concern. However, sharing these ideas and resources with others - often online - appears to be an important dimension of coping with difficult climate emotions for many people.

There are many gaps in our knowledge about how climate emotions affect the behaviour, decision-making and wellbeing of scientists, engineers, researchers, industry professionals and educators working on 'the front line' of climate solutions.

However, from what we know of emotion research in general and climate emotions research in other groups, it is very likely that climate emotions not only affect the wellbeing and resilience of those working in this area but also the way that they make and implement decisions and work with others.

Since 2014, researcher Joe Duggan has approached climate scientists (earth sciences professionals and researchers) across the world and asked them to express their feelings about climate change in a handwritten letter. These letters are shared online at www.isthishowyoufeel.com and 73 letters have now been coded and analysed[12] demonstrating the range of strong climate change emotions (negative and positive) experienced by this group of scientists.

A study of the 'emotional management strategies' employed by a group of Australian climate scientists[13] found diverse and complex 'distancing practices' that enabled them to manage the stress and anxiety of their work by 'downplaying painful or troubling emotions and playing up the pleasurable ones (love of their job, passion for science)'. This, the authors of the study suggest, is a kind of 'double move' that 'enables them to keep going, but in ways that systematically downplay worst-case scenarios and embody a kind of everyday denial favouring positive scenarios.'

Crucially, we found little in our scoping about how climate emotions affect those scientists, engineers and industry professionals involved in developing climate technologies.

The literature we found on emotions and engineers related to the importance of cultivating moral emotions in engineering education in order to manage the ethical risk of new technologies and produce morally responsible design.[14] One study found that emotional and social intelligence (ESI) as observed by peers significantly predicted engineers' 'effectiveness'.[15] However, we did not find any research or discussion around how climate emotions may impact engineers in terms of their own wellbeing or their role in design, decision-making and research in the development of climate technologies.

> 'Engineers are seen as geeks and nerds. We are often thought of as not having much emotion or, at least, not much emotional intelligence. Nobody really cares what we feel. People just want us to make the thing that works.'
>
> - Key stakeholder

Of interest here also is research that suggests that emotions influence the way that the science of climate change is framed in general, such as a study that suggests scientific norms and values - dispassion, objectivity, restraint - may lead scientists to err on the side of caution in their description, prediction and modelling of climate data.[16]

It is clear that the interplay of climate emotions with scientific inquiry is complex. On the one hand, there is a picture of front line scientists suffering the consequences of repeated exposure to 'bad news' and the need for tools to help people to develop greater resilience, connection and community. On the other hand, climate emotions may be downplayed or may even cause the 'bad news' itself to remain only partially acknowledged.

Language is emotional

As we carried out this research, we came to realise that the language in which our original research proposal was framed is problematic. Although the words 'engagement' and 'solutions' are widely used across the literature of climate change, they suggest a technology-centric model in which engineers, scientists and 'experts' in universities already have all the *solutions* and now need to find ways to persuade or motivate people (communities, publics) to adopt them. Related terms that we found frequently used in industry are 'social acceptance' or 'social licence to operate.' See section Pro-active v. dialogue-oriented engagement strategies.

As climate psychologist Renée Lertzman writes, our rush towards 'solutions' can be misleading. The word 'solution' might imply that 'the messiness of our situation can be avoided and glossed over'.[17]

The term 'technology' itself appears to evoke a range of emotions that can be real barriers to change, particularly in the context of climate solutions such as clean energy. As philosopher James Bridle writes: 'Technology is the last field of study to discover its ecology.'[18] Bridle draws on novelist Ursula LeGuin's definition that, put simply, technologies are 'what we can learn to do'.[19] Perhaps we need to broaden our understanding of what 'technology' means in order to encompass the technologies of communicating, educating, engaging, decision-making and policy-making that are crucial for the process of climate action. In this sense, our framework and toolkit can be seen as technologies.

Similarly the word 'nature' can mean many different things to different people.

See our definition of 'place' and 'belonging' in Dimension 2 of our Framework for further discussion.

We need to find a shared language around climate change and technologies

Different groups involved in the development, implementation and use of climate technologies have different approaches and ways of working - and even different languages. Finding a shared language is an important element in the process of finding a shared vision. The language of climate change and technologies may be familiar to scientists, researchers and policy-makers working in this area; but it is much less familiar outside of this setting. Even within the different fields of science, practice and research that contribute to climate action and the Net Zero transition, people may interpret key terms or words differently. Helping everyone to become more fluent in this language is an important part of developing a shared vision.

