

# **Eco-emotions of Climate Activists**

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### **Abstract**

This paper examines the eco-emotions experienced by climate activists in relation to the climate crisis. An increasing amount of scholarly literature has established the impact of climate change on people's emotional states and experiences. The complexity of the climate crisis and varying perspectives on it due to differing cultural, social, and political contexts along with individual knowledge and values result in contrasting findings and limited research. The aim of this study is to assess the prevalence of positive and negative eco-emotions among environmental activists living in different countries, and to explore their emotions before and after personal or collective mitigations. Semi-structured interviews were conducted with sixteen climate activists from the Netherlands, UK, France, Zimbabwe, Mexico and Austria. Results of the study highlighted a wide range of interlinked eco-emotions with the most prevalent eco-emotions being sadness, anger and grief in addition to some positive emotions, mainly joy, admiration, hope, and trust. Furthermore, changes in eco-emotions before and after engaging in pro-environmental behavior were found. Moreover, a significant difference in frequency and variety of eco-emotions occurred between self-reported eco-emotions and elicited eco-emotions. Although the study is subject to various limitations, the findings still contribute valuable qualitative insights about eco-emotions and the emotional experiences of climate activists. Gaining insight into eco-emotions linked to environmental activism has considerable implications for promoting pro-environmental actions and individual well-being.

*Keywords:* Eco-emotions, Climate activism, Climate Crisis, Pro-environmental behavior

**Table of Contents**

Introduction.....	6
Literature Review.....	8
Defining emotions and eco-emotions.....	9
Analyzing emotions and climate change related behavior.....	11
Results of Previous Studies.....	13
Research gap.....	15
Methodology.....	17
Participants.....	17
Procedure.....	17
Analysis.....	18
Results.....	18
Reported eco-emotions.....	18
Effect of pro-environmental behavior on eco-emotion change.....	20
Thematic Analysis.....	24
Sources of eco-emotions promoting pro-environmental behavior.....	25
Sources of eco-emotions post pro-environmental behavior.....	27
Discussion.....	29
Reported eco-emotions.....	29
Wide range of interlinked eco-emotions.....	29
Sadness and Grief.....	31
Anger.....	33
Positive eco-emotions.....	34
Difference between elicited and self reported eco-emotions.....	35
Changes in eco-emotions before and after engaging in pro-environmental behavior.....	36
Change to positive eco-emotions.....	37
Changes to negative eco-emotions.....	38

Eco-emotions as a motivator for pro-environmental behavior.....	39
Implications of the current research.....	41
Increase pro-environmental behavior.....	41
Improved mental health and climate justice.....	42
Shift in narrative towards positive eco-emotions.....	42
Limitations and Future research.....	43
Conclusion.....	45
References.....	47
Appendices.....	54
Appendix A: Informed consent form.....	54
Appendix B: Interview Questions.....	56
Appendix C: Wheel of Emotions.....	57

## Introduction

Climate change has been outlined as the biggest challenge of our time, due to its disastrous effect on the natural world and our society. Global warming caused by anthropogenic climate change leads to various negative impacts including the deterioration of the environment, disappearance of biodiversity, adverse health implications for communities and loss of land and infrastructure (Paavola, 2017). As a result of these accelerating devastating effects of the climate crisis an increasing number of people are experiencing negative emotions such as eco-anxiety, eco-grief, eco-guilt and eco-anger (Ojala, 2012; Ohala et al., 2021; Pihkala 2020). Psychological impacts of climate change are not only present when individuals experience direct exposure to climate events such as extreme weather events (e.g. flooding, bushfires, droughts) but also when being exposed to indirect effects (e.g. negative health effects) (Marczak et al., 2023; Sangvero et al., 2022). Emotions associated with the climate crisis have been termed as eco-emotions and are defined as an “affective phenomena that accompany specific climate-change related perceptions” (Marzak et al., 2023, p.2). Definitions for eco-emotions differ between scholars and a need for a continuous discussion about these definitions still exists (Hickman, 2020; Pihkala, 2020).

Various research has outlined the significant influence that emotions have on climate change related behavior (Brosh & Steg, 2021; Kalwak & Weihgold, 2022; Marczak et al., 2023; Pihkala, 2022; Randall & Hoggett, 2019). Emotions can act as motivators towards pro-environmental action and can therefore contribute to sustainable behavior change (Brosh & Steg, 2021; Kalwak & Weihgold, 2022). People aim to engage in actions which decrease negative emotions and lead to positive emotions. Hence, the anticipated increase in positive emotions after partaking in sustainable actions has been found to be a significant motivator for pro-environmental behavior (Brosh & Steg, 2021). Furthermore, engaging in pro-environmental

behavior has also been used as a resolution for negative eco-emotions (Randall & Hoggett, 2019). Therefore, emotions associated with climate change significantly impact people's behaviors. However, due to the multifaceted nature of the climate crisis (such as being temporally distant, difficult to understand, etc.) and complexity of the origin and expression of human emotions, studying eco-emotions related to the climate crisis remains difficult (Brosh & Steg, 2021; Marczak et al., 2023; Pihkala, 2022). Nevertheless, the number of studies showing the association of particular eco-emotions with pro-environmental behaviors has significantly increased (Contreras et al., 2023; Mathers-Jones & Todd, 2023; Ogunbode et al., 2022; Ojala, 2012). Although the possible association of positive emotions with climate change has been addressed in the literature (Lange & Dewitte, 2020; Ojala, 2012; Pihkala, 2020; Voški et al., 2023), the range of positive emotions and their possible relationship with climate change mitigation behaviors have been under examined (Ojala, 2012; Voški et al., 2023; Zelenski & Desrochers, 2021). The discussion of positive emotions associated with environmental activism is still limited since existing studies mostly focus on negative emotions or broader eco-emotions which might include some positive emotions (Jain & Jain, 2022; Landmann, 2020; Marczak et al., 2021; Randall & Hoggett, 2019). Research thus far has investigated the positive influence of hope on pro-environmental behavior (Ojala, 2012) and the impact of self-transcendent emotions (including awe, gratitude, compassion) on pro-environmental behavior (Zelenski & Desrochers 2021). Hence, studies that combine the diversity of positive eco-emotions are still limited. No qualitative study was found that focused specifically on the eco-emotions experienced before and after individual or collective environmental actions. Additionally, there is no study that addresses the issue from the perspective of environmental activists and provides comprehensive content by collecting data from different countries.

In this framework, semi-structured interviews were conducted with environmental activists to elicit all possible eco-emotions. The aim of the study was to assess the prevalence of positive and negative eco-emotions among environmental activists living in different countries and to explore their eco-emotions before and after personal or collective mitigations. Hence, the research seeks to answer the following research questions:

1. *Which eco-emotions do environmental activists experience?*
2. *How do eco-emotions change after engaging in pro-environmental activities ?*

It is expected that a number of mixed (positive and negative) eco-emotions will be associated with the climate crisis by the respondents and that environmental activists would report more positive eco-emotions after they engage in pro-environmental behavior.

As emotions derived from individual climate action have been outlined to be of significant influence on pro-environmental behavior (Brosh & Steg, 2021), gaining insight into (positive) eco-emotions linked to environmental activism has considerable implications for promoting pro-environmental actions and individual well-being (Ojala, 2012).

This paper firstly provides an overview of the existing literature, giving a theoretical foundation and insights into existing studies and their limitations. Then, an explanation of the research methods is given followed by the results, discussion and conclusion.

### **Literature Review**

The following part of the paper reviews the existing literature investigating the topic of eco-emotions. Firstly, a definition of emotions linked to the climate crisis and the term eco-emotions is provided, followed by an overview of various frameworks and conceptual models used to examine the relationship between eco-emotions and climate change related



behavior. Additionally, reported eco-emotions and results of previous studies will be discussed. Lastly, the existing research gap will be addressed.

### **Defining emotions and eco-emotions**

A growing body of research has identified the role climate change plays in the emotional experiences and state of individuals (Marczak et al., 2021, 2023; Ojala, 2012; Ojala et al., 2021; Pihkala, 2020, 2022; Schneider et al., 2021). However, there is no consensus about the definition of emotions, as various interpretations exist in literature (Marczak et al., 2021). Brosh & Steg define emotions as characterized by extreme reactions which can lead to “changes in motivational action tendencies, physiological reactions, expressions and subjective feeling” (2021, p. 1694). The definition of emotions provided by Brosh & Steg (2021) will be used in the remainder of this paper.

