

# Dear Future:

A Meaning-Focused Coping Game to  
Empower Youth Experiencing Eco-Anxiety



**Master thesis by Isa Jorritsma**

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**Hope** is definitely not the same thing as optimism. It is not the conviction that something will turn out well, but the certainty that something makes sense, regardless of how it turns out.

Vaclav Havel



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# Summary

Many young people, including myself, experience eco-anxiety. We worry about the impact of climate change on our future: the loss of nature, the harm to vulnerable populations, the threat of safety of living in places like the Netherlands, and this list of concerns goes on and on.

Eco-anxiety, characterized by negative emotions due to the awareness of growing climate risks and environmental threats, can significantly affect mental health among youth, that might cause issues with sleep, work or socializing. Although therapists are able to guide youth through eco-anxiety, mental healthcare already faces long waiting lists. There is a lack of interventions integrated into youth's daily lives, which can be more promising in effectively helping them manage eco-anxiety. My master's project, in collaboration with the Ministry of Health, Welfare, and Sport, aims to develop a design intervention to help Dutch youth cope with eco-anxiety in their daily lives.

This project starts with a literature review to explore what is known about eco-anxiety among youth and how it can be addressed. The review raises three research questions:

- (1) How do youth experience eco-anxiety?
- (2) What are the best ways for youth to cope with eco-anxiety in their daily lives?
- (3) Who are the key stakeholders and what are their roles?

A mixed-method study, including self-study, context mapping with Dutch youth, and stakeholder interviews, are conducted to address these questions. The results reveal various manifestations of eco-anxiety, individual and social influences contributing to it, effective coping strategies that youth can integrate into their daily lives, and a system map of

youth-stakeholder relationships. Based on the literature review and empirical research, the following design goal was formulated:

The design intervention should assist youth (aged 15-21) experiencing eco-anxiety, in fostering positive eco-emotions with someone who is environmentally conscious, which provides support for addressing eco-anxiety when negative eco-emotions arise at a later moment.

To explore possible design directions, two generative sessions with climate psychologists and designers were organized respectively. Then, several initial design concepts were proposed, prototyped, and tested with youth.

This has led to my final design concept: Dear Future, a meaning-focused coping game to empower youth experiencing eco-anxiety. It encourages youth to together reflect on personal values in relation to climate change, providing support to manage eco-anxiety.

Dear Future was prototyped in a high-fidelity way and evaluated by youth, climate psychologists, and policy advisors. Participants found the concept engaging and useful for meaningful conversations and fostering hope. Dear Future could be further improved by integrating small action steps aligned with participants' values. Additional recommendations include researching how to implement Dear Future, its long-term effects, addressing negative eco-emotions, and incorporating values into climate discussions.



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# Introduction

## 01. Motivation to start the project

I have always been involved in sustainability. I try to buy fewer things, eat less meat, and fly less often. When I see news about rising temperatures, increasing sea levels, and more frequent wildfires, I feel like it is even more important to take responsibility for my CO2 emissions. Often, climate change discussions focus on facts, figures, and what actions we can take. However, we rarely talk about how we feel about the consequences of climate change. Whereas I actually feel a lot about it, and I am not the only young person who does.

With this project, I want to set aside the facts and figures about climate change for a moment. Instead, I want to explore the emotional side of climate change. How do we really feel about it? And how can we cope with these feelings?

## 02. Project client

Recent research by Hickman (2021) reveals that more than half of the youth (16-25 years) worldwide expressed extreme worry about climate change. This indicates that climate change is a significant threat to the mental health of youth, which makes eco-anxiety a relevant theme for the Dutch government to further investigate.

### **The Ministry of Health, Welfare and Sport**

The project's client is the Dutch Ministry of Health, Welfare and Sport (HWS), whose main goal is to provide a healthy, fit and resilient life for their citizens. This project is part of their action plan 'Mentale gezondheid: van ons allemaal - Good Mental health for All' (Rijksoverheid, 2022). Within this action plan three key objectives are formulated:

- 01.** To raise awareness and start a societal discussion about the importance of having and maintaining good mental health, focused on the individual and society as a whole.
- 02.** A greater focus on prevention: strengthening mental health and providing easily accessible support where required.
- 03.** To provide people with tools that enable them to manage their own mental health and to be alert to the mental health of others.

The action plan is signed by various ministries and this project is being carried out within the youth affairs department, given that youth is one of the target groups who are most vulnerable to experiencing eco-anxiety (Pihkala, 2021).



## 03. Initial project aim

### Understanding of eco-anxiety

Eco-anxiety refers to all challenging emotions due to the awareness of climate change and its threats (Coffey et al., 2021). Climate change is recognized as one of the most significant global health threats of the 21st century, including the impact on mental health (Coffey et al., 2021).

Since eco-anxiety is caused by both social dynamics and geophysical changes in the environment (Pihkala, 2020), individuals have limited control over its causes. Therefore, coping strategies to eco-anxiety should not only focus on problem-solving, but there is a need for skills for living with anxieties and distress (Pihkala, 2020). While psychologists are able to guide people through anxieties and distress, the pressure on mental healthcare is significant, leading to extensive waiting lists (Inspectie Gezondheidszorg en Jeugd, 2023).

### Project goal

As the approach of the Ministry of HWS suggests, it is valuable to focus on prevention and providing tools to address one's own mental health, without direct involvement of psychologists. Given the variety of emotion-regulation interventions in people's everyday lives (Slovák et al., 2023), design holds the potential to promote the ability with anxieties as a basic human skill. Not many interventions are known that help young individuals in managing emotions specifically related to eco-anxiety. This leads to the following project goal:

*I want to design an intervention that helps youth (aged 15-24) who are experiencing eco-anxiety, to cope with their negative emotions related to climate change in their daily life.*

### Key stakeholders

Figure 1 shows the onion model (Alexander & Robertson, 2004) with the key stakeholders who are involved in this project. These stakeholders might play an important role for youth regarding their eco-anxiety, because they often point out the desire for more understanding from the social groups around them (Pihkala, 2020).

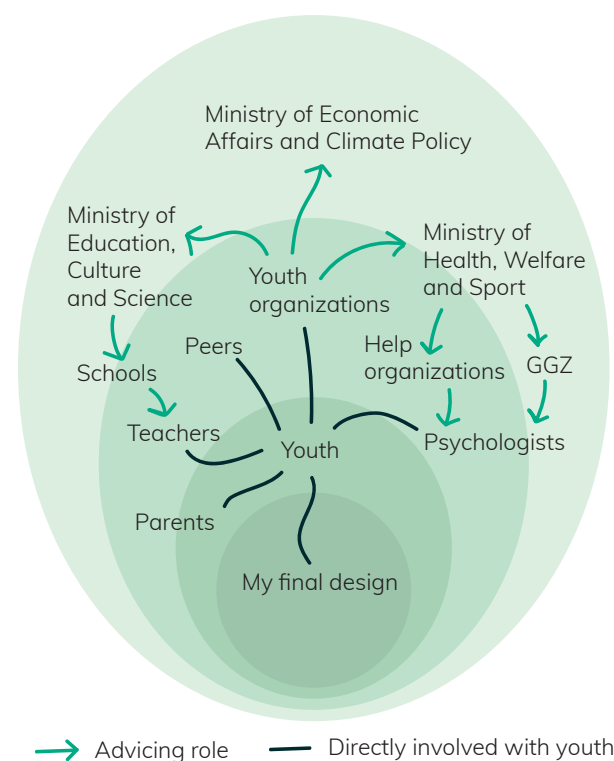


Figure 1: The onion model illustrates the main stakeholders involved in this project.

## 04. Project approach

The project will be addressed by a design-oriented approach, following the Double Diamond model (see figure 2).

This model follows four phases, in which diverging and converging are alternated:

01. Discover
02. Define
03. Develop
04. Deliver

In the first phase, known as “discovery” the problem of eco-anxiety will be explored. This phase includes a literature review and empirical research, including an introspective self-study, context mapping with youth, and interviews with relevant stakeholders.

The collected data will be analyzed to gather insights, refine the problem, and establish a clear design goal.

The second diamond will start with a divergent thinking process. Various solutions within the defined design goal will be ideated. This involves testing different small-scale solutions, rejecting those that are ineffective, and refining the most promising concept. The approach ends with the delivery of a final concept, which will be prototyped at high fidelity and assessed through validation tests. Based on the test results, recommendations for further research will be proposed.

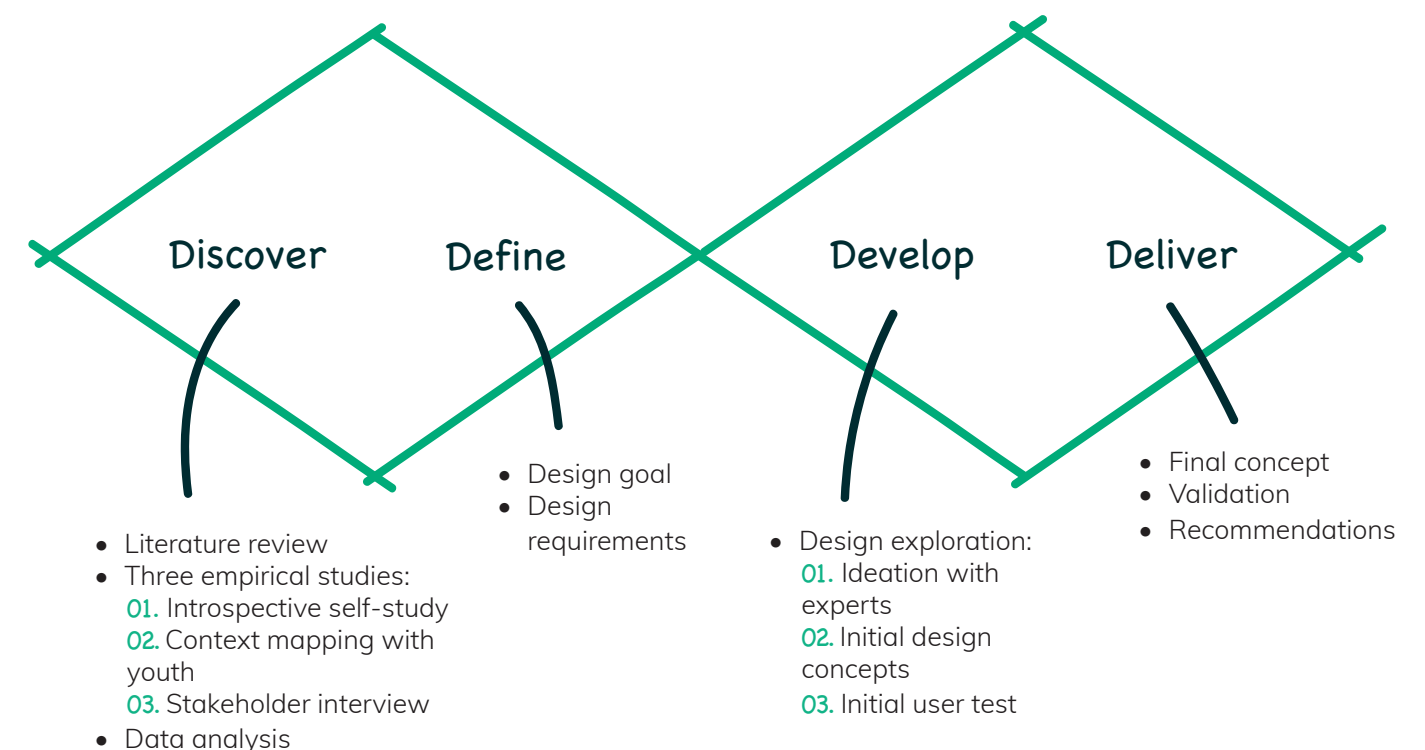
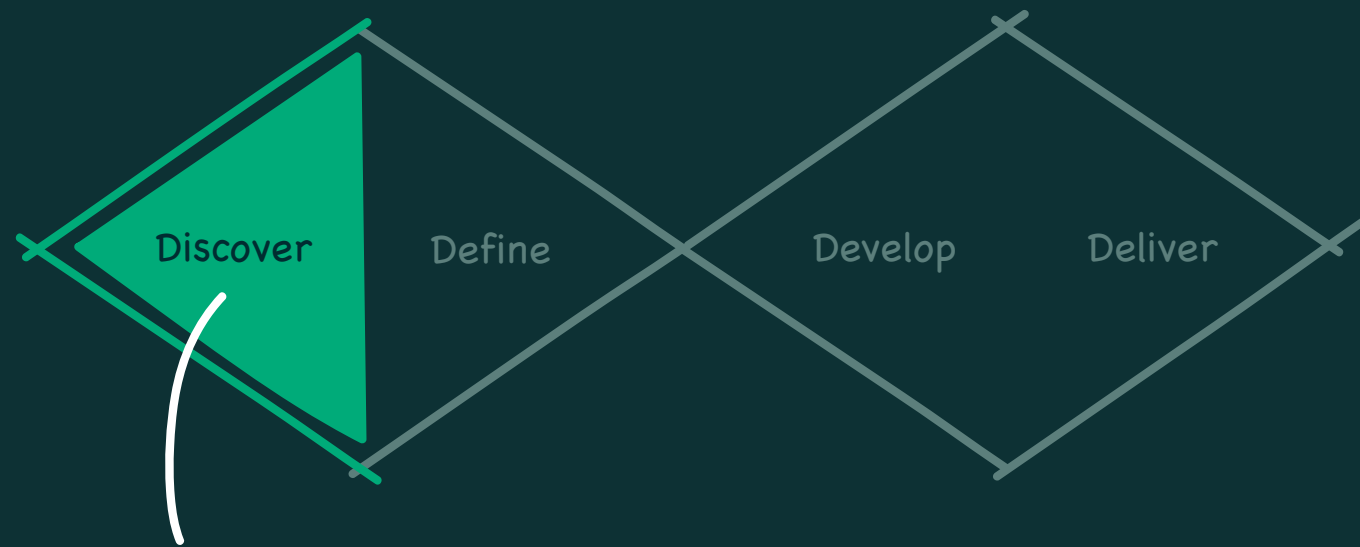


Figure 2: Double Diamond model (Design Council, n.d.).