Current engagement practices rarely take climate emotions into account

We found a growing number of frameworks, plans and guidance for engagement in climate projects developed by departments, institutes and professional bodies. Some of these were focused on improving ways of 'communicating the message,' 'communicating evidence and expertise', building 'social acceptance' or even 'persuasion'.

There is a growing recognition of the need for early, better and transparent communication and for genuine dialogue that embeds policy-making work in communities, rather than communication of *a priori* decisions. However, it was striking that these discussions tend to be framed in terms of communication between experts and lay publics, where lack of knowledge of often complex technologies is seen as the main problem to be addressed. The need to consider social and distributive justice, local ownership or 'buy in' and compensation are also discussed. However, we did not find any specific acknowledgement of the complexity of climate *emotions* or climate *anxiety* (which is not the same as lack of knowledge) as a potential barrier to engagement.

Pro-active v. dialogue-oriented engagement strategies

In a systematic review of the literature on CCS communication and trust building, Otto and Gross[20] identify 'two main strands of the discussion', which they describe as 'proactive communication' and 'dialogue.' They found that proactive communication is typically framed as occurring early on and characterised as 'honest and comprehensive' but is predominantly planned to 'occur *after* site selection is complete or the project has already started.' Dialogue-oriented or two-way engagement strategy emphasises the importance of dialogue and deliberation but notably the research in this area does not discuss 'the actual practice of public and stakeholder deliberation in detail or provide theoretical guidance for such a process'. The review suggests a research gap in communication best practice, which currently often demonstrates an understanding of communication as 'a means to an end,' a way to identify the correct means of arriving at public acceptance of (in this case, CCS) technology. See Language is Emotional. Otto and Gross call for broader and more rigorous theoretical analyses of dialogue-oriented engagement practices and spaces of co-production, experimentation, and participation. It is this exploration of a co-created approach that we begin to address in our framework.

Knowledge-based interventions

Another area of the climate technology public engagement literature highlights the intersection of knowledge about climate technologies and self-efficacy. Self-efficacy is the degree to which people feel that they are equipped with sufficient knowledge to engage confidently in discussions around climate change and climate action. In our conversations with technology developers and policy-makers, we noticed a frequent assumption that, if people have better knowledge about climate technology, they will automatically be more accepting of tech solutions. Our scoping suggests that more research is needed to better understand knowledge-based interventions as a means of building self-efficacy (and related response efficacy).[21] One interesting example, the Carbon Literacy Project,[22] provides climate knowledge education and training with some acknowledgement of the role of climate emotions, including the pledging of specific climate actions. This under-explored interaction between knowledge and emotion in the development of self-efficacy is a promising direction for further research.[23]

Further challenges to dialogue-oriented engagement

In a 2016 national public opinion research survey commissioned by Engineers Canada to gauge perceptions of professional engineers,[24] engineers were seen as most suited from a list of professions (engineers 54%, architects 10%) to play a role in 'Solving Environmental Challenges'; but conversely were seen as much less well suited (engineers 7%, lawyers 36%) to 'Addressing Social Issues.' This would tend to confirm the perception that climate action is a challenge of technology rather than people or society, particularly when seen through the lens of engineering.

Psychotherapeutic and personal development strategies

A range of practices specifically encourage the acknowledgment and expression of climate emotions, drawing upon western therapeutic principles, spiritual practices such as Buddhist meditation and mindfulness and traditional indigenous practices. These include The Work That Reconnects (WTR)[25] and Active Hope (AH),[26] which focus on nurturing inner transformative work. Early research suggests that such approaches can help to develop emotional reflexivity, which in turn may be effective in motivating active engagement with climate change.[27] However, further and larger-scale research is needed to understand how such therapeutic principles may help to activate and sustain climate action across a wider range of cultures and particularly among those with little previous experience of inner emotional work.

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We need a generative model of change

In fact, what the research shows is that we urgently need a generative model of change in which we all - engineers and scientists, policy-makers, educators and politicians, community members and individuals - work together to co-create innovative and flexible ways forward.

For the purposes of our project, we have identified three groups of people that we need to actively bring together to generate change. We found it difficult to come up with helpful labels for these three (often overlapping) groups and so they are represented by icons below.

Scientists, engineers, industry professionals engaged in developing and making technologies for climate projects

Policy-makers, politicians at national and local levels engaged in implementing the technologies for climate projects

Communities and individuals living in areas where climate projects are or may be sited, or who are 'end-users' of these technologies

The personal is as important as the political and practical

Karen O'Brien[28] identifies 'three spheres' or dimensions - the personal, the political and the practical - that need to be held in a dynamic and evolving relationship with one another in order to generate climate transformation.