The most prevalent emotions related to the climate crisis discussed in previous research are eco-anxiety, eco-grief, solastalgia, eco-guilt, eco-anger, and eco-depression (Cianconi et al., 2023; Coppola, 2023; Breth-Petersen et al., 2023; Hickmann, 2020; Ojala et al., 2021; Randall & Hogget, 2019; Marczak et al., 2021; Pihkala, 2022). The term eco-anxiety has been widely used to describe negative emotions experienced as a result of climate change (Hickmann, 2020). More specifically, it has been defined by the American Association of Psychology as “the chronic fear of environmental cataclysm that comes from observing the seemingly irrevocable impact of climate change and the associated concern for one's future and that of next generations” (as cited in Jain & Jain, 2022, p.1). However, the term eco-anxiety is often pathologized and labels distress related to climate change events as an individual mental struggle, hence it frames emotional reaction to the climate crisis as a mental illness rather than a normal experience related to the occurring social and environmental challenges (Hickmann, 2020). Furthermore, the term

fails to represent different experiences of climate anxiety, especially of indigenous communities, who might experience a broader range of emotions (such as joy and grief) linked to the climate crisis (Jain & Jain, 2022). Therefore, a reframing of eco-anxiety as eco-empathy has been proposed (Hickmann, 2020). Eco-grief or ecological grief describes the sorrow associated with seen or anticipated environmental changes due to the vanishing of species, ecosystems, and landscapes. It has been defined as “the grief felt in relation to experienced or anticipated ecological losses, including the loss of species, ecosystems and meaningful landscapes due to acute or chronic environmental change” (Cunsolo & Ellis, 2018, p. 275). Similarly, the term solastalgia also describes the distress and despair individuals experience due to the loss of their home environment (Albrecht, 2011). Related to eco-grief and solastalgia is also the experience of eco-guilt, which occurs when individuals realize they have transgressed societal or personal norms of behavior in relation to ecological norms (Mallet et al., 2012). Eco-anger refers to the anger individuals experience in relation to climate change, for example due to a lack of action from governments (Contreras et al., 2024). Perceiving the emotional reactions to the negative impacts of the climate crisis as unbearable, in relation to negative emotions of sadness, deep sorrow, overwhelmness and emotional pain has been defined as eco-depression or climate depression (Cianconi et al., 2023).

While these are the most prominent emotions experienced by individuals in relation to the climate crisis outlined in past research, the term eco-emotions has been introduced which aims to capture the broad range of interrelated emotions (Hickmann, 2020; Jain & Jain, 2022; Marzak et al., 2023; Pihkala, 2020, 2022; Sangervo et al., 2022; Schneider et al., 2021). Various definitions of the term exist, however in the remaining part of this paper, eco-emotions will be defined as the “affective phenomena that accompany specific climate-change related

perceptions” (Marzak et al., 2023, p. 2). Recent studies highlight the complexity of emotional experiences of climate change, as a broad range of emotions, including negative and positive ones, are identified by researchers (Pihkala, 2022).

### **Analyzing emotions and climate change related behavior**

The literature outlines different conceptual frameworks and theories which aim to explain the relationship between emotions and climate change related events and pro-environmental behavior (Brosh & Steg, 2021; Sangervo et al., 2022; Schneider et al., 2021).

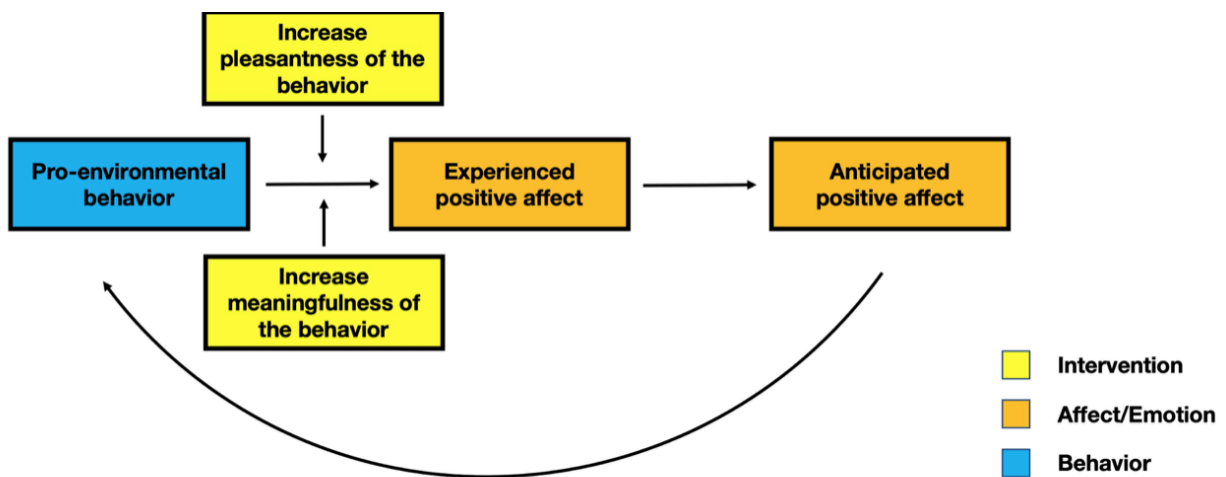
Brosh & Steg (2021) outline the formation of emotional reactions resulting from relevant values. Hence, an individual's values related to climate change and the environment are indicators for a possible emotional response to these topics. Values which have been identified as relevant to the context of climate change are biospheric, altruistic, hedonistic and egoistic. The lack of emotional response to climate change events has been explained either due to no perception of threat to the environment or that the state of an intact environment is not of value to the individual (Brosh & Steg, 2021). While egoistic and hedonistic values may result in pro-environmental behavior, biospheric and altruistic provide a more constant foundation for partaking in sustainable actions (De Groot & Steg, 2009).

Furthermore, positive emotions, either experienced or anticipated, have been identified as significant predictors of behavior. This phenomenon has been described as the “warm glow” effect, which is the good feeling sensation one experiences after engaging in pro-social or pro-environmental behavior. The “warm glow” effect has been explored as a motivator and indicator of positive climate change related behavior (Brosh & Steg, 2021; Schneider et al., 2021).

Additionally, Schneider et al., (2021) identified two ways in which positive emotions are related to climate change behavior: either as antecedents or as consequences. Their conceptual model describes climate change relevant engagement as originating from explicitly targeted, experienced or anticipatory positive emotions or indirect activation of experienced or anticipatory positive emotions (see Image 1). The relationship between these two variables and climate change relevant behavior is influenced by moderating factors (such as contextual background, personal differences, cultural background etc.) which also impact the post-engagement experience of positive emotions (like hope, pride, warm glow). Another factor of the conceptual framework is the “upward spiral”, occurring via positive reinforcement, whereby post-engagement positive emotions lead to more climate change relevant engagement (Schneider et al., 2021).

**Image 1**

*The cycle of positive emotions and pro-environmental behavior*



*Note.* Conceptual model of pro-environmental behavior and experienced positive affect by Schneider et al., (2021).

Moreover, Sangervo (2022), utilized the Extended parallel process model (EPPM) to investigate the relationship between climate anxiety, climate hope and its effect on climate actions. The model examines how participants react to a perceived threat (climate anxiety) in relation to self efficiency (climate hope). The study showed that individuals modify their behavior when they view climate change as a serious threat in combination with their perception of being able to influence it (Sangervo, 2022).

### **Results of Previous Studies**

A wide variety of emotions experienced due to climate change related events has been identified in past research (Marczak et al., 2021, 2023; Ojala, 2012; Ohala et al., 2021; Pihkala, 2020, 2022; Schneider et al., 2021). Most eco-emotions described are negative ones, with the most frequent ones being eco-anxiety, eco-anger, eco-grief and eco-guilt (Coppola, 2023; Pihkala, 2022; Marczak et al., 2021; Randall & Hogget, 2019). Other negative eco-emotions which have been identified include feelings of powerlessness, hopelessness, sadness, worry, and isolation (Ojala, 2012; Marczak et al., 2021). The experiences of negative eco-emotions are most prone in young people and are becoming more frequent, as 70% of people (aged 18-24 years old) are increasingly worried about the climate crisis. Nevertheless, the occurrence of negative emotional reactions to the climate crisis is also present across generations (Hickmann, 2022).

In addition to negative emotional responses to climate change related events, research has also outlined positive eco-motions, however the discussion of positive eco-motions associated with environmental activism is still limited (Jain & Jain, 2022; Landmann, 2020; Marczak et al.,

2021; Randall & Hogget, 2019). Hope has been identified as a frequent positive eco-motion (Marczak et al., 2021; Ojala, 2012). Other positive eco-emotions include excitement, optimism, gratitude, empowerment and anticipated pride (Brosh & Steg, 2021; Marczak et al., 2021). Furthermore, trust and joy have also been identified as occurring positive eco-emotions (Zaremba et al., 2022).

Scholars have highlighted the importance of considering the interplay between various eco-emotions, including positive and negative ones (Sangervo et al., 2022; Zaremba et al., 2022). This is due to the fact that individuals might experience a wide range of eco-emotions and also rapidly vary between contrasting emotions (Hickmann, 2022). Marczak et al., (2023) developed the inventory for climate emotions (ICE) tool to psychometrically assess the broad range of emotional response to the climate crisis. According to their evaluation, emotional experiences of the climate crisis are based on eight underlying factors: anger, contempt, enthusiasm, powerlessness, guilt, isolation, anxiety, and sorrow. The authors found evidence for the psychometric quality of the ICE after concluding two quantitative studies with participants from the general population in Poland. By separating the emotional experience of anxiety from other feelings like grief, rage, guilt, and loneliness, the ICE tool enables the simultaneous assessment of a broad variety of eco-emotions. Furthermore, the ICE tool highlighted the strong interrelation of various eco-emotions, especially for eco-anger, eco-anxiety, and climate sorrow. In addition, the multifaceted comprehension of eco-emotions provided by the ICE tool may facilitate the creation of more complex and accurate climate change psychology models. Thus, the ICE significantly enhances the understanding of the complexity of eco-emotions and can be used as an important research tool (Marczak et al., 2023). Nevertheless, the ICE may not capture the entire emotional experience of climate change and since emotions are a culturally rooted

phenomena, more investigation is required to determine the instrument's cross-cultural validity.