# Discover



- Literature review
- Three empirical studies:
  - 01. Introspective self-study
  - 02. Context mapping with youth
  - 03. Stakeholder interview
- Data analysis

## Chapter 01 Literature Review

In this chapter, an analysis of existing literature is done to narrow down the project scope. This chapter outlines the knowledge about eco-anxiety among youth that is already known in literature. The following goals are formulated:

- 01. Understanding eco-anxiety
- 02. Understanding eco-anxiety among youth
- 03. Understanding how eco-anxiety can be addressed

Each section will conclude with redefining the scope, research takeaways and project takeaways. Research takeaways will form the basis for the questions used in the empirical research. Project takeaways will serve as inspiration throughout the entire project.

The chapter ends with a conclusion, which serves as a bridge between existing knowledge and future exploration of eco-anxiety among youth.



# 01. Understanding eco-anxiety

This section explores a better understanding of eco-anxiety. It starts with a definition of eco-anxiety and then delves into its causes. To gain a deeper understanding of this phenomenon, a taxonomy of both positive and negative eco-emotions is reviewed. Next, it is examined how eco-anxiety can manifest in individuals' lives. The section ends with a discussion on the broader societal impact of eco-anxiety.

## 1.1. Definition of eco-anxiety

Although eco-anxiety is frequently referenced in literature, there is still a lack of clarity about its concept. In a scoping review of current literature on eco-anxiety, Coffey et al. (2021) identified common elements of the definitions of eco-anxiety. These definitions all share a description of the challenging emotions due to the awareness of climate change and environmental issues and threats. According to this review, the American Psychological Association (2017) offered a definition that was commonly cited in articles and could serve as a consistent one: "a chronic fear of environmental doom".

## 1.2. Causes of eco-anxiety

Climate change, as the major stressor, has some unique attributes (Clayton,

2020). It is a real threat, so it is rational to feel concerned. It is also ongoing and developing, making complete adaptation to the threat not completely possible. Based on scientific literature, the RIVM (the Dutch National Institute for Public Health and the Environment) identifies three types of influencing factors of eco-anxiety: 1) acute events or disasters related to extreme weather, 2) long-term changes like drought, and 3) the overall threat of ongoing changes caused by climate change (Van Der Ree et al., 2022).

Anxiety and other negative emotions are not only caused by changes in the geophysical environment, but also from social influences (Pihkala, 2020). Several empirical studies show how social and ecological factors become intertwined: individuals who experience eco-anxiety frequently express a desire for more understanding from the social circles around them: they feel that their anxiety is made worse by social conflicts or silence (Pihkala, 2020).

## 1.3. Manifestations of eco-anxiety

Pihkala (2020) states that eco-anxiety shares in general some fundamental characteristics of general anxiety, like experiencing difficult feelings of uncertainty, unpredictability and uncontrollability. However, emotions related to climate change occur in many different forms.

Pihkala (2022) explored the taxonomy of climate emotions and closely related states, based on literature reviews and philosophical discussion. The following themes were found: surprise-related emotions, threat-related emotions, sadness-related emotions, strong anxiety-related feelings, guilt-related emotions, emotions related to indignation, anger-related emotions, feelings of hostility.

Also many kinds of positive emotions were found, like interest, feeling an urge to do something good, feeling motivated, excitement, empowerment, feeling of being moved, feeling determined, joy, pleasure, happiness, pride, gratitude, hope, optimism, togetherness, love, care, empathy, sympathy and compassion. Based on this review, Stichting Klimaatpsychologie (2024) created a wheel of eco-emotions, offering a visual overview of the taxonomy of eco-emotions (see figure 3).

Although academic research has investigated emotions related to climate change, there still exists a lack of clarity regarding the manifestations of eco-anxiety. There is a broad spectrum of the

severity of symptoms (Coffey et al., 2021). According to Pihkala (2020), there are differing opinions about whether the terms eco-anxiety and climate anxiety should be used only for intense anxiety symptoms, or whether these terms should also include milder forms of fear. Further research is recommended to explore both severe and less severe forms of eco-anxiety.

Additionally, understanding eco-anxiety is complex due to its dependence on social factors, and its practical forms often involve combinations of various distresses. Therefore, it is suggested that contextual matters must be considered when analyzing people's experiences of eco-anxiety (Pihkala, 2020).

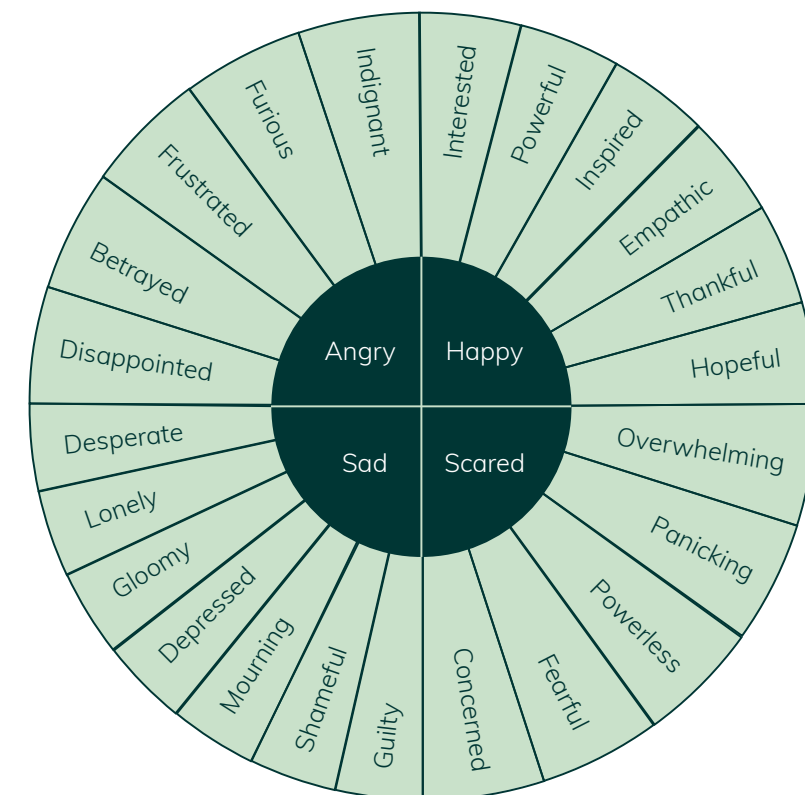


Figure 3: Wheel of eco-emotions.



#### 1.4. Impact of eco-anxiety

Given the variety of forms of eco-anxiety, several scholars avoid pathologizing eco-anxiety (Pihkala, 2020; Clayton, 2022), because eco-anxiety can also manifest as a socially beneficial phenomenon, known as “practical anxiety” (Kurth, 2018), that motivates individuals to take action. Although eco-anxiety is not classified as an official disorder, some forms of eco-anxiety require mental health care (Clayton, 2022). Eco-anxiety becomes clinically significant, when it is difficult to control and it starts to interfere with a person’s ability to sleep, work, or socialize. At this moment, society cannot handle an increasing demand for mental health care, as this sector is already facing growing

waitlists for mental help (NOS, 2023). Therefore, it is important to prevent eco-anxiety from developing into clinical disorders.

Another social consequence of eco-anxiety is a declining childbirth rate in western countries (Pihkala, 2020). An increasing number of people cited eco-anxiety as a significant reason for their hesitancy to have children. Recently, it has been reported that Dutch clinics are seeing an increase in demand for sterilization among men under the age of 30. Among the various reasons cited, doctors have observed a new motive: not wanting children due to concerns about climate change (NOS, 2024).

### Main takeaways: Understanding eco-anxiety

#### Redefining the project scope

- The focus of this project will be on the overall threat of ongoing changes influenced by climate change, rather than on acute climate events, as they are not occurring frequently in the Netherlands (yet).
- It is important to avoid pathologizing eco-anxiety, but to focus on the prevention stage (as already stated in the project scope).

#### Research take-aways

- There is a lack of clarity regarding the manifestations of eco-anxiety, since it is multifaceted and complex. By using the taxonomy of eco-emotions, I aim to conduct further research to explore the different manifestations of eco-anxiety and how they are influenced by contextual factors.
- Social influences are an important aspect of eco-anxiety. Therefore, I aim to conduct further research on how stakeholders within the context of youth contribute positively or negatively to their eco-anxiety.

## 02. Understanding eco-anxiety among youth

This section explores how eco-anxiety impacts youth. First, general research on eco-anxiety among youth will be reviewed, followed by specific statistics about Dutch youth.

### 2.1. Youth as one of the vulnerable groups in experiencing eco-anxiety

Clayton and Karazsia (2020) found that younger participants (18-35 years) showed higher levels of distress regarding climate change than older adults. Youth is not the only group who is more vulnerable to experiencing eco-anxiety, also women, Indigenous groups, people who identify having a close relationship with nature and individuals who have experienced physical environmental changes (Coffey et al., 2021).

Hickman et al. (2021) surveyed 10,000 young people (aged 16-25) across ten countries and found that 59% were extremely worried about climate change, and 45% experienced negative impacts on their daily life. Their findings show that eco-anxiety is widespread, evident in countries facing severe physical consequences, like the Philippines, and those with less direct impact, like the UK.

### 2.2. Dutch youth and eco-anxiety

In 2022, the RIVM was commissioned by the Ministry of VWS to investigate the link between climate change and health effects, including mental health. For this purpose, the RIVM has developed an action plan (Van Der Ree et al., 2022), because a significant lack was indicated of research on eco-anxiety in the Dutch context. In 2023, several studies were conducted regarding eco-anxiety among Dutch youth. In these studies, the variables have been chosen differently, leading to a diverse range of outcomes.

Ipsos (2023) found that 49% of young people (aged 16-30) regularly experience negative feelings about climate change and they found that 21% of young people regularly experience eco-anxiety. Motivaction International (2023) states that 11% of young people (aged 16-26) feel a lot of worry about climate change, and 34% feel some worry. Intense feelings of frustration were reported by 8%, anger by 7%, and sadness by 5% in response to climate change. Additionally, UNICEF Nederland (2023) conducted a study on general concerns of young people (aged 13-17). In this study, climate change emerged as the top concern, with 44% of respondents expressing worry about it, followed by 43% concerned about global conflicts, and 38% worried about poverty.

### Main takeaway: understanding eco-anxiety among youth

#### Research take-away

- Recent research indicates that many young people experience negative emotions about climate change. Therefore, the final concept design will target a significant group of Dutch youth. I aim to conduct further research to understand this target group’s experience of eco-anxiety.



## 03. Understanding how eco-anxiety can be addressed

This section explores **3.1.** how youth naturally handle climate change, **3.2.** a general strategy for addressing low mental health, **3.3.** eco-anxiety interventions for mental health professionals and **3.4.** existing eco-anxiety interventions in daily life.

### 3.1. Youth' natural coping strategies on the climate problem

Ojala (2012) explored how Swedish children handle climate change and how different natural coping strategies link to their involvement in environmental issues and well-being. Three coping strategies were identified: (1) problem-focused coping, which involves actively seeking solutions to the problem; (2) denial-focused coping, aimed to get rid of negative emotions, often through denial strategies; and (3) meaning-focused coping, which involves focusing on personal beliefs and values to find positivity. Both denial-focused and meaning-focused can include optimism. However, in the first case, optimism comes from ignoring the problem, while in the second way, it comes from hope. To provide a better understanding of each coping strategy, Netherlands Youth Institute (2022) formulated several statements (see figure 4).

Ojala (2012) found that problem-focused coping was associated with negative feelings, because highly problem-focused children worry more about climate change. Meaning-focused coping strategies were linked to feeling more satisfied with life, as well as being more involved in environmental issues. So, finding meaning in the situation might help children to feel better while still being involved in trying to solve the problem.