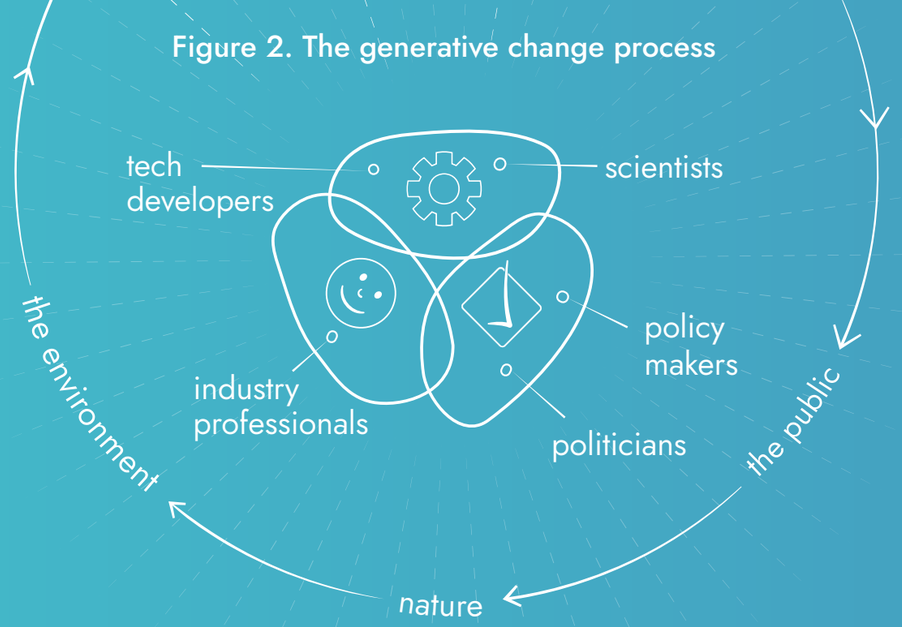
O'Brien argues that, although many roadmaps and climate action plans treat climate change as a *technical* problem (within the 'practical' sphere of her model), we will achieve our goals by viewing climate change as 'an adaptive challenge' and attempting to understand how to integrate work across the personal, political and practical spheres. This integrative approach enables people to see themselves as active 'agents of change,' rather than treating them as 'objects to be changed.'

For example, recent research at UBC[29] uses O'Brien's 'three spheres' as a conceptual framework to review and analyse a range of mechanisms being used for climate action in transportation in British Columbia, specifically for personal mobility. This research found a clear 'disconnect between actions and efforts in the practical sphere' and 'key barriers' in the personal and political spheres. This disconnect 'sets up a situation in which certain culturally provocative climate action policies and measures may meet with public opposition and indeed fail.' The study concludes that there is a need 'to frame the problem as a challenge of transformative change rather than as a technical problem of GHG emissions'.

Climate emotions, we argue, sit within O'Brien's 'personal' sphere, influencing the ways in which we implement the practical and political.

The emphasis here on working across the personal, political and practical spheres and bringing tech developers, industry, policy-makers and publics together in generative dialogue is particularly important when we consider some of the themes that emerge from our rapid scoping.