Furthermore, the connection between emotions elicited by the climate crisis and the health and psychological well-being of individuals is highly complex (Pihkala, 2022). Experiences of eco-emotions depend on local contexts, whether individuals experience direct or indirect consequences of climate change (Kalwak & Weihgold, 2022; Pihkala 2022). Additionally, experiences of eco-emotions also vary due to the degree of climate change awareness (Marczak et al., 2021; Kalwak & Weihgold, 2022; Schneider et al., 2021), individual's values (Brosh & Steg, 2021; Kalwak & Weihgold, 2022; Schneider et al., 2021) as well as political, cultural and social contexts (Kalwak & Weihgold, 2022; Pihkala, 2022; Zaremba et al., 2022). Furthermore, the connection between emotions elicited by the climate crisis and the health and psychological well-being of individuals is highly complex (Pihkala, 2022). Therefore, researching eco-emotions remains difficult.

### **Research gap**

Due to the complexity of eco-emotions and inconsistent research methods, further research is still needed which examines the eco-emotions experienced by individuals as well as the impact of pro-environmental behavior. Research methods thus far have varied greatly, employing different quantitative and qualitative approaches. Various scholars have conducted literature reviews (Brosh & Steg, 2021; Kalwak & Weihgold, 2022; Pihkala, 2022; Schneider et al., 2021) to obtain a holistic understanding of the existing research or to create a taxonomy of eco-emotions (Landmann, 2020; Pihkala, 2022). Surveys have also been conducted, on a global scale (Hickmann, 2021) but mostly focused on local contexts, such as Belgium (Contreras et al., 2023) or Finland (Sangero et al., 2022). Questionnaires were employed to research Swedish individuals' emotions on climate change related events (Ojala, 2012; Ojala & Bengston, 2019)

and some scholars also used an experimental approach (Jones & Todd, 2023; Lange & Dewitte, 2020) or analyzed cross-sectional data from various countries (Ogunbode et al., 2022). A multitude of researchers relied upon various interview formats to obtain their data. Randal & Hogget (2019) conducted interviews with the target groups of climate activists and scientists. Semi-structured interviews were conducted with British adolescents (Bowman & Pickard, 2021), Finnish and North American individuals (Coppola, 2023), Norwegian participants (Marczak et al., 2021), and Polish individuals (Zaremba et al., 2022). Given the variety of research methods utilized, results from various studies are difficult to be generalized (Marczak et al., 2021; Pihkala, 2022; Sangervo et al., 2022; Schneider et al., 2021)

Moreover, due to the complex reality of the climate crisis and different understandings of it, related to contrasting cultural, social and political contexts as well as personal knowledge and values, the experiences of eco-emotions related to pro-environmental behavior vary greatly between studies (Brosh & Steg, 2021; Marczak et al., 2023; Pihkala, 2022). Additionally, a lack of consensus of eco-emotions definitions further complicates the task of creating a comprehensive overview of eco-emotions and their relationship to climate change related behavior (Brosh & Steg, 2021; Marzak et al., 2023; Pihkala 2022).

Scholars have expressed a shortage of studies on eco-emotions and environmental engagement (Brosh & Steg, 2021; Marczak et al., 2021; Ojala, 2012; Pihkala, 2022; Sangervo et al., 2022; Schneider et al., 2021, Zaremba et al., 2022), especially concerning the relationship between positive eco-emotions and pro-environmental behavior (Ojala, 2012; Voški et al., 2023; Zelenski & Desrochers 2021). Further research is thus needed to gain a better understanding of the topic in order to leverage emotions to motivate action, create more reliable psychometric measures and help policymakers increase awareness about climate change more successfully



(Brosh & Steg, 2021; Ojala, 2012; Zaremba et al., 2022).

### **Methodology**

The present study utilized a qualitative research approach in which semi-structured interviews were conducted with climate activists. The flexible format of semi-structured interviews allowed the researcher to adjust the wording of questions, ask for clarifications or use probing to receive further detailed information, therefore ensuring a holistic understanding of the emotional experience of the participants. Ethical approval was obtained from the Campus Fryslân ethics board.

### **Participants**

Participants were recruited through personal contacts, snowballing technique by other activists and social media channels, university groups and contacting environmental activist organizations and NGOs (e.g. Extinction Rebellion, Fridays for Future). Individuals were included in the research if they engaged in environmental activism and were able to express themselves in English. To gather generalisable data, no age or gender exclusion criteria were set.

### **Procedure**

Participants signed an informed consent form (Appendix A) before the interview was conducted. Face-to face online interviews, lasting ca. 15-30 minutes were held to investigate the eco-emotions associated with the climate crisis and to explore individuals' eco-emotions before and after personal or collective positive climate change related action. Participants were asked about what eco-emotions they associated with the climate crisis (which were either self-reported or elicited) as well as their eco-emotions associated with pro-environmental behavior (i.e those resulting from activism (see interview questions in Appendix B). For the purpose of not missing any eco-emotion experienced by individuals, the Wheel of Emotions (by Plutchik 2001, see

Appendix C) was presented to participants at the end of the interview. The interviews concluded by asking participants demographic questions about their age and country of residence.

Afterwards, participants were debriefed, and informed that the research dissertation will be shared with them upon its completion.

### **Analysis**

The audio recordings were transcribed using the help of the transcription software Otter.ai. Transcriptions of the interviews were anonymised by omitting personal information and names of participants. The information obtained through the interviews was analyzed using a deductive and inductive approach. Consequently, the data was first analyzed by creating codes based on the research questions. Next, transcriptions were analyzed again by allowing additional codes, not based on the research questions, to emerge from the data. The thematic analysis developed by Braun and Clarke (2022) was used to identify overarching themes. First, a preliminary group of themes was determined based on frequently occurring codes. The prior themes were then combined into more general themes.

## **Results**

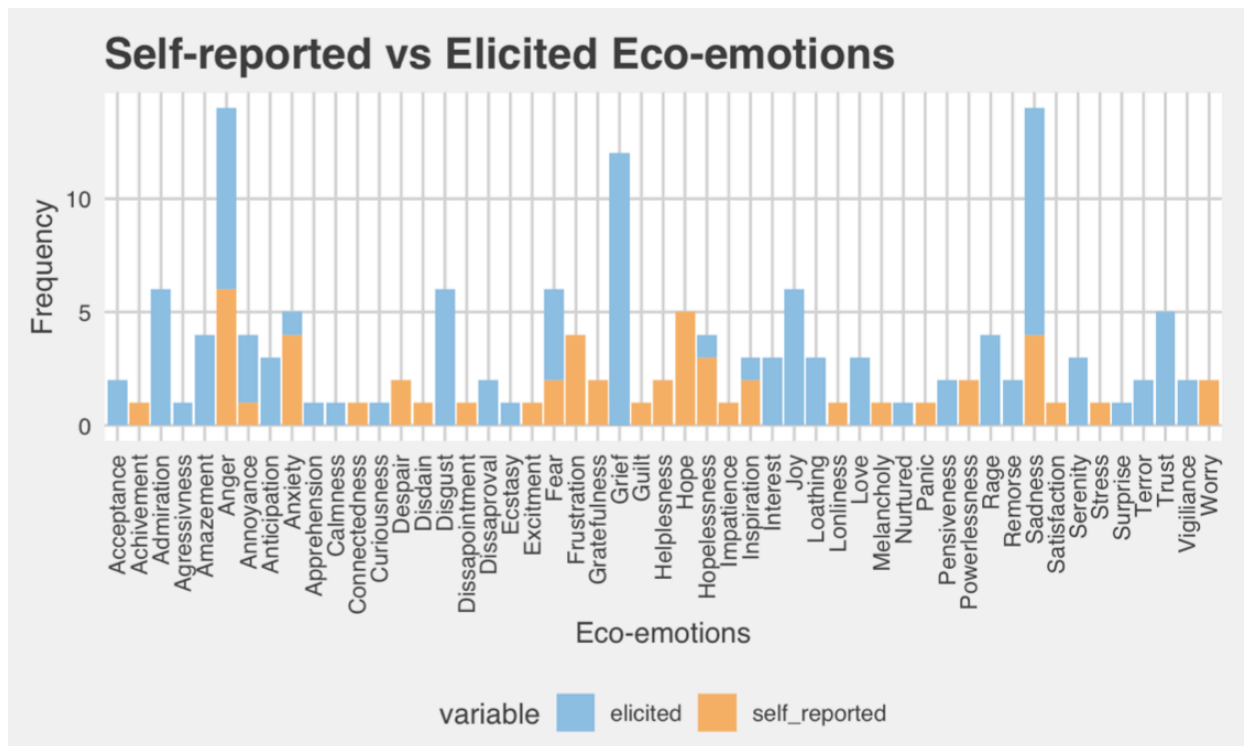
### **Reported eco-emotions**

The sample consisted of sixteen participants in total, eight of which were residents in the Netherlands, three from the UK, two from Zimbabwe, one from Mexico, one from France and one from Austria. Eight of the participants identified as female, six who identified as male and two who identified as non-binary. The interviewees' ages ranged from 19 to 63 years old, with a mean age of 31. Participants experienced a wide range of eco-emotions, including negative and positive eco-emotions. The most reported negative eco-emotions were sadness (14), anger (13)

and grief (12). Additionally, the positive eco-emotions of joy (6), admiration (6), hope (5) and trust (5) were most often reported by interviewees.