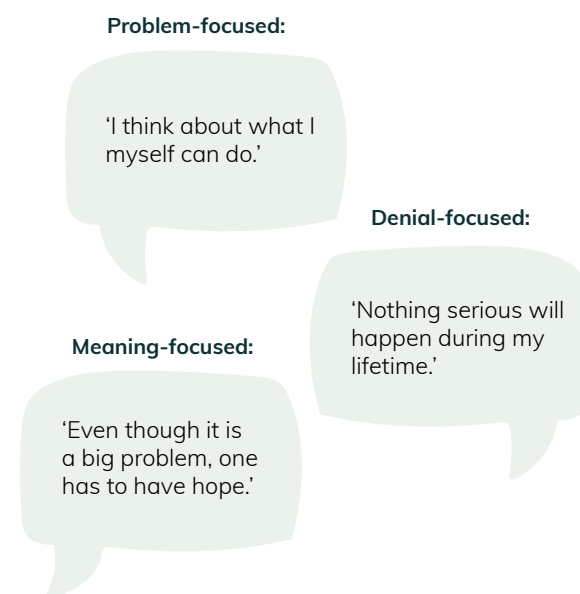


Figure 4: Examples of statements for each coping strategy.

### 3.2. Psychotherapy in general

Cognitive-behavioral therapy (CBT) interventions are the most well-supported and commonly practiced methods in psychotherapy (Otte, 2011). In the early 2000s, Acceptance and Commitment Therapy (ACT) emerged as a third wave within CBT (Li et al., 2022), proving effective for a wide variety of clinical conditions (Harris, 2006).

ACT is aimed to create a fulfilling and meaningful life, while accepting the pain that inevitably goes with it (Harris, 2006).

This therapy emphasizes on taking effective action aligned with our core values, while remaining fully present and engaged. Meanwhile, life can bring all sorts of unpleasant and undesirable obstacles. ACT teaches mindfulness techniques for managing these kinds of unpleasant experiences (Harris, 2006).

Figure 5 presents the six core principles of ACT (Health and Healing Therapy, 2023).

- Acceptance: be willing to experience difficult thoughts.
- Cognitive Defusion: create space from your thoughts and feelings.
- Being present: focus on the present.
- Self as Context: notice your thoughts.
- Values: discover what is really important to you.
- Committed action: pursue the things that are important to you.

Each principle comes with its own set of methods, exercises, assignments and metaphors (Harris, 2006).

### 3.3. Eco-anxiety interventions in mental healthcare settings

Baudon and Jachens (2021) conducted a scoping review to explore current interventions and approaches for addressing eco-anxiety, aimed at mental health practitioners. Five key themes were analyzed for treating eco-anxiety in both individual and group settings. Figure 6 shows an overview of the themes, including sub-themes. All themes are described below.

#### Theme 1: fostering clients's inner resilience

This topic focuses on interventions created to help individuals experiencing eco-anxiety reframe their feelings and make deep meaning out of their distress. These interventions target various aspects of the individual's emotional experience.

#### Theme 2: encouraging clients to take action

These interventions aim at supporting the clients in their efforts to make action plans to decrease their carbon footprint and participate in collective efforts to make environmental impact.

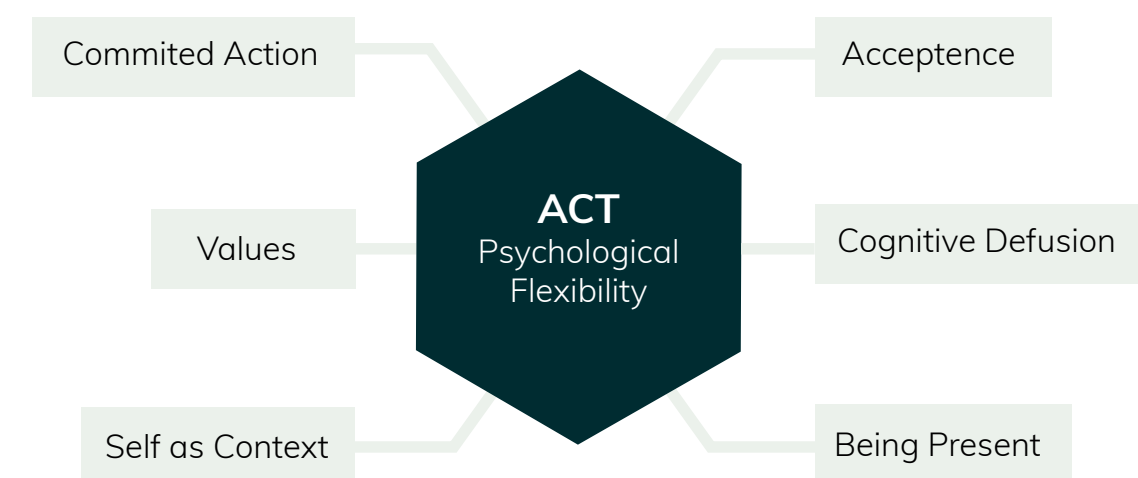


Figure 5: The six core principles of ACT.



*Theme 3: helping clients find social connection and emotional support by joining groups*

These interventions aim at guiding the client towards supportive groups that have knowledge about eco-anxiety and are able to support individuals in the emotional process of eco-anxiety.

*Theme 4: practitioner's inner work and education*

This theme relates to interventions that therapists can apply to themselves, such as self-exploration and self-education on the topic of climate change and eco-anxiety.

*Theme 5: connecting clients with nature*

These interventions focus on supporting clients to connect to nature as a space of reflection, resourcing, and inspiration.

### 3.4. Eco-anxiety interventions in daily life

No scientific studies have been found regarding interventions specifically for eco-anxiety that do not directly involve health professionals. However, a Google search on eco-anxiety reveals numerous blogs, books, and workshops aimed at addressing it within daily life contexts. Additionally, inspiration can be drawn from general mental health interventions applicable to daily life.

#### 3.4.1. Eco-anxiety interventions from grey literature

Three online blogs were used as sources, featuring interviews with eco-anxiety experts (Groen, 2023; Blokhuis, n.d.; Oostra 2024). These three blogs were the top search results on Google for "tips voor klimaatstress" (English for tips for eco-anxiety) on 28/03/2024.

- All three articles emphasized the importance of processing negative emotions. It is helpful to express, acknowledge and reflect on them.
- Additionally, they all highlighted the importance of practicing sustainable behavior.
- Blokhuis (n.d.) and Oostra (2024) suggested aligning negative emotions with personal values and long-term goals. Negative emotions arise because personal values are impacted by climate change and they make more sense after realizing this. Oostra (2024) quoted climate psychologist Siepert:

"Your fears are connected to your values. Fear about climate change only disappears when you no longer care about it. And you should not want that either."

- Groen (2023) and Oostra (2024) recommended focusing on the present moment and engaging in self-care activities that stimulate calmness.
- Blokhuis (n.d.) suggested exploring a passion and ways to utilize that interest.
- Oostra (2024) emphasized the importance of connecting with others who experience eco-anxiety.
- Lastly, Oostra (2024) noted that it is good to realize every era has its challenges. For example, during the Cold War people also had no control over the situation.

The coping strategies from grey literature are integrated into the intervention themes based on the literature review of Baudon & Jachens (2021). A clear overview is provided in figure 7.

### Intervention themes for the treatment of eco-anxiety

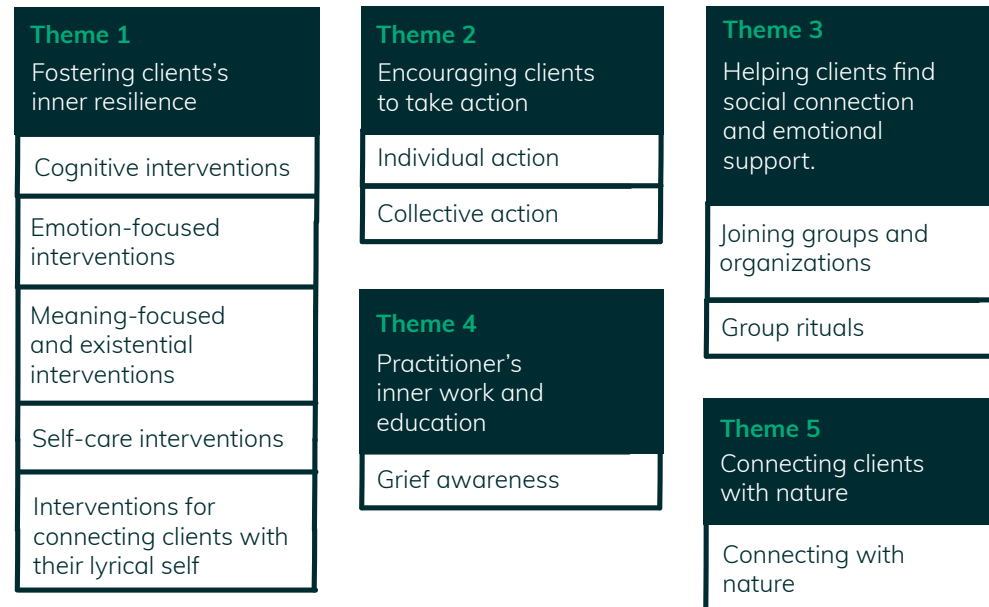


Figure 6: Five key themes for treating eco-anxiety, including types of interventions.

### Coping strategies for dealing with eco-anxiety

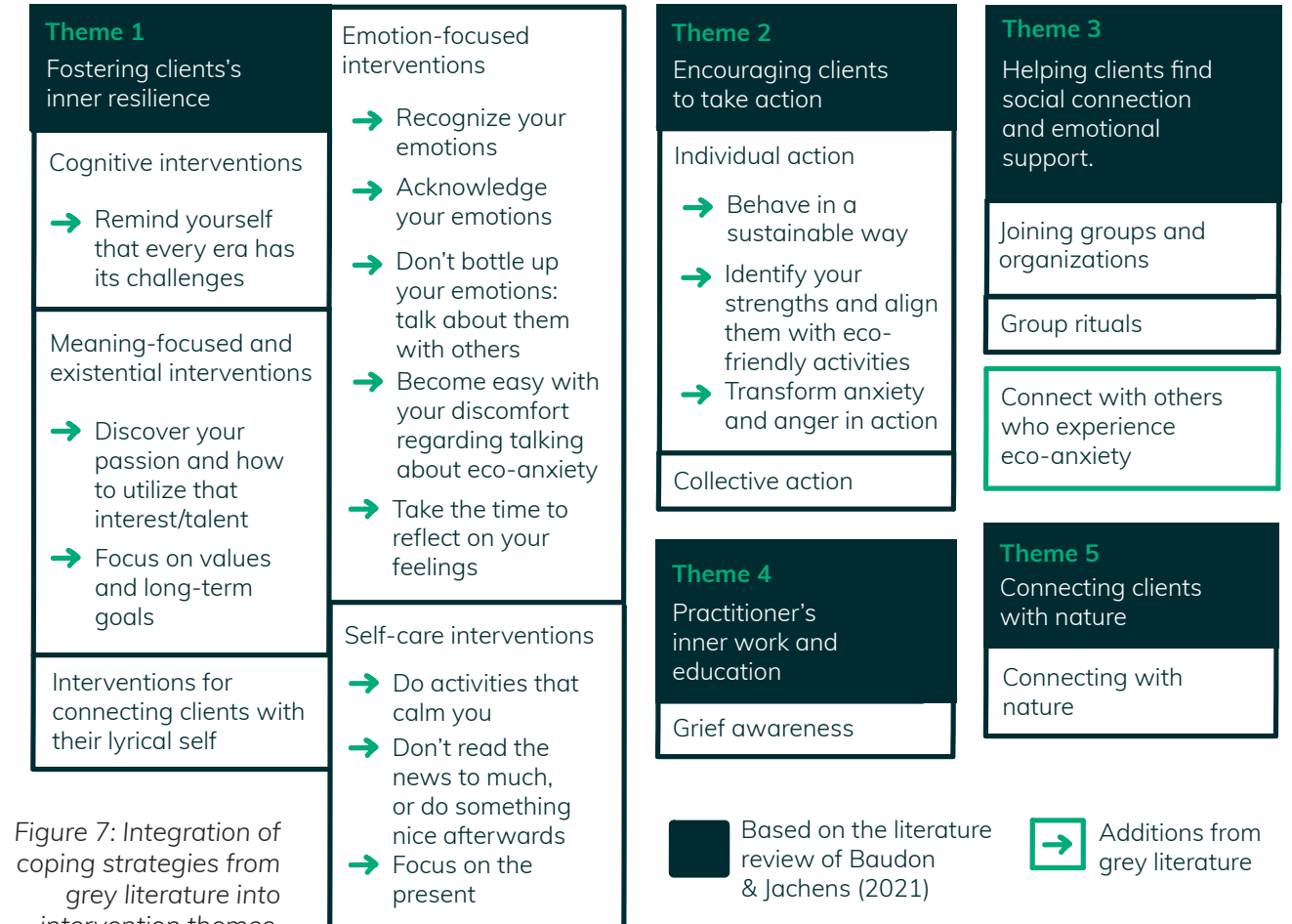


Figure 7: Integration of coping strategies from grey literature into intervention themes.