Figure 2. The generative change process



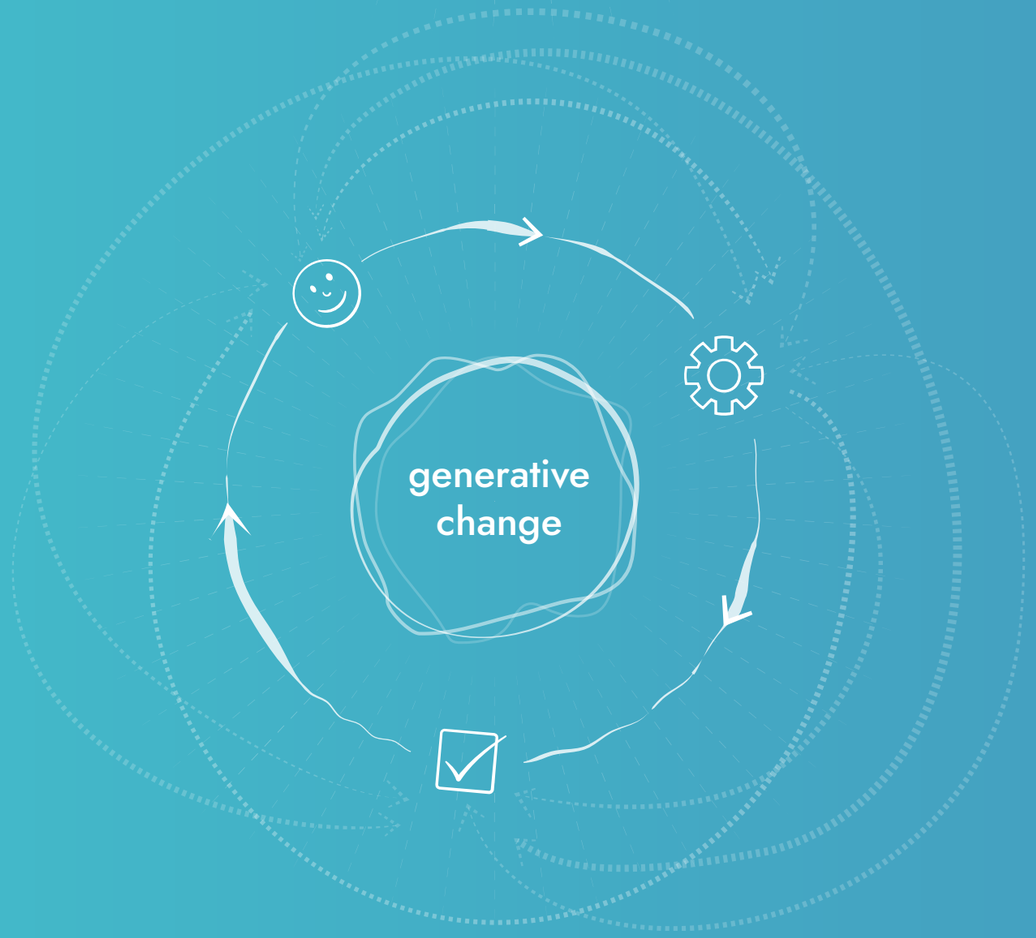


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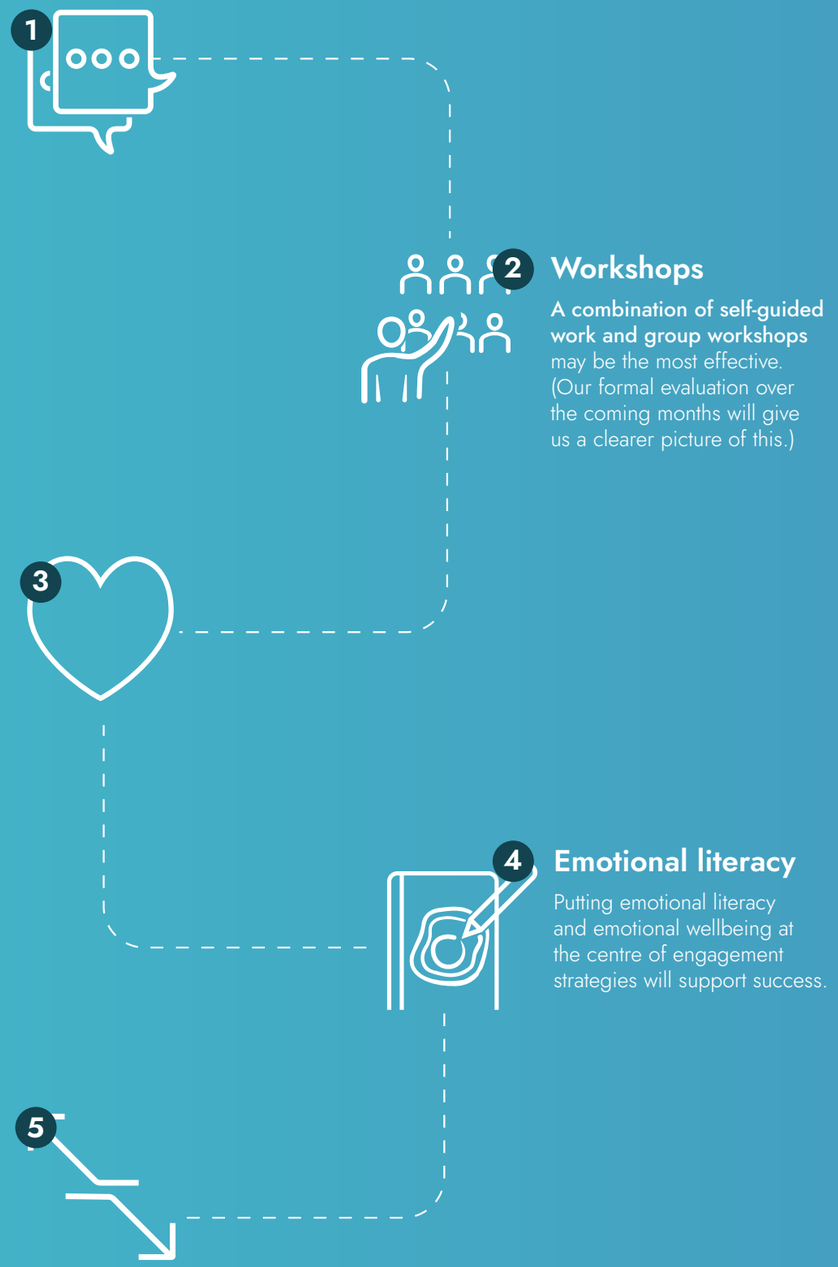
Figure 3.