Furthermore, a significant difference in frequency and variety of eco-emotions occurred between initially self-reported emotions by participants and elicited emotions. At the end of the interview, individuals were asked to identify any eco-emotion using the Wheel of Emotions by Plutchik (2001). This led to participants explaining a variety of previously unmentioned eco-emotions. Graph 1 displays the frequency of described eco-emotions, categorized by self-reported and elicited:

**Graph 1**



*Note.* Frequency of eco-emotions described by participants, categorized in elicited (blue) and self reported (orange)

While some eco-emotions (fear, anger, sadness, hopelessness, anxiety, inspiration) were self-reported as well as reiterated after the presentation of the Wheel of Emotions, a wide

spectrum of eco-emotions was only reported after participants were elicited. The most frequent eco-emotions only stated after elicitation included grief, admiration, disgust, joy, rage and trust. Hence, without being prompted, these eco-emotions would have been missed in shaping the experience of the climate crisis for participants.

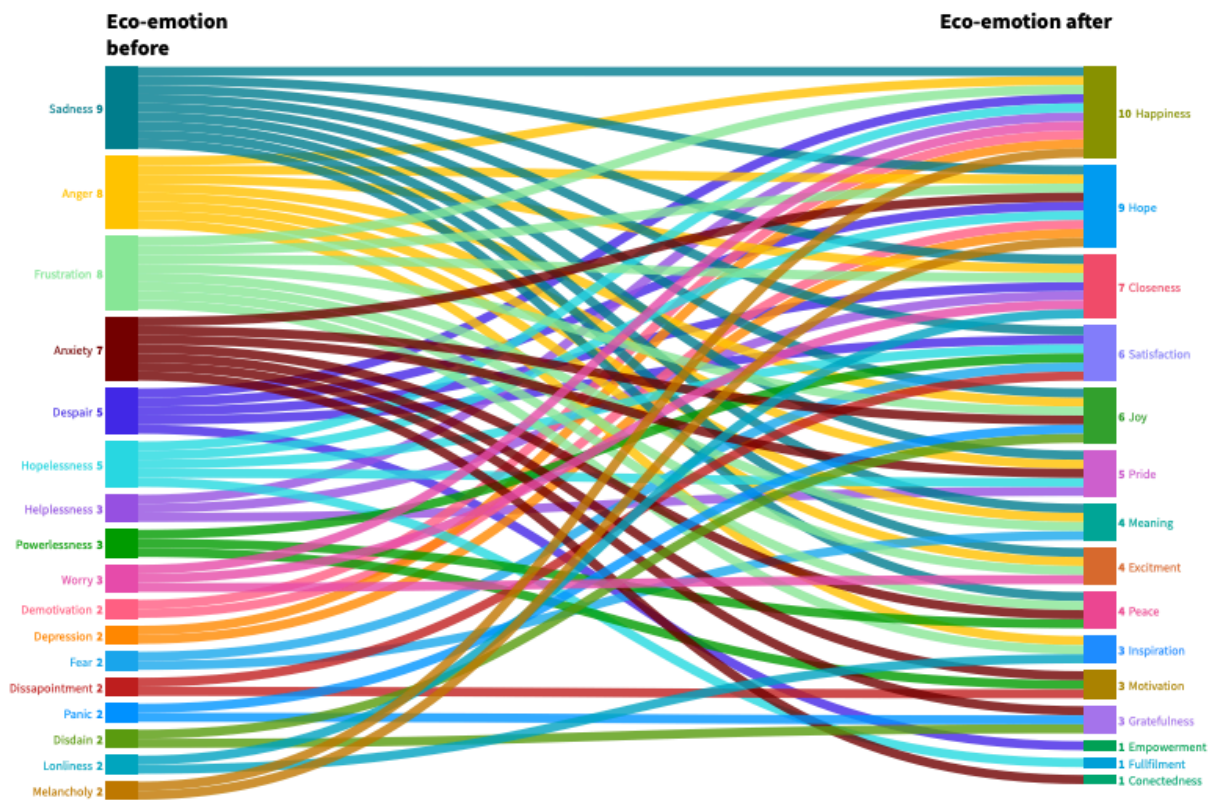
### **Effect of pro-environmental behavior on eco-emotion change**

One of the most distinct findings was the effect of pro-environmental behavior on the change of eco-emotions. Participants recorded different and contrasting eco-emotions before and after engaging in pro-environmental behavior. Various participants described negative eco-emotions in relation to the climate crisis (such as despair or sadness) however after engaging in pro-environmental behavior their eco-emotions changed, either to positive or different negative eco-emotions.

Furthermore, participants described the positive impact that engaging in pro-environmental behavior had on their eco-emotions. Some of the negative eco-emotions experienced by participants were changed to positive eco-emotions after engaging in pro-environmental behavior. Graph 2 shows the negative eco-emotions reported before engaging in pro-environmental behavior which shifted into positive eco-emotions after partaking in environmentally friendly behavior.

**Graph 2**

**Change in negative eco-emotions to positive eco-emotions  
After engaging in pro-environmental behaviour**



*Note.* Change in negative eco-emotions before engaging in pro-environmental behavior (left) and eco-emotions experienced after pro-environmental behavior (right). The number next to the label of eco-emotions represents the frequency of the eco-emotion expressed by participants.

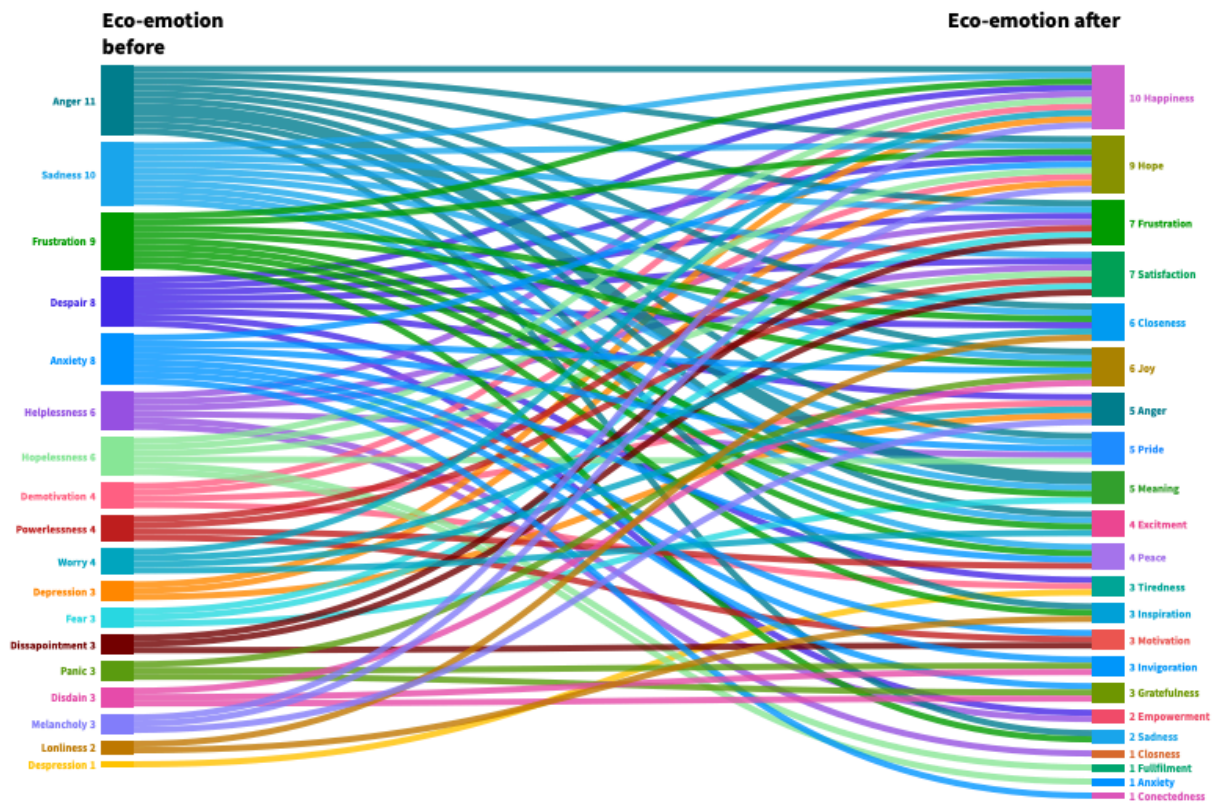
The most prevalent negative eco-emotion before engaging in pro-environmental behavior which changed towards positive eco-emotions were sadness and anger. Sadness was reported to have shifted to happiness, hope, closeness, satisfaction, joy, pride, meaning, excitement and peace. Anger also changed to happiness, hope, closeness, joy, pride, meaning, excitement in

addition to inspiration. Happiness and hope were the most frequently reported positive eco-emotions after participating in pro-environmental behavior.

Despite engaging in pro-environmental behavior, some participants' negative eco-emotions persisted or different negative eco-emotions arose. This is illustrated in Graph 3, which depicts the change in negative eco-emotions before engaging in pro-environmental behavior to positive as well as alternate negative eco-emotions.