Based on the literature review of Baudon & Jachens (2021)

→ Additions from grey literature



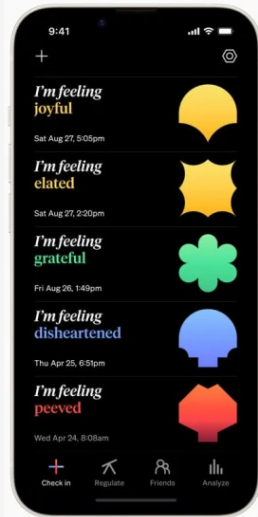


Figure 8: Application for emotion regulation (Fage et al., 2019)



Figure 9: MoodWings: a wearable biofeedback device for real-time stress intervention (MacLean et al., 2013)



Figure 10: Mindnosis: a toolkit to self-explore emotional distress (Lopez, 2020)

### 3.4.2. General mental health interventions in daily life

There is a lot of scientific information available on interventions targeting general mental well-being in everyday life. For instance, Ahmed et al. (2021) conducted a review of mobile apps designed for mental health self-care; Van Doorn et al. (2021) provided an overview of recent research on online preventive interventions for youth with early-stage mental health concerns; Dobson et al. (2023) conducted a review on the use of sensors to detect anxiety for in-the-moment interventions and Peng et al. (2023) presented a review of existing literature covering the topic of mood-focused design.

Some examples of design interventions for improving mental health in daily life are an emotion regulation app in figure 8 (Fage et al., 2019), MoodWings: a wearable biofeedback device for real-time stress intervention in figure 9 (MacLean et al., 2013) and Mindnosis: a toolkit to self-explore emotional distress in figure 10 (Lopez, 2020).

## Main takeaways: Understanding how eco-anxiety can be addressed

### Redefining the project scope

- In this project, youth who naturally use denial-focused coping will not be targeted, as they tend to ignore the problem. Instead, youth who naturally tend to use problem-focused coping is an interesting target group for this project, since they tend to experience more negative feelings about climate change.
- Youth who use meaning-focused coping could be interesting participants for empirical research, to learn how they apply meaningful coping strategies.

### Research take-away

- In literature and online blogs, various coping strategies to manage eco-anxiety have been identified. I aim to conduct further research to better understand which coping strategies youth already apply to address eco-anxiety, which coping strategies align with their daily lives, and which ones may be ineffective.

### Project inspiration

- When youth find meaning in the situation of the climate crisis, they tend to feel more satisfied with life, as well as being involved in environmental issues. Therefore, exploring ways to find meaning in eco-anxiety could be an interesting design direction.
- For the design phase, inspiration can be drawn from existing psychotherapies and design interventions that target mental health within the daily life context.



## 04. Conclusion

### Additions to the project scope

Based on the literature review, the following statements are added to the project scope:

- The focus of this project will be on the overall threat of ongoing changes influenced by climate change, rather than on acute climate events, as they are not occurring frequently in the Netherlands (yet).
- It is important to avoid pathologizing eco-anxiety, but to focus on the prevention stage (as is already stated in the project scope).
- In this project, youth who naturally use denial-focused coping will not be targeted, as they tend to ignore the problem. Instead, youth who naturally tend to use problem-focused coping is an interesting target group for this project, since they tend to worry more about climate change.

### Research questions

The literature review offers a solid understanding of eco-anxiety in general, yet there is a need for a deeper exploration of eco-anxiety and its coping mechanisms specifically within the daily context of Dutch youth. This project aims to investigate the link between eco-anxiety and contextual factors in the daily lives of youth. Given the significant role of social influences on eco-anxiety, the relationship between youth and stakeholders who are expected to have influence on eco-anxiety will also be examined. Additionally, it will be examined which coping mechanisms for eco-anxiety are most suitable for youth in their daily lives.

To achieve this, three main research questions are formulated, each supported by a set of sub-questions. Empirical research will be conducted to answer these questions.

### 01. How do youth experience eco-anxiety?

- What negative emotions are associated with eco-anxiety for youth?
- What events or situations trigger eco-anxiety among youth?
- When do youth typically feel eco-anxiety?

### 02. What are the best ways for youth to cope with eco-anxiety in their daily lives?

- How are youth currently managing their eco-anxiety?
- Which coping strategies do youth wish they were better at using?
- What obstacles prevent youth from using certain coping strategies?

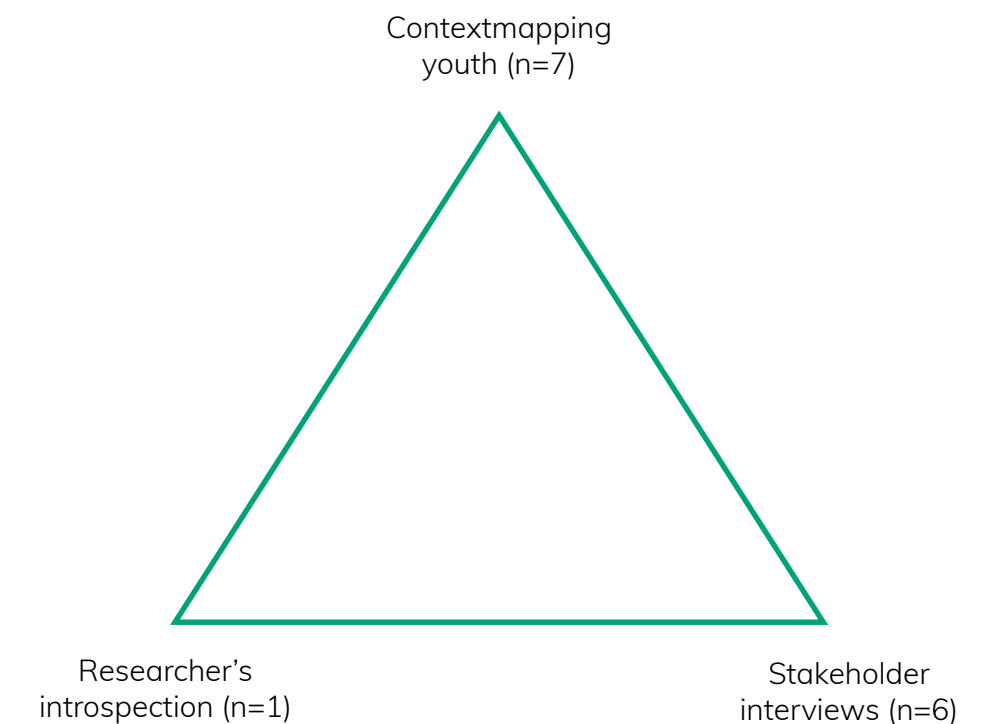
### 03. Who are the key stakeholders regarding eco-anxiety and what are their roles?

- Who are the key stakeholders involved with youth experiencing eco-anxiety?
- What do youth expect from these stakeholders in terms of addressing eco-anxiety?
- How do these stakeholders view their role in helping youth with eco-anxiety?

# Chapter 02 Empirical Research

While the literature review has offered a better understanding into eco-anxiety among youth, empirical research is conducted to deepen the insights specifically within the context of Dutch youth. This deeper understanding will serve as a valuable groundwork for designing concepts. The chapter outlines the three empirical studies which are conducted: introspective self-study, generative research and the stakeholder interview. The empirical research is approved by the university's Human Research Ethics Committee.

Each study will be described by its goal, its methods, its results and its main takeaways. The chapter ends with a synthesis of results and conclusion, offering an overview of design opportunities that can be incorporated into the design phase.





# 01. Studies

This section explains the goal and research process of each empirical study: **1.1.** introspective self-study, **1.2.** contextmapping with youth and **1.3.** stakeholder interview.

## 1.1. Introspective self-study

Researcher's introspection is a research method, which involves the researcher's tracking, experiencing and reflecting on their own thoughts, mental images, feelings, sensations and behaviors (Xue & Desmet, 2019).

### 1.1.1. Goal

The goal of this method is **01.** to explore my own subjective experiences of eco-anxiety, **02.** to identify personal effective coping strategies for eco-anxiety, **03.** to understand my relationship with stakeholders related to eco-anxiety.

Doing an introspective self-study leads to several opportunities. Firstly, it encourages a more in-depth understanding of the emotions, experiences, and motives involved in the topic of eco-anxiety. In addition, awareness about the researcher's own biases and prejudices about eco-anxiety will be increased. This helps prevent the researcher from unconsciously including personal experiences into the results.

### 1.1.2. Research process

I conducted autoethnography, 'a qualitative research method that uses a researcher's autobiographical experiences as primary data to analyze and interpret the sociocultural meanings of such experiences' (Chang, 2016).

This involved two activities.

- Retrospective storytelling, where I recalled and analyzed a memory, in which I experienced negative eco-emotions. I wrote this memory down.
- A therapy session with a climate psychologist. During this session, the psychologist asked questions regarding my experiences with eco-anxiety and provided guidance on coping mechanisms for these negative emotions. Afterwards, I reflected on my thoughts and feelings during the conversation by writing.

The data of these activities can be found in Appendix 1.

## 1.2. Context mapping with youth

Contextmapping is a user-centered design approach in which participants are asked to map their context. This includes social, cultural, and physical factors, as well as the internal state of the users, such as their emotions and mindset (Van Boeijen et al., 2014). By using generative techniques, participants are asked to construct a view on the context, drawing upon memories from the past and envisioning dreams for the future (Sleeswijk Visser et al., 2005).

### 1.2.1. Goal

The goal of this method is **01.** to explore youth's subjective experiences of eco-anxiety, **02.** to identify effective coping strategies for eco-anxiety, **03.** to map the relationship between youth and stakeholders related to eco-anxiety.

### 1.2.2. Research process

The context mapping study involves a series of research activities, which include recruiting participants, sensitization, generative sessions and data analysis. Each research step is explained.

### Participant recruitment

Participants are selected who have an age between 15 and 21 years old and who are experiencing negative emotions related to climate change. Since it was anticipated that not everyone would use the term 'klimaatstress' (Dutch for eco-anxiety) to describe their state of mind, the recruitment text inquired whether participants experienced negative emotions related to climate change, such as worry. Participants were recruited through the personal network of the researcher, which included snowball recruitment, as well as through networks associated with the Ministry of HWS, such as youth panels.

For recruitment, the primary focus was to achieve a balanced mix of age and education among participants. In total, 7 youth participants (YP) were recruited (see table 1).

As soon as the participants were recruited, they were contacted via phone provided with additional information. Participation involved two tasks:

- Attending a generative sessions lasting 60-90 minutes.
- Completing a sensitizing assignment each day for five days, with each session lasting 5-10 minutes, prior to the generative session.

Before participating in the research, participants were asked to sign a consent form (see appendix 2), which was sent through a phone message before the research activities started.

### List of youth participants

Participant number	Age	Education	Gender
YP1	19	WO bachelor	Female
YP2	18	High school	Female
YP3	19	HBO bachelor	Male
YP4	17	High school	Female
YP5	17	WO bachelor	Female
YP6	21	WO bachelor	Female
YP7	21	WO bacehlor	Female

Table 1: List of participants in the context mapping study.



*Sensitizing assignments*

Prior to the generative session, participants were asked to complete five small assignments each day for five days. The goal of these assignments is to prepare participants for the generative sessions. In this process, participants are stimulated, encouraged and inspired to think, reflect, wonder and explore aspects of their personal context in their own time and familiar surroundings (Sleeswijk Visser et al., 2005). On the next page, figure 11 presents all assignments.

After assignment 1, 3 and 5, participants were asked to circle an image about how they felt during completing the assignment, in order to create awareness of their emotions. These images are based on WhatsApp stickers, in order to better engage with youth as a target group (see figure 12).

*Generative session*

The second part of the context mapping study involved a generative session. Each participant was invited separately instead of a group discussion, since the discussion involved expressing emotions and it was expected that participants would feel less at ease when other participants were present, especially if they would not experience the same level of eco-anxiety. Participants were invited to come to the Faculty of Industrial Design Engineering, or it was proposed to travel to them and they could choose a location they preferred, like their school, a library or a cafe. Figure 13, 14 and 15 on the next page show pictures of the set-up of sessions at cafes and at the Faculty of Industrial Design Engineering.