We need to find practical ways of surfacing, acknowledging and sharing climate emotions



We did not fully understand when we began this work how powerful this creative approach appears to be in sparking reflection, conversation and discussion. People tell us just how much they value finding space to talk and think in this way. By being able to acknowledge the difficulties inherent in climate change work, they begin to feel less alone.

Finding ways to look after our mental health, manage stress, build resilience and cultivate hope is very important for all of us working in this area.

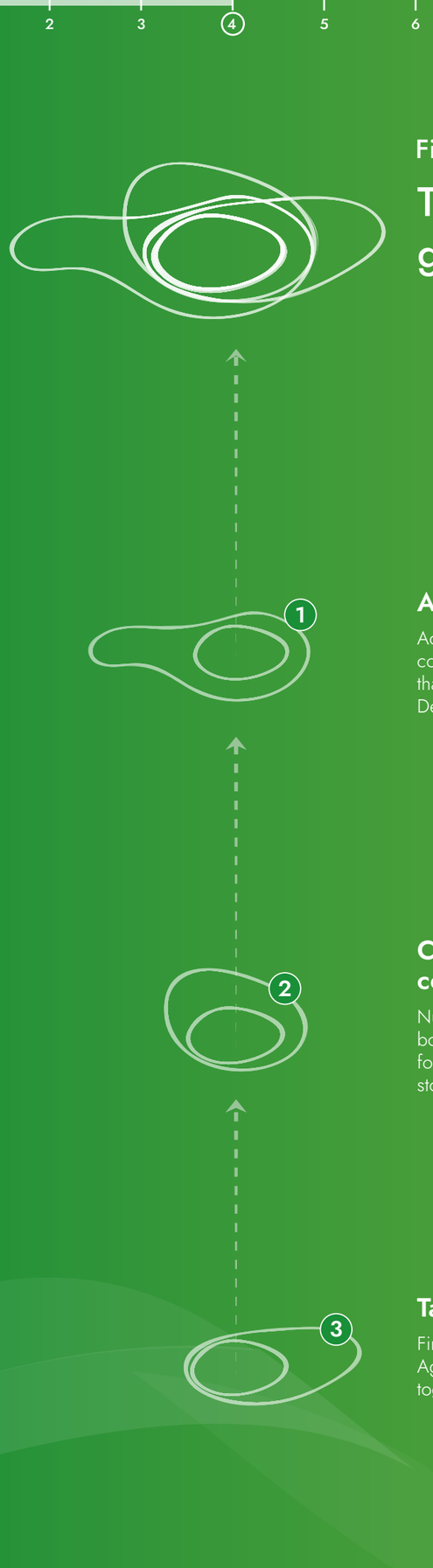


Figure 4.

The three dimensions as guiding principles

Acknowledging and expressing feelings

Acknowledging difficult emotions with self-compassion and curiosity towards ourselves, rather than judgement. Cultivating positive climate emotions. Developing emotional differentiation and reflexivity.

Cultivating belonging, community and dialogue

Nurturing a sense of 'connectedness' or belonging with both place and one another. Finding shared language for emotions, places and technologies. Sharing our stories and amplifying marginalised or silenced voices.

Taking action

Finding a shared sense of purpose and vision. Agreeing timelines and contributions. Taking steps together to achieve change.

4

The framework

This section sets out our conceptual framework for working together to achieve generative change around three dimensions.