**Graph 3**

**Change in negative eco-emotions**  
After engaging in pro-environmental behaviour



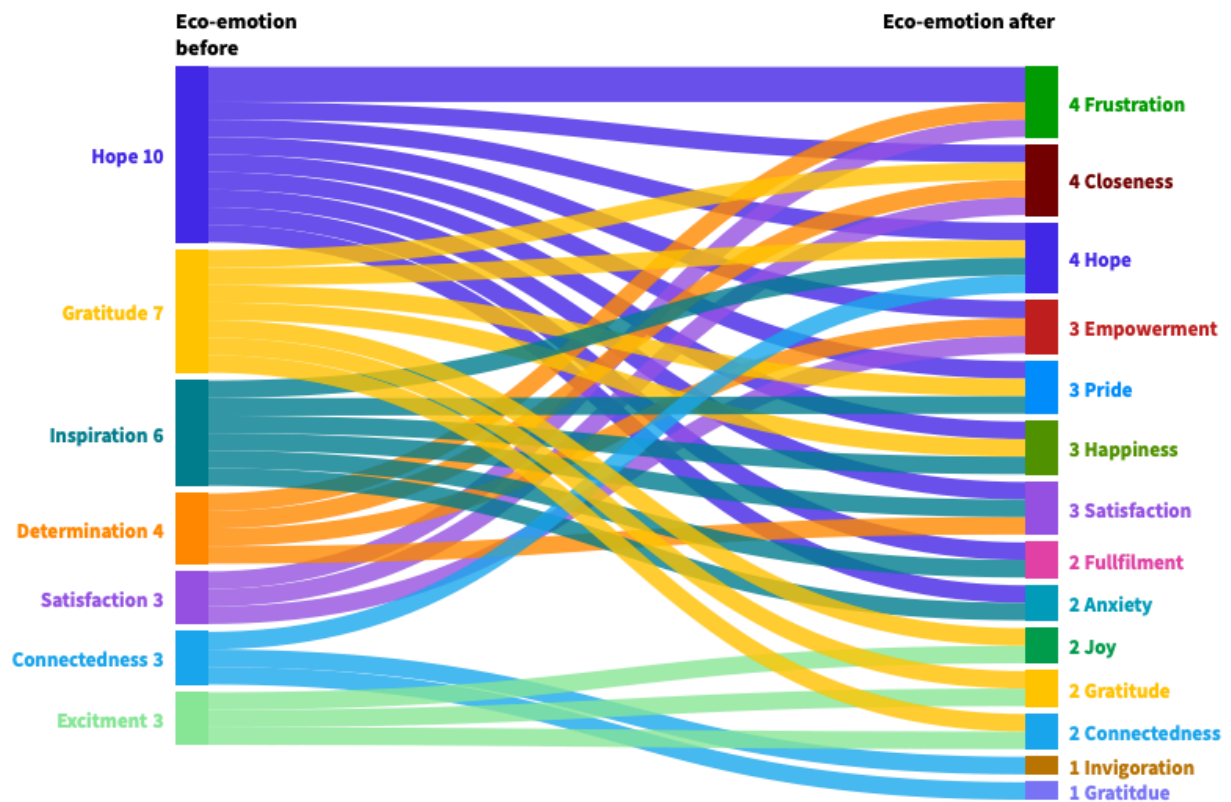
*Note.* Change in negative eco-emotions experienced before engaging in pro-environmental behavior (left) and eco-emotions reported after engaging in pro-environmental behavior (right). The number next to the label of eco-emotions represents the frequency of the eco-emotion expressed by participants.

While the majority of participants who experienced anger before taking environmentally friendly actions describe a positive change in their eco-emotions after, some participants reported eco-emotions of frustration and sadness after taking part in pro-environmental behavior. Frustration and anger were the most frequently negative eco-emotions experienced after engaging in pro-environmental behavior, while other negative eco-emotions of tiredness, sadness and anxiety were also mentioned.

Furthermore, some interviewees also reported initially positive eco-emotions changing to negative eco-emotions as a result of engaging in pro-environmental behavior, visible in graph 4.

**Graph 4**

**Change in positive eco-emotions**  
After engaging in pro-environmental behaviour



*Note.* Change in positive eco-emotions before engaging in pro-environmental behavior (left) and eco-emotions experienced after pro-environmental behavior (right). The number next to the label of eco-emotions represents the frequency of the eco-emotion expressed by participants.

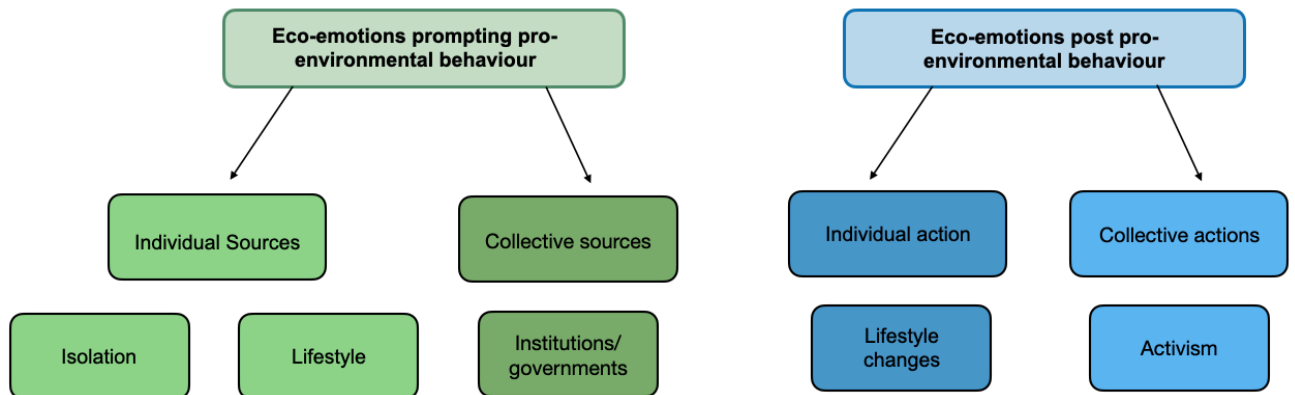
After engaging in pro-environmental behavior, participants who experienced positive eco-emotions of hope reported feeling frustration and anxiety. Furthermore, inspiration and satisfaction were also described as having shifted to anxiety and frustration, respectively.

### **Thematic Analysis**

The thematic analysis revealed the distinction between eco-emotions which prompt pro-environmental behavior and eco-emotions which were experienced post engagement in pro-environmental actions. Figure 1 depicts the motivations which resulted in eco-emotions that prompted pro-environmental actions and eco-emotions participants experienced post pro-environmental engagement. Eco-emotions which prompted pro-environmental actions either resulted from individual or collective sources of motivations. Individual sources of motivation related to participants described experience of isolation and their current lifestyle. On the other hand, interviewees described collective sources of motivation as institutions and governments. Furthermore, participants' descriptions of post-engagement eco-emotions have been categorized into the sources of collective action referring to activism behavior and individual action which relate to participants' changes in lifestyle.

The following sections will provide an overview of each theme. First an explanation of the sources of isolation, lifestyle and institutions which lead to eco-emotions promoting pro-environmental behavior will be given. Next, sources of eco-emotions which resulted from engagement in pro-environmental will be provided. Connections to the reported eco-emotions are illustrated, and quotes from the interviews are used to provide examples.



**Figure 1***Sources of eco-emotions*

*Note.* Sources of eco-emotions prompting pro-environmental behavior (left) and sources of eco-emotions post pro-environmental behavior (right)

### ***Sources of eco-emotions promoting pro-environmental behavior***

**Individual sources.** Individual sources which led to eco-emotions promoting pro-environmental behavior were isolation and lifestyle. Participants described feeling isolated with their emotional experiences of the climate crisis as they often felt misunderstood by friends and family. When voicing their eco-emotions in relation to the climate crisis and the importance of environmental protection individuals felt not listened to:

*“Beforehand, I felt very isolated, and that I was basically speaking to a brick wall.”*

*(Female, 27, UK)*

Moreover, individuals also experienced isolation due to lacking access to a community of like-minded people. As a result, they experienced negative eco-emotions more frequently, such as anxiety.

Some participants experienced cognitive dissonance between their environmental values and their lifestyle, as they felt like they had no choice but to engage in consumerism and behavior which was negative for the environment, due to living in a capitalistic society. One participant described this conflict with their current lifestyle:

*“The dissonance that's kind of in me between how I'm living my life now and how I want to live...I'm still part of this massive consumption cycle, you know. But the thing is, I feel like recently, it's just been very difficult for me to think about this stuff in a positive way.”*

*(Non-binary, 21, Netherlands)*

In relation to their lifestyle choices, participants described feeling frustrated by not being able to act more environmentally friendly as well as sadness, related to the reality of society and their own negative impact.

Resulting from the individual sources of a sense of isolation and lifestyle choice, participants experienced eco-emotions of anxiety, sadness and frustration which prompted them to engage in pro-environmental behavior.

**Collective sources.** In addition to the individual sources of isolation and lifestyle which lead to eco-emotions promoting pro-environmental behavior, participants also described the collective source of institutions and governments.

Many interviewees identified institutions and governments as a source of eco-emotions of loathing and disgust. Participants expressed loathing and disgust about governments and policy

makers who are in positions of power which could create significant positive impact, however instead choose to ignore the issue of climate change:

*“ Disgust is over people, that are people in positions of power that have the power, they have the money, they have the influence and they don't do anything about.” (Female, 27, Netherlands)*

In addition to loathing and disgusts, individuals also felt angry at institutions and governments. Participants who were living in the global north felt anger due to the lack of action that governments take in preserving the environment. A participant from the global south however described experiencing anger not at their own governments, but at governments and institutions from the global north which allowed the continuous high emissions of greenhouse gasses at the expense of other countries:

*“So at first, it was like, this isn't our problem. We didn't do anything... So even though we aren't responsible for these things, we are feeling the impact of it.” (Male, 23, Zimbabwe)*

Therefore, anger felt towards governments and institutions was not only expressed in relation to current policies and actions, but also included the negative impacts of post-colonial history.

Hence, the eco-emotions of anger, loathing and disgust resulting from participants' perception of institutions and governments lead to participants engaging in pro-environmental behavior.