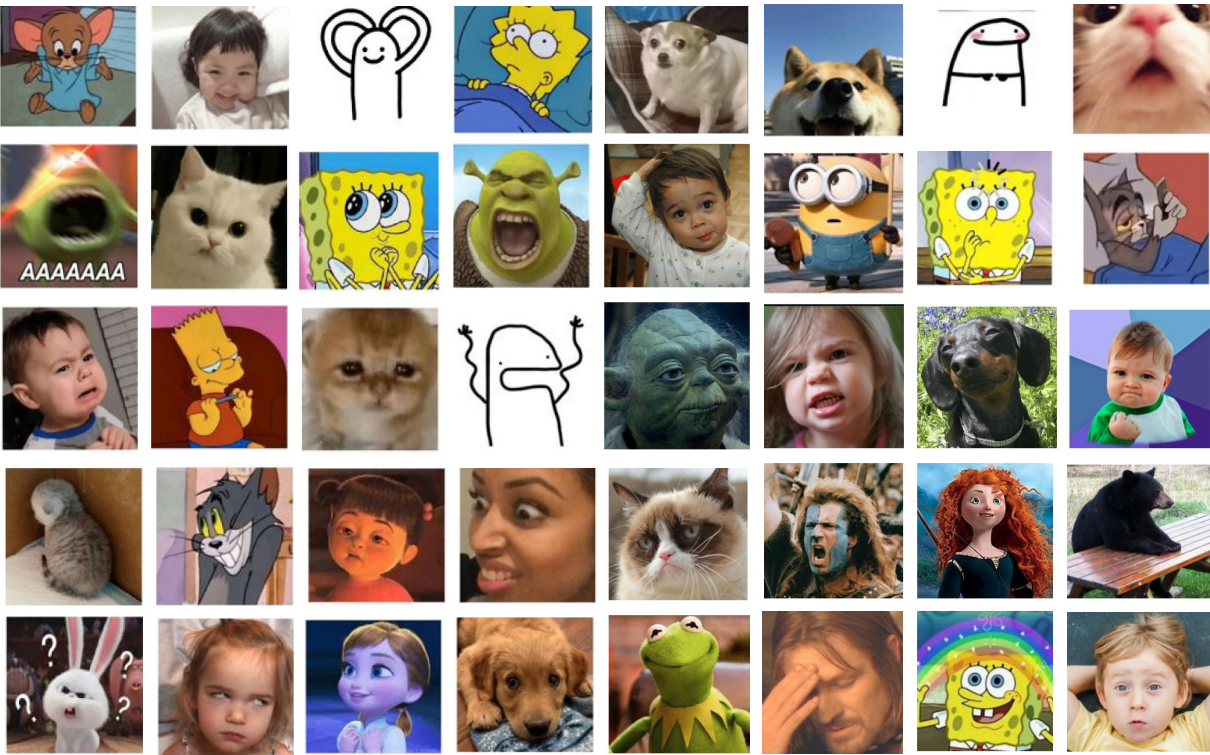


Figure 12: List of emotions that participants had to circle after completing assignment 1, 3 and 5.

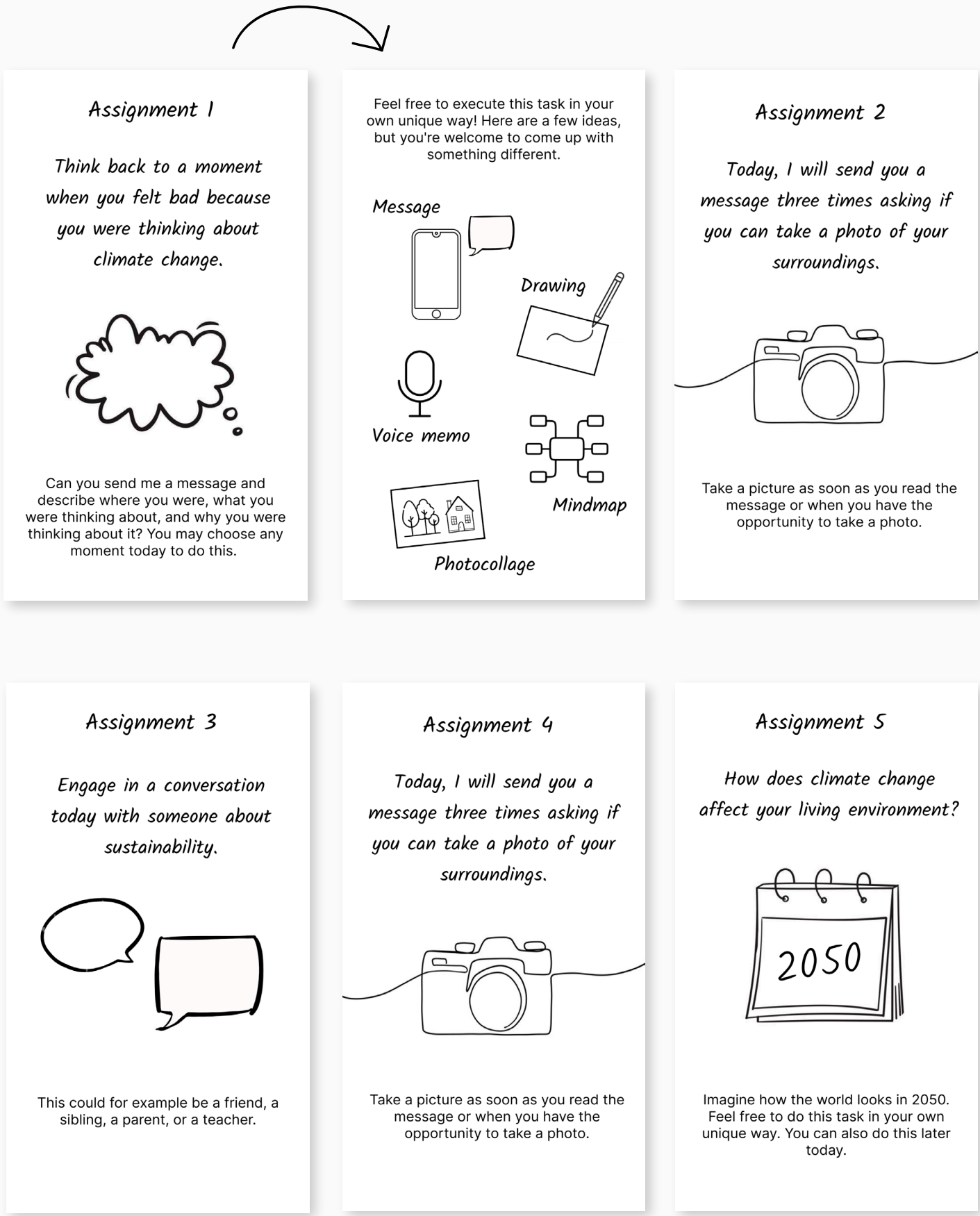


Figure 11: The five assignments that were sent prior to the generative session.





Figure 13: One participant interacting with the research activities at a cafe.



Figure 14: One participant choosing a 'Dixit' card.

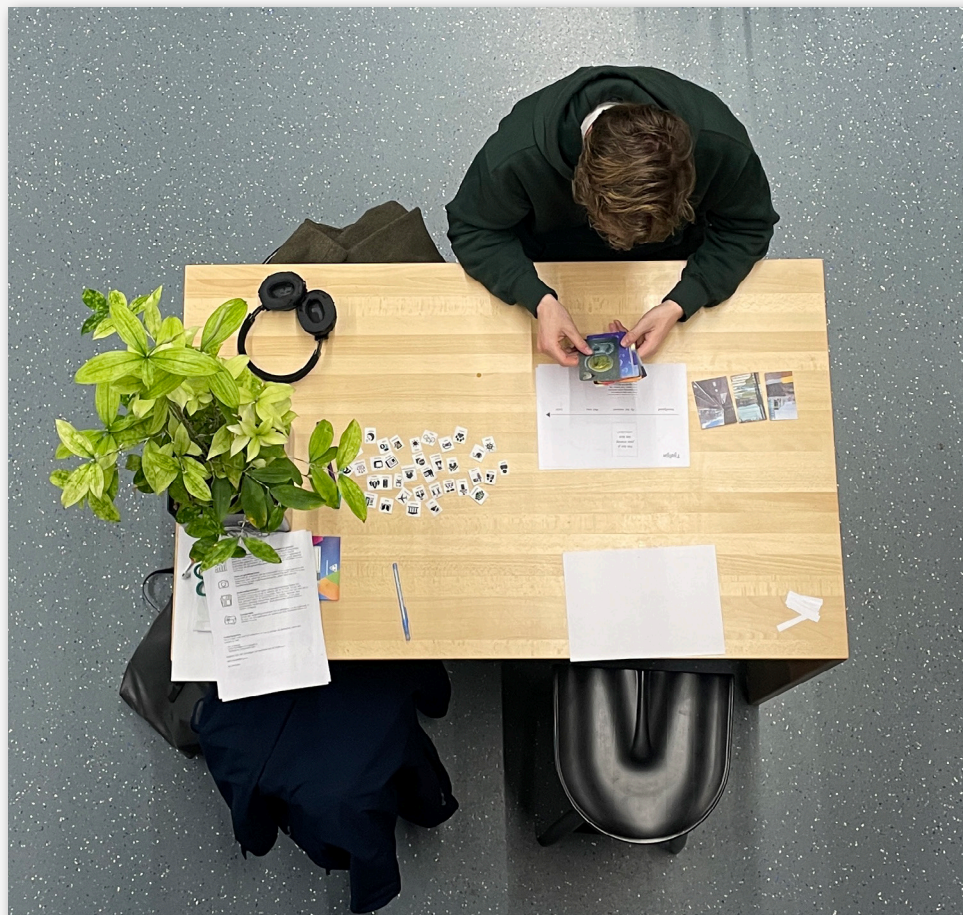


Figure 15: Set-up of the generative session at the Faculty of Industrial Design Engineering.

The generative session was performed in Dutch, since all participants have a Dutch nationality. The session involved the following activities (see appendix 3 for the full research script).

#### Introduction

Participants were welcomed by offering them something to drink and by doing some small talk to make them feel at ease. The goal of the study and the procedure was explained. It was emphasized that they always had the option to not answer a question or to quit the study without any reason. In addition, consent was asked to record audio and to take non-identifiable pictures. Photos and audio were captured using a phone.

#### Generative part

The generative session included four activities and for each activity a worksheet was provided, which participants were able to use to express their thoughts (see appendix 4).

#### Activity 1: Scoping your life

Participants had to describe how their daily life looks like - and how the topic of climate change is involved within their daily life.

#### Activity 2: Mapping the timeline of eco-anxiety

For one of the sensitizing assignments, participants had to tell about an experience of eco-anxiety. During the generative sessions, participants had to describe the timeline of their experience of eco-anxiety.

#### Activity 3: Imagining the future

Describe your perception of the future, regarding climate change.

#### Activity 4: Expressing a desire

To end the generative session in a positive way, the last question to the participants was to choose a 'Dixit' card, to describe how they wish to feel about the climate change issue. Dixit is a game with a card deck that contains many visual cards that can be interpreted in an ambiguous way.

#### Winding up

After the session, participants were thanked and they were compensated by a gift card of €25.

#### Data analysis

This section explains the method of the data analysis. Data retrieved from the sensitizing sessions is not analyzed since the goal was to prepare the participants for the generative session. Data retrieved from the generative sessions is analyzed by the following activities.

#### 01. Data preparing and organizing

First, the audio recordings are manually transcribed. Then, relevant quotes from participants are anonymously written down on post-its on a Miro board.

#### 02. Developing a data coding system

Patterns and repeated ideas were found and a data coding system was developed. Each quote is examined and tagged with codes.

#### 03. Identify recurring themes

Finally, all groups of codes were linked in overarching themes, representing answers to the research questions.



1.3. Stakeholder interview

Interviewing is a design research method to acquire knowledge about current or past events (Motte, 2009). This method is applied with the stakeholders directly involved with youth who experience eco-anxiety.

1.3.1. Goal

The goal of this method is 01. to identify effective coping strategies for youth experiencing eco-anxiety, 02. to map the relationship between youth and stakeholders related to eco-anxiety.

1.3.2. Research process

The context mapping study involves a series of research activities, which include recruiting participants, interview sessions and data analysis. Each research step is explained below.

Participant recruitment

The stakeholders that were recruited who are in direct contact with the target group are teachers who teach about climate change and parents of children who experience eco-anxiety. In addition, one climate psychologist was recruited. Table 2 shows the list of stakeholder participants (SP) that were interviewed.

List of stakeholder participants

Participant number	Type of stakeholder	Additional information
SP1	Teacher	Geography teacher at high school
SP2	Teacher	Geography teacher at high school
SP3	Teacher	'Design for Sustainability' teacher at University
SP4	Parent	Parent of a 16-years old daughter who experiences eco-anxiety.
SP5	Parent	Parent of a 17-years old daughter who experiences eco-anxiety.
SP6	Climate psychologist	Psychologist with a focus on eco-anxiety among adults.

Table 2: List of participants for stakeholder interview.

Interview sessions

Five interviews were conducted online and one in person, each lasting approximately 30 minutes. Three scenarios were presented to the participants, who were asked to describe their potential reactions in each situation and why. Two examples of scenarios are presented in figure 16.

Data analysis

Data retrieved from the interview sessions is analyzed by the following activities.

01. Data preparing and organizing

First, the audio recordings are manually transcribed. Then, relevant quotes from participants are anonymously written down on post-its on a Miro board.

02. Developing a data coding system

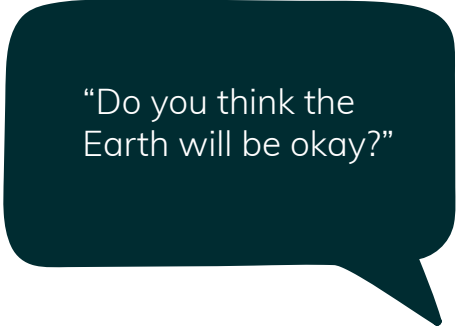
Patterns and repeated ideas were found and a data coding system was developed. Each quote is examined and tagged with codes.

03. Identifying recurring themes

Finally, all groups of codes were linked in overarching themes, representing answers to the research questions.

Teacher’s scenario

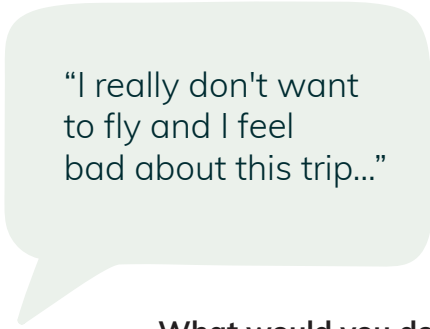
It’s on the front page of the newspaper: the wildfires in the Amazon are more numerous than ever before. A student comes up to you and asks:



What would you say?