The framework in practice

We propose that the framework can be used in two main ways. Firstly, the three dimensions operate as a set of guiding principles that can be used in education, public engagement and consultation scenarios, in order to encourage general awareness raising, conversation and discussion that is centred around emotionally-centred ways of thinking, behaving, being and decision-making.

This more general work is important in laying the groundwork for the scale of the technological transformations that both the UK and Canada will need to make towards Net Zero. For example, recent research in the UK suggests limited public awareness and clarity about hydrogen as a potential fuel source, despite its key role in Net Zero road maps.[30] Work needs to focus on the co-creation of spaces and opportunities for generative discussion, developing wider understanding about the need for and urgency of the change without overwhelming people or causing them to 'switch off' as a result of difficult emotions.

Secondly, we propose a more specific and goal-oriented framework that can help to generate climate project engagement plans and activities. See A generative framework for engaging people in climate change projects.

The three dimensions as guiding principles

1

Acknowledging and expressing feelings

Acknowledging difficult emotions with self-compassion and curiosity towards ourselves, rather than judgement. Cultivating positive climate emotions. Developing emotional differentiation and reflexivity.

In this dimension, activities focus on helping us to surface and name our feelings around climate change and its proposed solutions. We develop greater differentiation and granularity in the way that we experience and name our emotions, and perhaps even find new language for them. Over time, we develop emotional reflexivity and a greater sense of agency and hopefulness.

Why is this important?

Developing our emotional vocabulary in general so that we can make finer, more granular or specific distinctions between emotions can help us to understand, regulate and respond to these emotions.[31] [32]

Helping people to name and differentiate between climate emotions in a more granular way may help them to process these emotions and protect against anxiety and overwhelm.

Noticing and becoming aware of our emotions and self-talk around climate change and proposed climate projects can be difficult, and perhaps even painful. Cultivating self-compassion[33] [34] and an attitude of curiosity about our emotions and the emotions and beliefs of others can prevent us from becoming overwhelmed and help us to build resilience and hope. Developing emotional reflexivity[35] can help us to work together more effectively and to protect our mental health.

Naming our emotions around climate action projects can help us to develop a shared language and therefore directly informs the other two dimensions of this framework: **Cultivating belonging, community and dialogue** and **Taking action.**

Experiments in the toolkit designed to develop this dimension draw on a growing taxonomy of climate emotions[2] [3] including neologisms for naming and sharing new emotions emerging around climate change.[5]

> ***'Until we have the language to describe the changing world around us, we will not be able to fully grasp what is happening.'***
>
> - Quante & Escott, The Bureau of Linguistical Reality. (Ongoing public participatory artwork, begun 2014.)

Cultivating positive emotions such as hopefulness, belonging and oneness with the earth (***eutierria***) is an important aspect of this dimension, enabling us to experience ourselves as deeply embedded in place or landscape (rather than separate from or 'other' to it).

The ability to both name and understand our emotions and to cultivate positive emotions may increase our feelings of self-efficacy, helping us to contribute to debate and discussion and play our role in project development, policy-making, implementation and decisions without feeling overwhelmed.

2

Cultivating belonging, community and dialogue

Nurturing a sense of 'connectedness' or belonging with both place and one another. Finding shared language for emotions, places and technologies. Sharing our stories and amplifying marginalised or silenced voices.

In this dimension, activities focus on helping us to gain a greater understanding of how we belong or are 'connected' to place and one another. We develop a shared language that respects our different ideas and helps us to communicate more effectively to find solutions together.

Why is this important?

There is emerging evidence that connection to nature (CTN)[36] has important correlations with both wellbeing and pro-environmental behaviours. Encouraging people to find ways to (re)develop this sense of 'connection,' with (the rest of) nature, or what Albrecht calls a sense of belonging or oneness (*eutierria*), can play an important role in engaging people in climate action. Identifying and connecting with our personal 'objects of care,'[37] those places and things that we care about most deeply, can help to motivate us towards more meaningful action.

Note: In this dimension, we emphasise the importance of examining language (such as 'nature' and 'connectedness'). In our framework, we have chosen to use the words 'place,' 'landscape' and 'dialogue' to describe these relationships and we have also used the word 'connectedness' to acknowledge the work currently being done in the UK around CTN. We acknowledge that the concept of connectedness will not resonate with all peoples. We encourage you to work with the words that feel right for you in order to describe what philosopher David Abrams calls the 'more-than-human'[38] and our relationships within it. More ideas are suggested in our toolkit.

Asking 'who is not here?' is an important aspect of this dimension. In order to begin to address the research gaps identified in 3. What we learned, we need to actively invite stories from groups beyond those already motivated to get involved in climate projects. Place and landscape can offer important foci for this process.