### ***Sources of eco-emotions post pro-environmental behavior***

Eco-emotions experienced by individuals after engaging in pro-environmental behavior either resulted from participating in collective or individual actions.

**Individual actions.** Individual actions often involved changes to their lifestyle such as consuming less or no animal products, using public transportation and avoiding flying to reduce their carbon footprint. Furthermore, participants also engaged in individual actions to spread awareness, either by talking to their community or sharing content on their social media accounts. Engaging in individual actions of pro-environmental behavior led to eco-emotions of pride and joy, as participants felt they were making a positive impact. However, individuals also expressed feeling frustrated, as they felt like their actions weren't impactful enough:

*“So there's also like, kind of this torn between, oh, yeah, it's nice what I'm doing, but is it enough? No.” (Female, 20, Netherlands)*

As a result, many interviewees decided to participate in collective actions, as they felt they could make a bigger positive impact when being part of climate activist groups.

**Collective actions.** Examples of collective actions were engaging in protests or demonstrations, being part of climate activist groups, engaging in educational activities or being part of community events, such as neighborhood clean ups or urban gardens. Being surrounded by people who also aim to create positive change led to eco-emotions of trust and hope in a brighter future. However, engaging in collective action also led to an increase in awareness about the negative impacts of the climate crisis, leading to feelings of sadness:

*“...this feeling of connection and feeling and being in these actions is especially, it's giving hope. That is, yeah, it's hopeful and it's comforting. And, but also again, sad, sadness, that it is necessary, I think. Yeah. Like this, and these feelings are deeper while I'm doing this action. So this feeling of sadness.” (Female, 54, Netherlands)*

In summary, participants expressed a variety of eco-emotions after engaging in individual and or collective actions for pro-environmental behavior. These were joy, pride, frustration, hope, trust and admiration.

## **Discussion**

The following part of the paper provides a general discussion of the reported eco-emotions experienced by climate activists as compared to the findings of previous literature. Furthermore, possible explanations of the described eco-emotions, change in eco-emotions before and after engaging in pro environmental behavior is given and motivations for pro-environmental behavior are analyzed. Theoretical frameworks and past studies are utilized to make the arguments. Next, implications of the findings of the current study are described. These include increasing pro-environmental behavior, improved mental health and climate justice and the shift in narrative towards positive eco-emotions.

### **Reported eco-emotions**

#### ***Wide range of interlinked eco-emotions***

This study highlighted the wide range of eco-emotions experienced by environmental activists. Participants explained mostly feeling negative eco-emotions as well as some positive eco-emotions towards the climate crisis. Additionally, the eco-emotions interviewees reported were often interconnected, for example individuals experienced anger which was also linked to eco-emotions of frustrations, hope and sadness. This is in line with previous research (Copoola, 2023; Marczak et al., 2021) which highlighted the complexity and variety of eco-emotions. Since emotions arise when an event or object is perceived as relevant to one's concerns and values, participants' emotional reactions to the climate crisis may stem from their concern about

climate change and their biospheric values. Brosh & Steg (2021) found a strong correlation between biospheric and altruistic values and individuals' tendencies to experience emotional reactions toward climate change. Thus, the stronger people's biospheric values, the more worry they report about environmental issues (Brosh & Steg, 2021). Given that all participants identified as environmental activists, engaging in pro-environmental actions may have been motivated by emotions of worry about the climate crisis and/or their biospheric and altruistic values. Therefore, it was foreseeable that a wide range of emotional responses to the climate crisis were described.

In addition, the finding that participants' mostly associated negative eco-emotions with the climate crisis could have stemmed from their increased awareness of the issue. The results show that participants expressed using (social) media outlets to stay up to date about climate change related news, hence participants might have more awareness about the (negative) impacts of climate change than the average person. Prior studies have highlighted the differences in eco-emotions experienced due to a variation in the degree of climate change awareness (Marczak et al., 2021; Kalwak & Weihgold, 2022; Schneider et al., 2021) and the relationship between exposure to climate change information through the media and increased negative eco-emotions (Ojala et al., 2021, Newman et al., 2018).

Furthermore, people are more attentive to media content that supports their personal values and worldviews (Newman et al., 2018). Hence, a possible explanation for the prevalent reported negative eco-emotions which interviewees experienced may be due to individuals' increased knowledge about the climate crisis, resulting from their personal interest and values about climate change.

### *Sadness and Grief*

Two of the most frequent negative eco-emotions described by participants were sadness and grief. Sadness and grief also emerged in previous studies as salient eco-emotions (Coppola, 2023; Ojala et al., 2021; Randall & Hogget, 2019; Marczak et al., 2021; Pihkala, 2022).

Participants of the current study often expressed sadness and grief in relation to the perceived and anticipatory loss of nature. The term ecological grief has been introduced by various scholars to describe this phenomenon (Cunsolo & Ellis, 2018; Ojala et al., 2021). Cunsolo and Ellis (2018) classify ecological grief into three categories: “grief associated with physical ecological losses and attendant ways of life and culture”, “grief associated with disruptions to environmental knowledge systems and resulting feelings of loss of identity”, and “grief associated with anticipated future losses of place, land, species, and culture”. While these categories don’t include all forms of ecological grief and have been expanded on (Pihkala, 2024), they resonate most with the sources of grief and sadness described by participants of the current study. Interviewees explained feeling grief due to the destruction and the loss of nature and biodiversity as well as the anticipatory loss of nature for future generations, which has also been discussed in previous research (Coppola, 2023; Cunsolo & Ellis, 2018; Pihkala, 2024). Experiences and factors which elicit feelings of grief and sadness vary greatly between individuals, due to different values and emotional attachments of individuals, which are formed by psychological and cultural influences (Cunsolo & Ellis, 2018; Pihkala, 2024). Therefore, participants of the current study could have experienced ecological grief as a consequence of their biospheric values and strong emotional responses to the climate crisis and natural environment.

Past research has highlighted the interconnectedness of ecological grief with various other eco-emotions (Marczak et al., 2021; Pihkala, 2024), which was also present in the current study, as interviewees described feelings of sadness, anxiety and hopelessness associated with the loss and destruction of nature. Furthermore, participants also explained feeling isolated, as their strong emotional reactions to the climate crisis were not reciprocated by their social surroundings. Emotions of isolation might be explained by the fact that some negative emotional reactions to the climate crisis, such as ecological grief, are not yet openly acknowledged and recognized as valid emotional responses in western contexts. While the concept of ecological grief is relatively novel in psychological and climate change related research, indigenous peoples have experienced grief about their loss of land and destruction of ecosystems for centuries, due to colonization (Cunsolo & Ellis, 2018). Reasons for not recognizing ecological losses include cultural contexts, economic prioritization of natural capital as well as colonial, patriarchal and racist frameworks (Phutick, 2024). Given that the majority of participants resided in western, industrialized countries, feeling isolated with their eco-emotions of sadness and grief might be explained by the continued dismissal of ecological grief in their cultures.

Cunsolo and Ellis (2018) argue that ecological grief should be acknowledged as a natural response to environmental loss and destruction, especially given the expected increase in such grief due to escalating environmental damage. Moreover, they describe positive implications of experiencing ecological grief, such as 'we-creating' capacities which create feelings of connection to others. This phenomenon was also described by participants in the current study, who explained finding close connections with other activists who experienced similar negative eco-emotions. Hence, experiencing negative eco-emotions like grief and sadness, can act as a



gateway for positive feelings of connection as well as act as a motivator for engaging in pro-environmental behavior (which will be discussed later on).

### *Anger*

Anger was reported by most participants, as a prominent emotional response to the climate crisis. Various studies have also highlighted the prevalence of anger as an eco-emotion (Coppolla, 2023; Randall & Hogget, 2019; Marczak et al., 2021). Participants mentioned governments and institutions as well as individuals as sources of anger. Anger towards governments and institutions was explained due to the lack of action towards climate change as well as continuous support of the fossil fuel industry. Thus, participants' eco-emotions were also influenced by their knowledge about government's actions and policies in their country and information about systemic injustices perpetrated by policy makers also discussed by Marczak et al., (2021).

Furthermore, interviewees also felt anger towards people who do not care about the climate crisis or continued to demonstrate behavior which has negative impacts on the environment, which is in line with previous research (Marczak et al., 2021). The emergence of anger could be explained by individuals' biospheric values as opposed to hedonistic, egoistic or economic values of others (Brosh & Steg, 2021). Therefore, participants feel anger and frustrations towards others who do not share their biospheric values. Anger was also linked to eco-emotions such as loathing, disgust and rage, which was directed towards people in power who continue to contribute to the negative acceleration of the climate crisis. This is in line with previous research, which has classified anger as well as disgust and contempt as an “other condemning emotion” (Landmann, 20202) and has linked anger to eco-emotions of disgust and rage (Marczak et al., 2021; Zaremba et al., 2022).

***Positive eco-emotions***

The positive eco-emotions most often experienced by interviewees were joy, admiration, hope and trust. Most participants explained their positive eco-emotions as resulting from engagement in pro-environmental behavior, being part of a collective environmental activists group or being aware of the positive impact of the activism work of others.