Parent’s scenario

You are going on a wonderful trip to Greece with your family, which you are really looking forward to. Your son or daughter sadly says:



What would you do?

Figure 16: Examples of a scenario for a teacher and a parent for the stakeholder interview.



## 02. Results and discussion

This chapter presents the results and discussion per research question: **2.1.** How do youth experience eco-anxiety? **2.2.** What are the best ways for youth to cope with eco-anxiety in their daily lives? **2.3.** Who are they key stakeholders regarding eco-anxiety and what are their roles?

### 2.1. How do youth experience eco-anxiety?

#### 2.1.1. What negative emotions are associated with eco-anxiety for youth?

During the generative sessions, all emotions are analyzed that were explicitly mentioned by participants. The frequency of each emotion varied. Figure 17 presents this in a bubble chart, with the dark green bubbles representing negative emotions, and the bright green bubbles for positive ones. The five most mentioned negative emotions and one of the most mentioned positive emotions are detailed.

#### Researcher's introspection

Several emotions arised: I felt scared, sad, frustrated, alone, panicking, and worried. Emotions I felt when talking to the climate psychologist were inspired, motivated, guilty, and relieved.

#### Worried

Mentioned 10 times. Participants expressed their worries towards the future regarding climate change.

*"Of course, I felt overwhelmed with worries when I first heard the statistics about climate change and the damage it inflicts on people's lives."* (YP1)

#### Frustrated

Mentioned 7 times. All participants expressed frustration as a reaction to the behavior of others.

*"I know this person has money, and other options, so I felt frustrated when I saw she took the airplane."* (YP6)

#### Sad

Mentioned 7 times. Participants expressed sadness because of a variety of reasons, like the loss of nature or the behavior of others.

*"[When I saw the loss of coral in a newsitem] I felt sadness within my body. Why do these plants need to die?"* (YP4)

#### Confused/surprised

Mentioned 6 times. Participants expressed surprise in a negative way, as a reaction to the behavior of others.

*"I was confused that so many peers did not know what XR [Extinction Rebellion] is."* (YP5)

### Amount of eco-emotions mentioned by participants



Figure 17: The amount of negative and positive emotions mentioned by participants.

#### Scared

Mentioned 6 times. Participants expressed scariness towards the consequences of climate change in the future.

*"I am scared that the Netherlands will be unlivable in the future"* (YP5)

#### Inspired

Mentioned 4 times. Participants felt inspired because of other people with whom they share sustainable thoughts.

*"Others help me with thinking positive, I know a person who creates an inspiring magazine about positive climate news."* (YP1)



Diverse manifestations of eco-anxiety

Notably, each participant experienced a different amount and mix of negative and positive eco-emotions. Figure 18 illustrates the frequency of negative and positive emotions mentioned by each participant. The following quotes illustrate that one participant can have negative and positive eco-emotions.

"I am scared that people will adopt an attitude of 'it doesn't matter anymore.' That can only make things worse." (YP6)

"There is still hope. Surely, there will be a way for us to deal with it." (YP6)

Amount of mentioned eco-emotions per participant

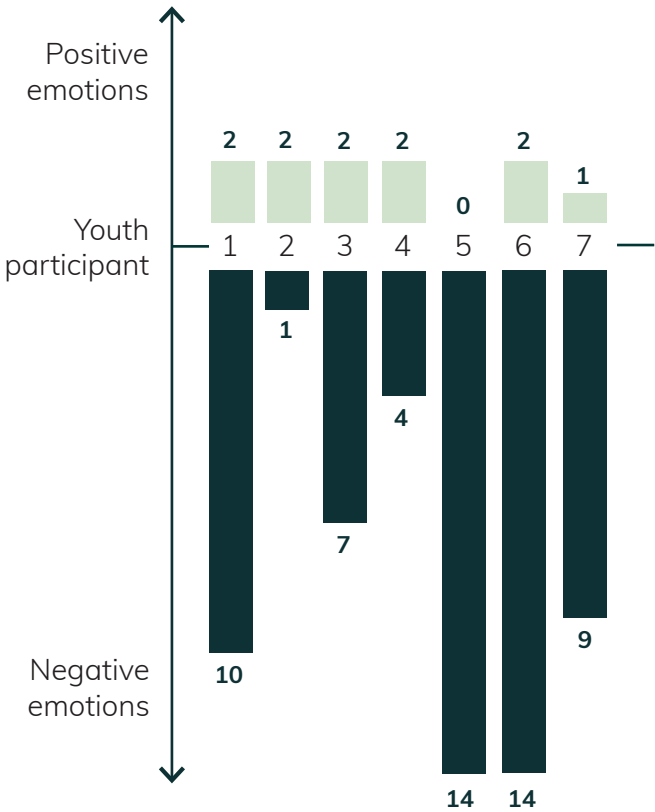


Figure 18: Frequency of how many times negative and positive emotions are mentioned per participant.

2.1.2. What events or situations trigger eco-anxiety among youth?

Researcher's introspection

The trigger of my negative eco-emotions was based on a contextual factor. I was being confronted by new knowledge about climate change, previously unknown to me. The negative emotions arose unexpectedly, without anticipating them. In addition, my eco-anxiety was increased by a social factor. Other people in the room did not literally trigger my negative eco-emotions, but these people represented all people in the world, wishing more recognition from them.

Numerous factors trigger negative eco-emotions, categorized into three main themes: individual, social and contextual factors. Figure 19 presents all factors categorized in these three themes. Each factor is further explained below.

Individual factors

Individual factors are mentioned by all participants (n=7) and represent observations and thoughts by an individual person. They are distinguished in perception of current state, perception of future, uncertainty and morality.

Perception of current state

Most of the participants mentioned they already observe changes in their environment, like environmental changes.

"I went on a ski trip, and the ski slope was completely covered with artificial snow. There was a long white stripe on the mountain, surrounded by green trees and brown earth. It was very real, it was right there in front of me." (YP7)

Factors that trigger eco-anxiety

Individual factors	Social factors	Contextual factors
Perception of current state	Lack of social support	News
Perception of the future	Lack of social alignment	Social media
Uncertainty	Lack of social trust	Courses at school
Morality		

Figure 19: All factors that trigger eco-anxiety, categorized in individual, social and contextual factors.

Perception of future

All participants have a certain perception of how climate change impacts their future. The possible consequences of climate change are listed below. Participants perceived most consequences as a chain reaction, one consequence can be influenced by another one.

- The earth will change physically.  
"We will lose nature, which is important to me." (YP5)
- The Netherlands will be unlivable, because of the rise of the sea level.  
"I live next to the sea. Everyone here has to move in the future, but there is no space for that." (YP5)
- Livelihood will decrease.  
"I am afraid to lose certainty and security [because of the threat of floods.]" (YP5)
- Climate injustice will increase.  
"It is not fair that climate change affects vulnerable people." (YP1)
- Polarization will increase.  
"I would not like to witness the increasing polarization. I already find it unpleasant how people currently react to migrants, but I think in the future it would really get frustrating." (YP7)

Some participants occasionally have the thought that the world will come to an end, which makes them feel scared. However, some of the participants mentioned they think it is important to not get stuck on this thought, because when people are too negative about the future, they think it's all pointless anyway and they start to behave unsustainably.

"People who are even more negative than I am, tend to think very pessimistically, just trying to enjoy whatever they can. But I do feel that we can still extend the livability of the earth to some extent. There is still hope." (YP6)

The way how participants looked at their future was linked to the range of emotions they expressed. For example, one participant believed they would not be heavily impacted by climate change in their lifetime, but they were worried about the future generation, resulting in fewer negative emotions. Conversely, another participant, who anticipated significant impacts from climate change as early as 2050, expressed many negative emotions. This participant associated climate change not only to geophysical changes, but also with its social consequences, such as food scarcity, climate refugees and polarization.



Uncertainty

Some participants expressed uncertainty about when their envisioned future might become reality, and they were unsure about when it would become too late to prevent it.

"You don't know when you are too late, that's the problem" (YP4)

Morality

Moral factors refer on the one hand to not knowing which behavior is good or wrong, and on the other hand to a sense of feeling responsible.

"[Going on a ski trip] I felt ashamed to be part of this problem." (YP7)

Social factors

Social factors are mentioned by all participants (n=7) and represent all triggers within the social environment of youth. They are distinguished in lack of

social support, lack of social alignment and lack of social trust. For every factor, different stakeholders are responsible (see figure 20).

Lack of social support

Lack of social support is distinguished in lack of empathy, lack of respect and lack of understanding.

- Lack of empathy

Some participants did not feel emotionally supported by others.

"Negative feelings about the climate may sometimes be less acknowledged compared to other feelings that people can relate to more strongly." (YP6)
- Lack of respect

Some participants felt that others didn't respect their thoughts or feelings about climate change.

Social factors within the context of youth

● = Mentioned by amount of participants

	Family	Friends	Peers	People in general	Government
Lack of social support	4	1	2	3	
Lack of social alignment	4	2	4	7	
Lack of social trust					4

Figure 20: Frequency of social factors within the context of youth

"[When talking about sustainable behavior] I'm not an adult yet, I don't know everything. My parents say they have life experience." (YP3)

- Lack of understanding

Some participants mentioned misunderstanding from others about their negative feelings towards climate change.

"My parents said, but in our time, we had other problems... But it's not comparable. This scale is much larger." (YP6)

Lack of social alignment

Lack of social support is distinguished in lack of awareness of the problem and lack of sustainable behavior.

- Lack of awareness of the problem

Many participants experienced negative eco-emotions because they did not understand why others are not aware about the consequences of climate change.

"I was angry that they were making jokes about climate change. They are not aware it is a really big problem." (YP5)

- Lack of sustainable behavior

A lot of participants experienced negative eco-emotions because other people behave in a very unsustainable way, while often they are aware of the consequences of climate change.

"I find it strange that people still fly so much. Hello, look around you, don't you read the news?" (YP7)

Lack of social trust

- No trust in government

Several participants mentioned they have no trust in the structure of the social system and that it is not believed the government will sufficiently address climate change.

"If the climate summit is held in Saudi Arabia with air conditioning, that doesn't really inspire hope." (YP3)

Contextual factors

Contextual factors are triggers within youth's environment that spread knowledge about climate change.

News

All participants mentioned they find it important to stay socially engaged by keeping up with the news. Through news items, participants gain knowledge about climate change.

"I was younger and watching the news with my mother, and it was about the dying of the coral reef." (YP4)

Social media

One participant mentioned that social media contributes to evoking negative feelings, for example messages about climate change. It is also mentioned that through social media, it is possible to see other's unsustainable behavior.

"Someone I know posted on Instagram that they had flown to a ski resort, while just last week they flew to Spain. I felt bad and demotivated because I was confronted with people who don't seem to have any problem with significant personal emissions." (YP6)

Courses at school

Four participants noted that much of their understanding about climate change comes from school courses. For some, this included subjects like chemistry and biology in high school, while others follow studies specifically related to climate change.

"One moment that stuck with me is when my class and I were watching a documentary about global warming. Here, we saw footage of polar bears and their habitats being affected. I found this quite emotional." (YP2)



2.1.2. When do youth typically feel eco-anxiety?

Participants experience negative emotions regarding climate change at various times. For most (n=6), their feelings are based on when they are triggered by specific events.

“Worries go up and down. They come up after reading news regarding the climate issue for example”. (YP1)

Two participants (n=2) reported that their eco-anxiety is constantly looming, while one participant noted feeling mostly worried at night, affecting their sleep (n=1).

Discussion: How do youth experience eco-anxiety?

Personal assumptions based on researcher's introspection

- There are many types of emotions related to eco-anxiety which can be felt in just a short moment of time.
- Emotions related to climate change are not always visible on the outside. They can quietly manifest within oneself, unnoticed by others.
- Negative eco-emotions can come and go, they are not constantly at the forefront of one's thoughts. They emerge in response to specific triggers or events, often appearing unexpectedly and at unpredictable times.
- Social influences are a significant aspect of eco-anxiety.

Negative emotions associated with eco-anxiety for youth

Many negative eco-emotions are found across all themes, including feelings of anger, sadness and fear. While there were fewer mentions of positive eco-emotions, they are important to youth, as they do not want to stay in negative thoughts for too long.

All eco-emotions mentioned by the participants are compared to the Dutch version of the eco-emotions wheel to identify similarities or additions. The results are presented in figure 21, where emotions in green were mentioned during the generative sessions, and those outside the wheel are not found in literature.

Consistent with literature indicating diverse manifestations of eco-anxiety, the quantity and intensity of eco-emotions vary among individuals, as well as when and how frequently they occur. It could also be an explanation that one participant can better reflect on their emotions than another during the generative sessions.