3

Taking action

Finding a shared sense of purpose and vision. Taking steps to achieve change.

In this dimension, activities continue to develop the dialogue established in 2, focusing on the importance of co-creation, dialogue and deliberative engagement along with the detailed practical guidance required to design and support action.

Why is this important?

Taking action has been shown to have positive effects on mental health and wellbeing. A framework that places emotional wellbeing at its centre must not stop at dialogue and 'consultation' but needs to allow everyone to take ownership of meaningful work towards generating change.

Our ability to take climate action and our mental wellbeing are closely intertwined. Each can affect the other, either positively or negatively. It therefore makes robust economic sense to develop a framework that places emotional wellbeing at its centre. We need to enable everyone to take ownership of meaningful work towards generating change if we are to meet Net Zero targets.

1 2 3 4 5 6

The framework

A generative framework for engaging people in climate change projects

KEY
- Guiding questions
- Goals

Phase One

As early as possible in the project timeline

Dimension 1:
Acknowledging and expressing feelings

- What are you feeling about the project?
- What are your anxieties and fears?
- What else?
- What are the benefits of the project for you?
- What makes you feel hopeful about the project or what would need to change for you to feel hopeful?

Surfacing and identifying emotions around place, proposed technology or solution, community, history, risks and any other factors. Listening to and acknowledging concerns and fears.

Dimension 2:
Cultivating belonging, community and dialogue

- What are the feelings, ideas and goals we share around this project?
- Who is not here and who else would we like to invite into the process?
- What stories can we share about our previous experiences relevant to this project?
- What might we have done before that was successful or not and what can we learn from this?
- What can we do about the factors where we disagree or have different ideas?
- What additional information do we need about the project?
- What research do we need to do and how will we share the outcomes?

Developing shared language and narrative.
Sharing stories of previous experiences. Identifying and amplifying marginalised voices.

Dimension 3:
Developing a shared vision and sense of purpose

Guiding questions: What and where are the opportunities for everyone's input into the project?

What are the goals for each step?

Goals: Map or draw this on a timeline. Name and agree the stages, who is responsible or involved and how progress will be monitored and communicated.

Phase Two

At agreed intervals

Dimension 3:
Taking action

- Which steps have we taken so far and where are we going next?
- What are the goals for each step?
- How do we feel about them?

Revisit map or timeline against stages identified in Phase 1. Map 'where next?'. Identify and share emotions as they arise.

Dimension 1:
Acknowledging and expressing feelings

- How are you feeling now?
- What anxieties or hopes for the project have changed and what feelings have remained the same since our first discussions?

Dimension 2:
Cultivating belonging, community and dialogue

- Are we on track?
- What does the future feel like for us if we continue to progress in this direction?
- Do we need to envisage alternative ways of realising some of our goals?
- Are there any additional things to consider as the project evolves or scales?

Repeat these stages as required.

Resource

Creating a Community and Stakeholder Engagement Plan:

This useful resource from the US DoE includes a list of 'key background questions for an engagement goals discussion': Creating a Community and Stakeholder Engagement Plan:

1 2 3 4 5 6

Figure 5. Toolkit dimensions & experiments

The toolkit

The toolkit explained

The toolkit provides practical detailed guidance on working towards climate technology goals. This was an important gap identified in our rapid scoping of current literature.

The toolkit takes a generative and dialogue-oriented approach, focusing on sparking both informal and structured conversation, sharing stories, listening, and using place and landscape as prompts for memory and association. It makes use of psychodynamic theory to provide psychological safeguarding and guidance on process and working with groups.

The core techniques and approaches in the toolkit can be adapted to the needs and situations of different groups and contexts. They can be used for self-guided exploration or as a training resource for leaders and facilitators.

A core technique used in the toolkit is writing.

The benefits of using writing

We have chosen to use writing as a core technique in our toolkit for a number of reasons.

Firstly, writing enables us to explore and interrogate language, the way that we name things and how this shapes our thinking.

For example, as we have discussed, many of us have different associations, memories and experiences around the words 'nature,' 'the environment' and 'technology'. We may use very different words to symbolise our emotions and beliefs. The way that we name our emotions can vary widely, depending on how we experience them in our own bodies. Writing is a way to help us to examine this relationship between feeling or idea and language. It can help us to explore this for ourselves and then share it with others, as a starting point for dialogue about what we hold in common and what we understand differently.