The prevalent eco-emotion of hope was most often described in relation to participants' engagement in pro-environmental behavior, such as being part of collective activist groups. This finding also accords with previous research which identified hope as a frequent positive emotion linked to the climate crisis (Marczak et al., 2021; Ojala, 2012, Martiskainen et al., 2020; Sangero et al., 2022). Participants also expressed joy as a result of engaging in pro-environmental behavior themselves or by learning about the actions of other environmental activists. Previous literature has outlined joy due to engagement in pro-environmental activities (Pihkala, 2022; Pickard et al., 2020; Zaremba et al., 2022). In addition to hope and joy, participants also described feeling trust, in relation to the positive impact of the environmental activist organizations they were part of. Ojala (2012) outlined two sources of trust; external sources (technology, environmental organizations) and individual sources, related to personal ability to positively influence the environment through one's actions (e.g. recycling). While many participants expressed feeling trust due to their engagement in environmental organizations, contrastingly to the results of Ojala (2012), most participants expressed frustration not trust in regard to their individual pro-environmental actions, as they felt they were not impactful enough. The fourth most prominent positive eco-emotion was admiration, which was also closely linked to participants' interaction with environmental organizations and other activists. Landmann (2020) classified admiration as an “other praising emotion”, since admiration was expressed

either in relation to nature itself or towards environmental activists. The current study supports these findings, as participants explained feeling admiration for the positive impact and continued engagement of other environmental activists.

Therefore, participants of the current study mostly outlined sources of positive eco-emotions as engaging in pro-environmental behavior, either through individual or collective actions. Possible explanations for the link between positive eco-emotions and pro-environmental behavior are explained in the section about changes in eco-emotions before and after engaging in pro-environmental behavior.

### **Difference between elicited and self reported eco-emotions**

A significant finding of this study was the difference in frequency and variety of eco-emotions when self-reported by participants compared to when elicited through the Wheel of Emotions (Plutchik, 2001). This contrast may be explained by various factors, including social norms, personality traits, cultural influence, worldviews and religion, which influence the recognition and expression of emotions (Pihkala, 2022). Coppola and Pihkala (2022) highlight the influence of culture on the expression of emotions. In addition to various interpretations and definitions of emotions, culture also influences the degree to which expressing different emotions is acceptable. Discussion about difficult eco-emotions like sadness and grief are generally discouraged in western, industrialized countries. Hence, it can be difficult and unsettling for individuals from these countries to freely express and discuss these difficult emotions (Coppola & Pihkala, 2022). Thus, the result that eco-emotions such as guilt and sadness were mostly expressed after being elicited, could be explained by the fact that the majority of participants (thirteen out of sixteen) were residents in countries classified as western and industrialized. Furthermore, the negative eco-emotions of disgust, loathing and rage were only reported by

participants after the presentation of the Wheel of Emotions. This may be due to the fact that these emotions are seen as negative, and the participants might feel inhibited to share them openly. Furthermore, the effect of individuals' self-recognition skills on the expression of emotions, could explain the greater variety of eco-emotions reported after elicitations (Coppola & Pihkala, 2022). Hence, individuals might have only remembered experiencing some eco-emotions after being presented with the Wheel of Emotions.

Previous research has identified gender as an alternative explanation for the difference in the expression and recognition of emotions (Coppola & Pihkala, 2022). While women might express their emotions more openly and often than men, expressing emotions of anger and rage has been found to be more difficult for women, due to social norms (Chaplin, 2015; Plant et al., 2000). Contrastingly, the results of the current study show no differences in expression of emotions based on gender, as eco-emotions such as anger were self-reported by female, non-binary and male identifying participants.

An alternative explanation for the differences in elicited versus self reported eco-emotions may be the strength of emotions. Perhaps some eco-emotions were only named after the presentation of the Wheel of Emotions because individuals self-reported emotions were the strongest eco-emotions they experienced.

### **Changes in eco-emotions before and after engaging in pro-environmental behavior**

Another important finding of the current study was the change in eco-emotions of participants before and after engaging in pro-environmental behavior. Many participants highlighted different negative eco-emotions, however after engaging in pro-environmental behavior, either through individual or collective actions, interviewees reported mostly a shift towards positive eco-emotions.

### *Change to positive eco-emotions*

Numerous studies have discussed the relationship between engaging in pro-environmental behavior and experiencing positive eco-emotions (Coppola & Pihkala, 2022; Lange, 2020; Ojala, 2012; Randall & Hogget, 2019; Sangero et al., 2022; Schneider et al., 2021; Zaremba et al., 2022; Zelenski & Desrochers, 2021). As mentioned earlier, participants of the current study outlined happiness, hope, closeness and joy as resulting from engaging in pro-environmental behavior.

As mentioned before, happiness and joy resulting from participating in pro-environmental behavior has been described as the “warm glow” effect (Brosh & Steg, 2021; Schneider et al., 2021), which could provide an explanation for the positive eco-emotions experienced by participants of the current study. Furthermore, interviewees also mentioned community as a source of positive eco-emotions. Being part of an (activist) community of like-minded people, was also linked to positive eco-emotions of joy, admiration, inspiration and hope. This accords with earlier observations, which discussed community as an important source of positive eco-motions among individuals, especially prominent among environmental activists (Pickard et al., 2020; Pihkala, 2022; Randall & Hogget, 2019; Zaremba et al., 2022).

Many participants also expressed a change from negative eco-emotions to hope after engaging in pro-environmental behavior. Various scholars highlight the positive effect that hope has on the emotional well-being of climate activists (Ojala, 2022; Sangero et al., 2022). Ojala (2022) discussed how hope interacts with fear and worry, thus allowing activists to confront the climate situation and resolve negative emotions. However, results of past research about the relationship between the emotional experience of hope and climate change related action has led to different outcomes, due to the various definitions of hope, sources of hope and mediating

factors (e.g. perceived self-efficacy) (Ojala, 2022; Sangero et al., 2022). Furthermore, whether hope can act as a predictor for pro-environmental behavior depends on the type of hope, as constructive hope has been found to positively influence pro-environmental behavior whereas hope based on denial has been negatively correlated with pro-environmental behavior (Ojala, 2011).

While it may be a common assumption that engaging in pro-environmental behavior can act as an antidote to negative emotions, the relationship between the two variables is much more complex and context specific (Coppola & Pihkala, 2022). The complex relationship between pro-environmental behavior and experiencing positive emotions is outlined by the conceptual model from Schneider et al., (2021) as discussed in the Literature review section. While pro-environmental actions can lead to positive emotions, Schneider et al., (2021) highlighted the significant impact that moderating factors, including cultural background, personal differences and contextual factors, have. Hence, participating in positive climate change related behavior is not a predictor of positive emotions. The result of the current study supports this reasoning, as not all participants experienced positive eco-emotions after engaging in pro-environmental behavior.

### ***Changes to negative eco-emotions***

Interviewees reported a broader range of interlinked eco-emotions, also including negative eco-emotions, after taking part in positive environmental actions. Past research has also outlined negative emotions resulting from engaging in pro-environmental behavior (Ogunbode et al., 2022). Ogunbode et al., (2022) found that pro-environmental behavior was positively linked with climate anxiety. This was also present in the current study, as some participants explained feeling anxiety after engaging in pro-environmental behavior. Furthermore, negative

eco-emotions resulting from engaging in pro-environmental behavior can also be explained by the awareness that these actions increased in individuals (as explained before). Engaging in climate change actions puts the negative impacts and challenges of the climate crisis on individuals' minds, and thus can lead to negative emotional reactions, such as frustration and anger.

### **Eco-emotions as a motivator for pro-environmental behavior**

Participants outlined positive eco-emotions as motivators for their individual or collective pro-environmental behavior. These results matched those observed in previous studies which have outlined positive emotions, either experienced or anticipated, as a motivator for engaging in pro-environmental actions (Brosh & Steg, 2021; Schneider et al., 2021). In addition to the “warm glow” effect (Brosh & Steg, 2021; Schneider et al., 2021), anticipated positive emotions resulting from pro-environmental behavior may also act as a motivator for further engaging in environmentally friendly behavior, leading to the “upward spiral” (Schneider et al., 2021).

Some interviewees also explained that participating in environmentally friendly behavior instead motivated negative eco-emotions of anxiety, sadness, frustration and anger. Previous literature has outlined the positive link between negative eco-emotions and engaging in pro-environmental behavior (Jain & Jain, 2022; Kals & Russell, 2001; Landmann, 2020; Ojala et al., 2021; Ogunbode et al., 2022; Randall & Hogget, 2019; Sangero et al., 2022). In order to reduce negative eco-emotions, like eco-anxiety, individuals take part in sustainable behavior as it leads them to feel positive eco-emotions like pride, accomplishment, joy and hope. As such, engaging in pro-environmental behavior can act as an antecedent and coping mechanism for negative eco-emotions (Randall & Hogget, 2019; Zaremba et al., 2022). Therefore, participants' engagement in pro-environmental behavior may have been significantly motivated by egoistic

factors of alleviating their negative eco-emotions. This is in line with previous research which has described the link between egoistic values and pro-environmental behavior (Groot & Steg, 2008).

Additionally, participants also explained being motivated by anger to engage in pro-environmental behavior. This result is consistent with previous literature which has identified anger as a strong predictor of pro-environmental behavior (Contreras et al., 2024; Landmann, 2020; Kals & Russell, 2001; Stanley et al., 2021). In the study conducted by Stanley et al., (2021) anger was the only emotion predicting individual pro-environmental action. Moreover, Conteras et al., (2024) found anger to be the only emotional response that was shown to be significantly connected with both collective and personal pro-environmental behaviors. These findings are consistent with psychological research which has described anger as an “activating” emotion, as perceptions of injustice or unfairness lead to group-based anger and can motivate collective action (Zomeran et al., 2004). While some participants of the current study still reported frustration after engaging in pro-environmental behavior, anger was only rarely mentioned after engaging in pro-environmental behavior. Hence, while anger might be an important motivating factor, partaking in individual and collective environmental friendly behavior could act as a coping mechanism, leading to more positive eco-emotions. This is in line with past research, which has described pro-environmental behavior as an important source for diminishing negative eco-emotions (Zaremba et al., 2022).