Events or situations that trigger eco-anxiety among youth

There is a wide range of triggers of negative eco-emotions and these are categorized in individual, social and contextual factors. Among these, social factors are most frequently mentioned. The social dynamics around eco-anxiety include various aspects and nuances. Participants note that having family members with differing views on sustainability often leads to lack of support. Additionally, negative emotions often arise because of lack of sustainable awareness or behavior by individuals. Individual related triggers are mostly about how youth perceive their future, mostly in a negative way. Additionally, contextual factors such as news items or social media contribute to eco-anxiety by fostering a negative view of climate change. Nevertheless, youth still express a desire for social engagement with the world around them.

Main takeaways: How do youth experience eco-anxiety?

Design opportunities

- The final design should be able to acknowledge the negative emotions and increase the amount of positive eco-emotions.
- There are many different manifestations of eco-anxiety. There is a choice to be made regarding whether the final design should address a broad spectrum of eco-anxiety manifestations or focus on more specific ones.
- Social factors are most frequently mentioned as triggers for eco-anxiety, therefore the final design should take into account the social dynamics of eco-anxiety.

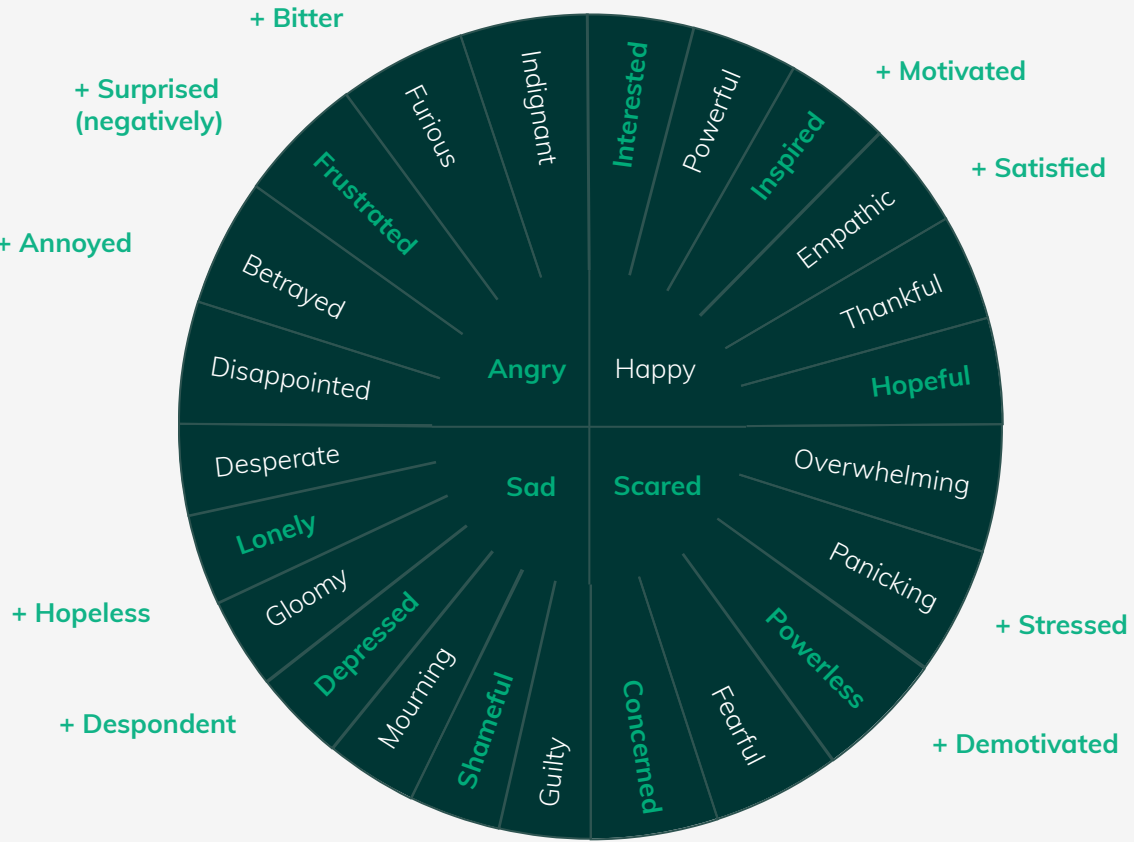


Figure 21: The emotions mentioned in empirical research (bright green) compared to literature.



2.2. What are the best ways for youth to cope with eco-anxiety in their daily lives?

2.2.1. How are youth currently managing their eco-anxiety?

Figure 22 illustrates the frequency of how many times each coping strategy is mentioned by youth during the generative sessions. Below, the way how coping strategies are applied are further explained.

**Researcher's introspection**

The coping strategy that I naturally applied was distracting myself from negative thoughts and focusing on the context of the present moment.

Frequency of used coping strategies among youth

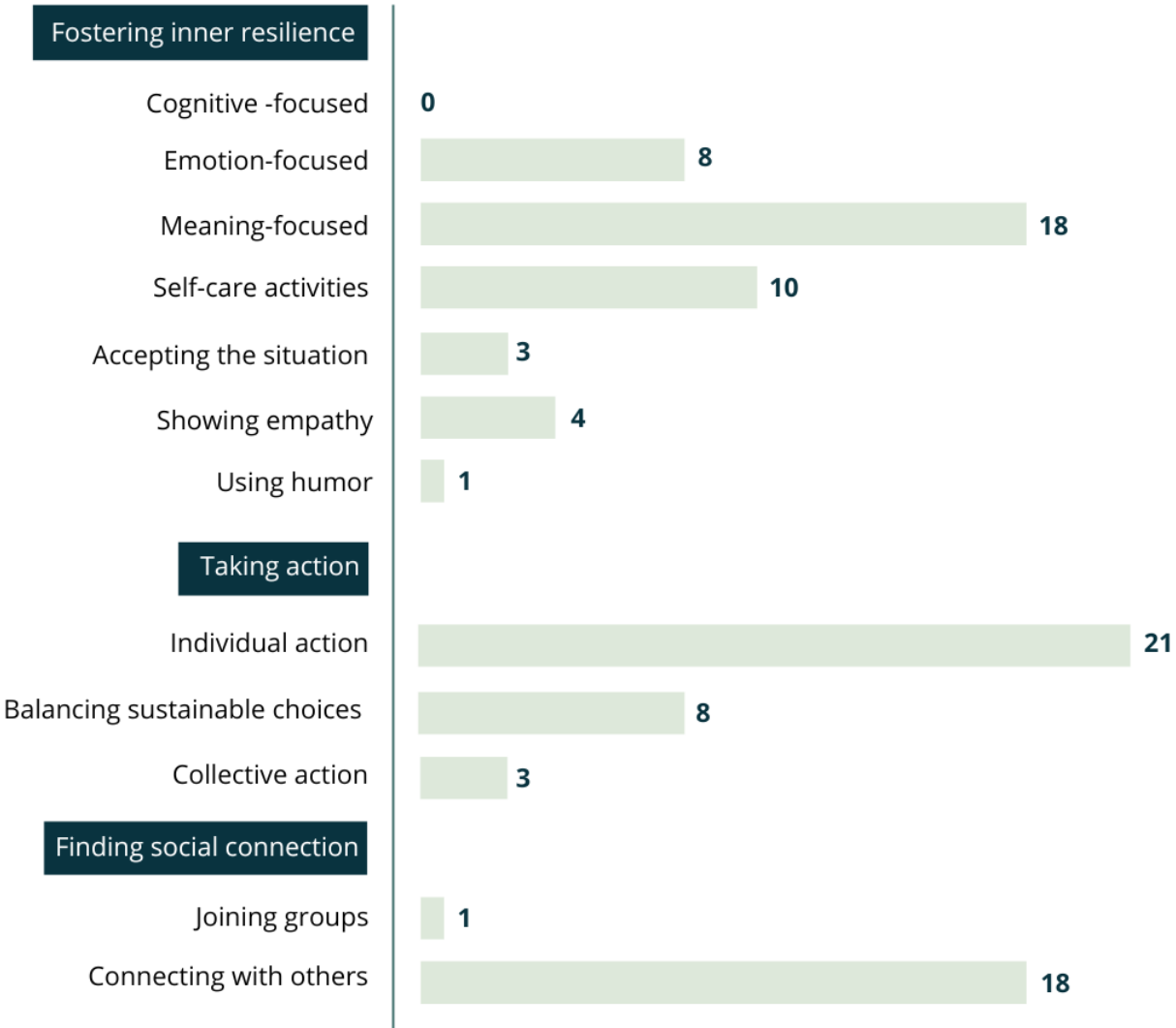


Figure 22: The frequency of how many times a coping strategy is mentioned during empirical research.

Fostering inner resilience

*Cognitive-focused*  
None of the participants mentioned using cognitive-focused strategies.

*Emotion-focused*  
Some participants mentioned they try to recognize, acknowledge, reflect and talk about eco-emotions.

*"It is okay to worry about it, it is a huge problem."* (YP5)

While three participants noted they avoid confrontation at all, some participants mentioned they try to express their opinions or feelings towards climate change, even when the conversation could turn out awkward.

*"When friends are going to McDonald's, I ask them why. I am honest about this."* (YP5)

*Meaning-focused*  
Several participants mentioned meaning-focused coping by emphasizing the importance of being positive. They did not appreciate it when others talk about a pessimistic future

*"There is still hope. And we will find a way to deal with it."* (YP6)

Three participants mentioned their long-term goals related to climate change.

*"I can protest, but it's better to follow education and contribute in that way."* (YP3)

*Self-care activities*  
Three participants mentioned they try to focus on the present things in life.

*"But I also managed quite well to not hold onto the negative feeling for too long, but instead just carry on with what I was doing and then set it aside for a moment."* (YP1)

*Accepting the situation*  
Three participants mentioned they try to accept the situation as it is, because they realized they cannot solve it on their own.

*"I alone can't do much about it, I accept that. But I am concerned about it."* (YP5)

Taking action

*Individual action*  
All participants mentioned doing sustainable actions in order to reduce their impact on climate change. In addition, many participants expressed enthusiasm for exploring new creative ways to improve their sustainable behavior.

*"When one of my friends says, let's make a vegetable garden, I think: oh yes, how nice, there's a really positive energy around it."* (YP2)

*Collective action*  
Two participants mentioned their involvement in collective actions, by joining a climate organization or going to a climate protest.

*"I was happy that I joined the XR [Extinction Rebellion] protest, I was happy to act."* (YP5)

*Balancing sustainable choices*  
Four participants emphasized the importance of balancing their decisions by considering the value of certain unsustainable actions against their impact.

*"We also went to South America once. I still feel really bad about flying, but then I felt much less guilty. It was the only option to fly. It is okay to sometimes take a long flight".* (YP1)



## Finding social connection

### Joining groups

One participant mentioned they joined a climate organization, as a combination of action and meeting like-minded people.

"The people from [climate organization x] share the same ideas and thoughts. There are also discussions on how we are going to achieve our goals." (YP1)

### Connecting with others

All participants know at least one person who shares their commitment to sustainability. It is helpful to discuss climate-related issues with like-minded individuals, finding it comforting and supportive.

"I feel more comfortable discussing it with my mother or friends who largely share the same views. It's a lot less confrontation." (YP7)

### Showing empathy

Trying to understand other's perspective  
Three participants mentioned it is helpful to show empathy and understanding towards others who hold differing views on climate change, particularly when dealing with anger-related emotions.

"I was discussing the situation [disagreement with a peer] with my brother. He pointed out that people are raised differently, which shapes their perspective. It helped me understand it more." (YP5)

## Researcher's introspection

When I had a conversation with the climate psychologist, it helped me to talk about my previous emotions, in order to better understand myself and to get recognition. I felt motivated to confront situations that might feel uncomfortable and accept the awkwardness.

## 2.2.2. Which coping strategies do youth wish they were better at using?

Participants were asked which coping strategy they wished to improve in the future. While many found this question challenging and often skipped it, two participants provided comments.

### Emotion-focused strategies

One participant expressed a desire to enhance their ability to express their eco-emotions more calmly. In addition, this participant mentioned the wish to engage in constructive confrontations, getting a better skill in choosing the right words.

"In the future, I would like to express my opinions more and have the facts ready so that I can engage in confrontations with greater ease." (YP7)

### Meaning-focused strategies

One participant aspires to act more from positive emotions rather than negative ones.

"I feel frustrated with myself for becoming somewhat bitter [about climate concerns]. I wish I didn't feel so irritated." (YP6)

The other participant expressed the wish of integrating climate action into their future careers, as a long-term goal.

"I hope that in the future, I can personally contribute to addressing it." (YP7)

### Showing empathy

One participant mentioned the need to better understand how they can better engage with others who don't share their views on the climate topic, and that others learn how to interact with them.

"I think it would be nice to learn how to interact with others on this topic, and for them to interact with me." (YP6)

## 2.2.2. What obstacles prevent youth from using certain coping strategies?

Some coping strategies may be hard to apply for youth due to various barriers. Figure 23 shows an overview of each coping strategy and its barriers. Afterwards, these barriers are further explained.