Writing is very well suited to both private self-guided work and group work and it enables us to move between personal inquiry and shared discussion. It can be particularly helpful in situations where emotions are running high because it enables us to explore ideas privately and take time to reflect on our feelings before sharing them with others in a group.

Writing is an accessible and inclusive medium that can be adapted very easily across the different groups that we need to bring together through our framework. It is low cost and it does not require lots of materials or space, which are important considerations for the future scaling of this work.

Many people find that writing an experience or a memory down to share with others is less intimidating than other forms of story-telling often used in participative engagement, such as talking or video. Where people feel shy or socially anxious, writing their thoughts privately before sharing them can help them to communicate their ideas more clearly.

The approach to writing that we have adopted for the development of the framework is based on a model of 'integrative writing' developed for education, wellbeing and professional development settings.[39] This approach extends and deepens Pennebaker's 'expressive writing' paradigm[40] to take account of other writing techniques such as narrative, autobiography and embodied practices, within the context of a new 'health humanities'.[41] In this context, writing can have benefits to health and wellbeing but can also spark reflection and dialogue and increase reflexivity through personal and collective inquiry.

The 'experiments' we use in our toolkit are designed to offer accessible and inclusive ways into exploring emotions and connecting with others. Care is taken to create a supportive environment in which people can feel safe to explore their feelings.

“What I’d really like is a way of knowing how scary this technology feels for other people. My team can do all the modelling and the siting analysis but, at the end of the day, we don’t have a scary-ometer or an uncertainty-meter. Right now, we don’t have any way of knowing when we will have reduced uncertainty sufficiently for people to be comfortable with the risks. Because there are always risks with everything. And there’s a massive risk if we do nothing.”

- Key stakeholder in tech development

5

Next steps

The next phase of the project is to carry out a formal evaluation of the framework and toolkit (Phase 2). We hope to begin this phase in the second half of 2023.

This will include evaluation of both the toolkit as a self-guided online resource and in a range of group workshop settings around project-specific engagement goals.

Once this phase has been completed, we hope to be able to share the framework and toolkit more widely. We envisage that it will continue to evolve as we gather feedback and refine our understanding of how it might contribute to Net Zero targets in both the UK and Canada.

6

Summary

Climate emotions affect all of us, whether we are tech developers, researchers, policy-makers, industry professionals, educators, community members or all of these.

It appears that there are currently two main approaches to engagement strategies in climate and clean energy technologies.

These are (i) a more instrumental approach in which the best ways to 'communicate' *a priori* decisions to lay publics are sought in order to gain 'acceptance'; and (ii) a dialogue-oriented approach through which ways to facilitate a two-way process between public and developers is explored. There is a gap in the research around how best to facilitate this dialogue-oriented approach.

We propose a three-way approach in which all groups involved in climate tech projects (see Figure 2 The generative change process) are brought into dialogue with one another in order to co-create change.

Perhaps most importantly of all, our framework and toolkit provide a starting point for developing detailed, practical guidance for these groups to work together to define and achieve climate project goals.

1 2 3 4 5 6

Key points

Climate emotions do not only affect 'the public', communities and consumers.

Many key decisions made by tech developers, industry professionals and policy-makers also appear to be motivated by emotions. Identifying ways to support and harness emotions across all groups could be a productive direction for future research.

There appears to be a complex interplay between knowledge/ information and emotional education.

Helping people to develop self-efficacy, to become informed consumers of climate tech and active agents of change, will require both knowledge and emotional education.

One-to-one conversations are sometimes more powerful than group workshops - particularly at an early stage.

A combination of self-guided work and group workshops may be the most effective. Our formal evaluation over coming months will give us a clearer picture of this.

Mental wellbeing is key to success.

Finding ways to look after our mental health, manage stress, build resilience and cultivate hope is very important for anyone working in this area.

Engaging everyone in generative change.

We need to find practical ways of surfacing, acknowledging and sharing climate emotions across all groups involved in generative change. This process needs to begin as early as possible in tech projects e.g. before siting or commercial viability decisions.

Emotional literacy is crucial for effective climate action.

Helping people to name and differentiate between climate emotions in a more granular way may help them to process these emotions and protect against anxiety and overwhelm.

We can use our emotions to drive engagement strategies.

Putting emotional literacy and emotional wellbeing at the centre of engagement strategies will support success.

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“ Setting down strong emotional foundations can make the difference between a successful attempt at action and one that leaves us feeling dejected, with lower self-efficacy and a self-perpetuating sense of hopelessness and powerlessness. ”

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