In comparison to the negative eco-emotions of anxiety, sadness and frustration which motivated participants to take part in sustainable actions in order to reduce these emotions, anger as a motivating emotion stemmed more from altruistic values. Since participants described mostly experiencing anger towards the injustices perpetrated by governments and institutions,



their motivation to engage in pro-environmental behavior was driven by a vision of a more sustainable and just future. Thus, different negative eco-emotions can stem from egoistic as well as altruistic values and understanding such differences may improve strategies of engaging more people in pro-environmental behavior.

### **Implications of the current research**

#### ***Increase pro-environmental behavior***

Understanding the relations between eco-emotions and engagement in pro-environmental behavior can result in campaigns which leverage emotions to foster greater engagement in pro-environmental behavior. The results of the current study highlight that negative eco-emotions as well as the (anticipated) experience of positive eco-emotions after engaging in pro-environmental behavior can lead to sustainable actions. Furthermore, egoistic as well as biospheric and altruistic values have been outlined as motivating pro-environmental engagement. As described by De Groot & Steg (2009), compared to egoistic values, altruistic and biospheric values offer the most stable foundation for pro-environmental behavior. Hence, understanding the sources of motivation and fostering altruistic and biospheric values can help to increase long-term engagement in sustainable behavior of individuals. Moreover, the finding that collective action leads to a wide range of positive eco-emotions highlights the importance of community in fostering pro-environmental behavior and to cope with negative impacts of the climate crisis. Hence, mitigation and adaptation strategies should bring community based support and interventions into the focus.

***Improved mental health and climate justice***

The current study brought into focus various eco-emotions which participants had difficulty self-reporting, thus providing a deeper understanding of the complex emotional reactions to the climate crisis. As discussed previously, some eco-emotions were only expressed after eco-emotions were elicited, thus highlighting the possible cultural and social norms which inhibit individuals to share the full range of their eco-emotions. By adding to the research about the broad spectrum of eco-emotions, a more comprehensive understanding of individuals experiences with the climate crisis can be achieved. Furthermore, these “hidden” eco-emotions can be brought into conversation. Opening a more accepting dialogue about eco-emotions is essential in connecting individuals and building resilient communities. Additionally, increased comprehension of eco-emotions could guide the development of mental health support networks for impacted individuals and communities. Individuals experience and express climate change-related eco-emotions in unique ways, based on their personal and cultural background. By understanding these emotional responses, the inclusivity of mitigation and adaptation strategies can be improved to take into account the diverse effects on different demographic and socioeconomic groups (for example indigenous communities) thereby fostering climate justice.

***Shift in narrative towards positive eco-emotions***

The results of the current study revealed a wide array of eco-emotions experienced by climate activists. The ICE tool developed by Marczak et al., (2023) outlines eight underlying eco-emotions: anger, contempt, enthusiasm, powerlessness, guilt, isolation, anxiety, and sorrow. While the current study also highlighted the eco-emotions of anger, guilt, isolation, anxiety and sorrow, the findings also described positive eco-emotions of joy, admiration, hope and trust. Hence, the current study highlights the need for the ICE tool to be expanded to include a wider

array of positive eco-emotions. Including positive eco-emotions in the measurement of emotional reactions to the climate crisis could lead to a shift in narrative about the climate crisis. The current narrative about climate change is heavily dominated by negative eco-emotions like anxiety, anger, guilt and hopelessness. Highlighting the positive eco-emotions that individuals experience can inspire and motivate people to join the climate movement. Moreover, including positive eco-emotions when discussing the experience of climate activists may lead to improved resilience and mental health of individuals. Due to the complexity of the climate crisis, sustained long term engagement in the climate movement is essential to foster societal change, which is reliant on the continued motivation and stable mental health of individuals. Thus, by including positive eco-emotions in the narrative of climate change, a shift towards a more positive story of the emotional experiences related to the climate crisis may be achieved. This in turn can lead to increased engagement in pro-environmental behavior.

### **Limitations and Future research**

This study provided insights into the complex emotional experience of climate activists in relation to the climate crisis, however the findings of this research may have been influenced by various limitations.

Firstly, since only sixteen participants were included in the study, a wider sample size of participants could have provided more diverse insights, as different eco-emotions might have emerged among further interviews. Moreover, since recruitment of participants was reliant on personal networks, advertisement in university, activist groups and social media channels, individuals who volunteered for the study may experience especially prominent emotions in regard to the climate crisis. Thus, their emotional responses can not be generalized to represent the experiences of other climate activists.

Additionally, there was a lack of cultural diversity among the sample. Most participants shared a similar cultural background coming from western, European industrialized countries, predominantly from the Netherlands. Furthermore, since emotions are significantly influenced by an individual's cultural background (Cunsolo & Ellis, 2018; Pihkala, 2024, Stanley et al., 2021) and emotions related to the climate crisis differ depending on peoples direct or indirect experiences of climate change (Sangervo et al., 2022) eco-emotions recorded by participants from European, western industrialized countries only represent a small part of the global population. Thus, future research is needed which investigates the cross-cultural emotional experience of climate activists, importantly also including participants from the global south.

Furthermore, participants self-reported their eco-emotions. Hence, results of the current study are influenced by individuals' self recognition skills of their emotions (Sangervo et al., 2022). Therefore, future research should utilize alternative methods to gain a more objective insight into the emotional landscape of climate activists.

All interviews were conducted in English, despite most participants not being native speakers. Therefore, individuals' ability to describe their eco-emotions might have been limited by the language barrier. Additionally, participants might have felt inhibited to share their eco-emotions, due to cultural and gender stigma surrounding the acceptance of emotional responses to climate change as well as their comfort around the interviewer. In addition, the research methodology requires mutual engagement and cooperation between the participant and researcher, which might be difficult to facilitate in the short time period. Moreover, the data gathered can be influenced by observer effects and the competence of the researcher to pick up upon and be reactive to subtle answers and comments by the participant (Billups, 2022).

While a significant finding of the study was the change in eco-emotions due to engaging in pro-environmental behavior, further research is required to confirm the positive influence of pro-environmental behavior in climate activists emotional experience of the climate crisis as establishing a causal relationship between engaging in pro-environmental behavior and experiencing positive eco-emotions is beyond the scope of this paper.

### **Conclusion**

The aim of this study was to examine the emotions experienced by climate activists in relation to the climate crisis, and how eco-emotions change after engaging in pro-environmental activities. The results of this research have highlighted the broad range of eco-emotions experienced by climate activists. The most prominent eco-emotions experienced by climate activists were the negative eco-emotions of sadness, anger and grief. Additionally, participants also reported positive eco-emotions, most often joy, admiration, hope and trust. Another major finding was the greater variation in scope of eco-emotions reported after participants were elicited with the presentation of the Wheel of Emotions. Furthermore, another significant result was the change of eco-emotions experienced by climate activists after partaking in individual and collective pro-environmental behavior. Most participants reported a shift in negative eco-emotions towards positive eco-emotions.

Despite the various limitations discussed previously, the findings of the study still contribute valuable qualitative insights for the research about climate change emotions and the emotional experiences of climate activists. Understanding the complex eco-emotions experienced by individuals can provide important understanding on how to leverage emotions to motivate pro-environmental behavior. Furthermore, increased knowledge about the emotions elicited by the climate crisis can lead to better interventions strategies and policies aimed towards

psychological well-being and support of individuals. Lastly, by also highlighting the wide range of positive eco-emotions, the current study may challenge the dominant negative narrative of the climate crisis. A more hopeful perspective of the climate crisis can lead to increased motivation and inspiration to join and continuously engage in the climate movement.

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## Appendices

### Appendix A: Informed consent form

#### Assessment

- I have read the information sheet and was able to ask any additional question to the researcher.
- I understand I may ask questions about the study at any time.
- I understand I have the right to withdraw from the study at any time without giving a reason.
- I understand that at any time I can refuse to answer any question without any consequences.
- I understand that I will not benefit directly from participating in this research.
- I understand that none of my individual information will be disclosed to anyone outside the study team and my name will not be published.
- I understand that the information provided will be used only for this research and publications directly related to this research project.
- I understand that data (consent forms, recordings, interview transcripts) will be retained on the google -drive of the University of Groningen server for 5 years, in correspondence with the university GDPR legislation.

Future involvement

- I wish to receive a copy of the scientific output of the project.
- I consent to be re-contacted for participating in future studies.

Having read and understood all the above, I agree to participate in the research study: yes / no

Date:

Signature

To be filled in by the researcher

- I declare that I have thoroughly informed the research participant about the research study and answered any remaining questions to the best of my knowledge.
- I agree that this person participates in the research study.

Date:

Signature

**Appendix B: Interview Questions**

## Main questions

1. When you think about the climate crisis what emotions arise ?
2. Could you think about a time (last two weeks) and share behaviors you engaged in that are good for the environment?
  - a. What positive emotions did these behaviors you reported evoke in you?
3. Could you share a pro-environmental behavior you plan to do soon (within a week, etc.)?
  - a. What positive emotions will arise when you engage in this behavior?

## Closing Questions

This is the Wheel of emotion, showing different kinds of emotions

1. Do you think that you might have missed some emotions in your previous answers ?
2. Do you have any questions or comments?

## Demographic Questions

3. How old are you?
4. Which country do you live in ?