## Overview of barriers to apply coping strategies

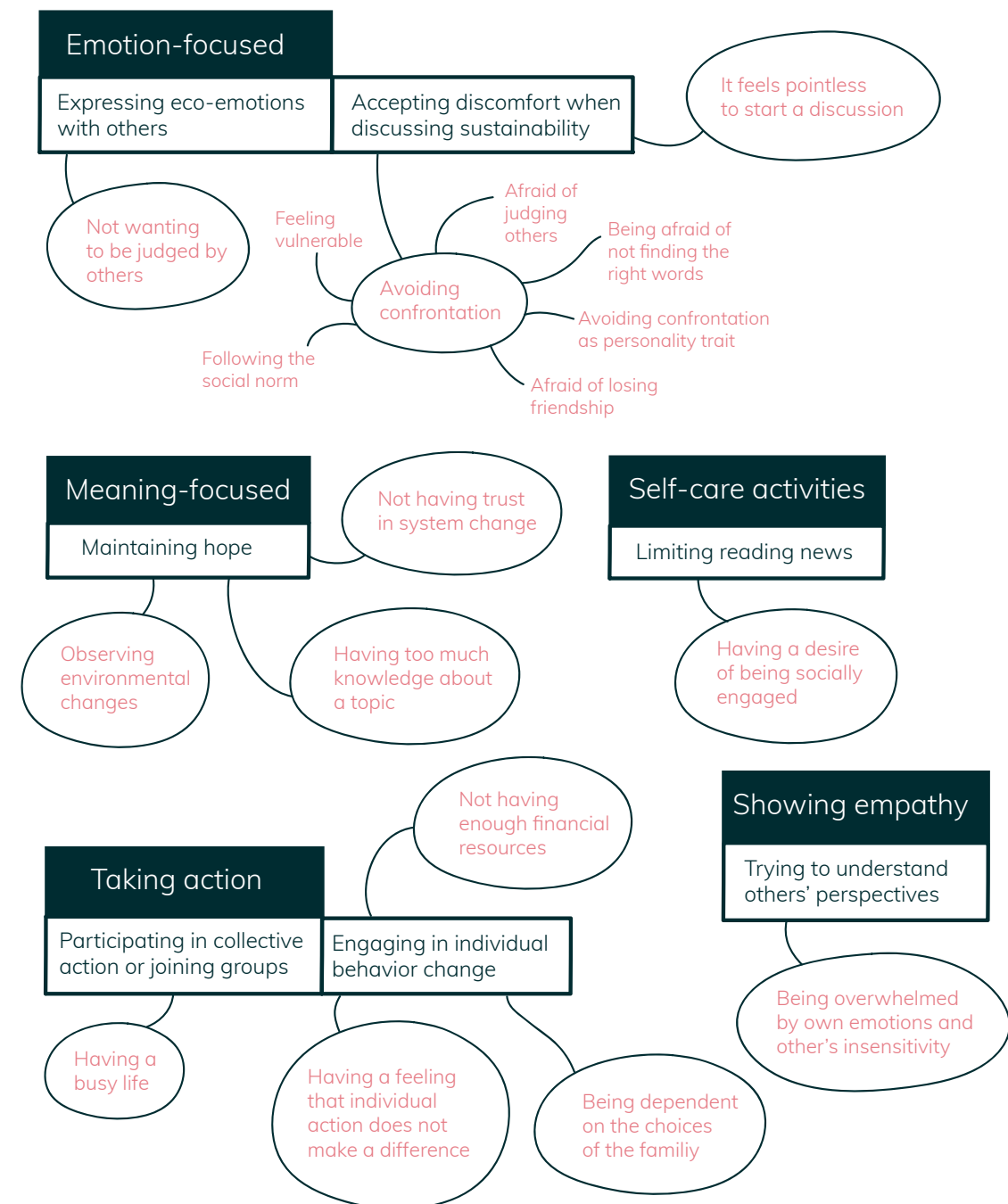


Figure 23: Overview of barriers to apply coping strategies for eco-anxiety.



#### Barriers for expressing eco-emotions with others

One participant mentioned they do not want to be judged by others when discussing sustainability.

*"I try to hold back a lot because I feel like I'll just be seen as a pessimistic hippie. And that is just not the image I want to convey."* (YP6)

#### Barriers for accepting discomfort when discussing sustainability

Many reasons are mentioned as barriers to accept discomfort. Some participants do not like confrontation and they felt it is not the social norm to this. They do not want to judge others' opinions or behavior or to lose their friendship. Other reasons are feeling too vulnerable, being afraid to not find the right arguments in a discussion, or feeling starting a climate discussion is pointless anyway, since it will only push people away.

*"They are my friends, so I don't want to push too much. I have to find the right balance."* (YP5)

#### Barriers for maintaining hope

Some participants mentioned it is sometimes hard to maintain hope. It is mentioned they feel like system change is not possible. Another reason why it is hard to maintain hope, is because environmental changes can already be observed or one participant mentioned they had too much knowledge about the topic.

*"I know much more than others about climate change, so it doesn't help when they say things to make me feel better."* (YP3)

#### Barriers for self-care activities

Multiple participants mentioned the importance of staying up to date about what is happening in the world.

*"I find it important to stay informed about what's happening in the world and to be socially engaged."* (YP5)

#### Barriers for taking action

Several participants mentioned they are dependent on choices of their family or on financial resources to act sustainably. Having a feeling that individual action does not make a difference is also mentioned as a barrier.

*"After watching the documentary, I knew I could not change it. It does not help to not shower for a day."* (YP2)

#### Barriers of participating in collective action/joining groups

Multiple participants mentioned they have no time to engage in collective action or joining groups.

*"I wanted to organize a climate group at school, but I am already too busy."* (YP5)

#### Barriers of showing empathy

One participant noted feeling overwhelmed by their own emotions to engage in a constructive climate discussion.

*"After a while, I gave up. I was overwhelmed by my own emotions, and their insensitivity made me unwilling to continue."* (YP7)

#### 2.2.4. When does a certain coping strategy not work?

The question about the failing of certain coping strategies was not initially part of the research plan. However, during the generative sessions, some interesting insights were found. Particularly when people with differing perspectives on sustainability were involved, some coping strategies were ineffective and they sometimes even have contradicted results. Figure 24 represents some examples of the interactions between a youngster experiencing eco-anxiety and someone who does not share the same level of climate concerns.

For instance, one participant mentioned feeling unsupported when their mother advised finding the right balance between enjoying life and sustainable behavior. However, this participant perceived their mother's own actions as unsustainable, leading to a feeling of hypocrisy. Another participant mentioned that when their parents compare climate change to the challenges of other eras, they did not feel understood and supported. Additionally, while discussing eco-anxiety in a lighthearted manner sometimes helps, some participants felt frustrated when others, who did not share their sustainable views, talked about climate change in a humorous way, because it felt like the climate problem is not being taken seriously.

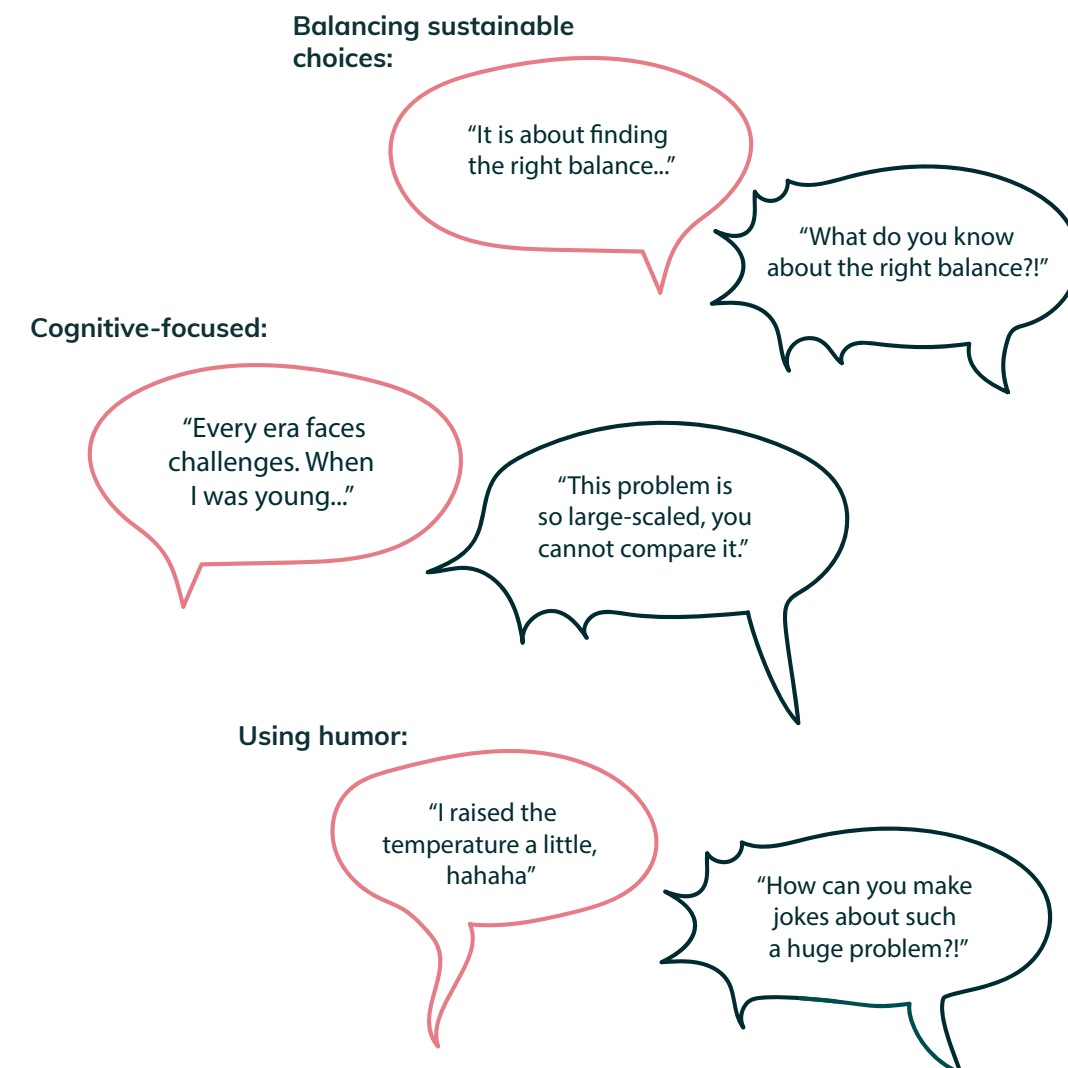


Figure 24: Examples of statements when certain coping strategies are ineffective.



2.2.5. Stakeholder interview: climate psychologistst

During the interview with the climate psychologist, it was discussed which coping strategies from literature have the most potential within the context of youth. It is mentioned that inner resilience in combination with social connection is very valuable.

“Social connection is key. Especially when it comes together with improving inner resilience.” (SP6)

On the one hand, it is important to accept the climate issue as it is, but it is also important to feel commitment to the climate issue and to connect it with personal values. Additionally, prioritizing self-care is essential as processing information about climate change can be emotionally heavy. Lastly, it is mentioned that taking action could be a helpful coping strategy, but it can also be tricky. When people are focusing too much on taking action, it can lead to a feeling that everything they do (e.g. eating, traveling, and even just living) is unsustainable, which can lead to extreme thoughts. Therefore, taking action should always be combined with other themes, like fostering inner resilience and social connection.

Discussion: What are the best ways for youth to cope with eco-anxiety in their daily lives?

Personal assumptions based on researcher’s introspection

- When experiencing negative eco-emotions, it sometimes might be beneficial to get some distraction, but sometimes it can be convenient to express negative feelings with someone else, who have similar thoughts on eco-anxiety.
- When talking about your feelings related to climate change, it can be inspiring to hear from others how they handle their eco-anxiety.
- Accepting the discomfort of confrontation related to climate change issues is a coping strategy that is not widely known or applied yet, and therefore an interesting opportunity.

Additional coping strategies to the literature review

Youth naturally apply various coping strategies to manage their negative eco-emotions. While many of these strategies align with existing literature findings (see chapter 1), three additional strategies emerged from the generative sessions: accepting the situation as it is, balancing sustainable choices and showing empathy towards others with differing perspectives on climate change. Figure 25 provides an overview of the coping strategies from literature alongside the new insights from empirical research.

Effective coping strategies

Some coping strategies resulted effectively within the daily context of youth.

Fostering hope and staying positive

Youth prefer not to stay in negativity for too long and enjoy thinking positively.

Acknowledging negative eco-emotions

It is important to acknowledge negative eco-emotions. These feelings are valid

and should be accepted by youth themselves and by others. It is appreciated when others handle these feelings with understanding and respect.

Showing empathy

Youth appreciate being understood. Conversely, they also indicated that understanding the perspectives of others (who may have different views on sustainability) helps them manage negative emotions more effectively.

Selfcare: finding distraction

Life is not just about sustainability. For youth, it helps to sometimes seek distractions, such as doing something fun with friends.

Connecting with others who experience eco-anxiety

Youth appreciate not feeling alone in their experiences. By connecting with like-minded others, they can share both negative and positive eco-emotions. This provides recognition and mutual understanding.

Behave in a sustainable way

Instead of always focusing on what is not possible, youth like to focus on what is achievable for them. They enjoy brainstorming creative ideas together for sustainable actions. This works especially well when they can combine these ideas with their skills and interests.

Complete overview of coping strategies for dealing with eco-anxiety

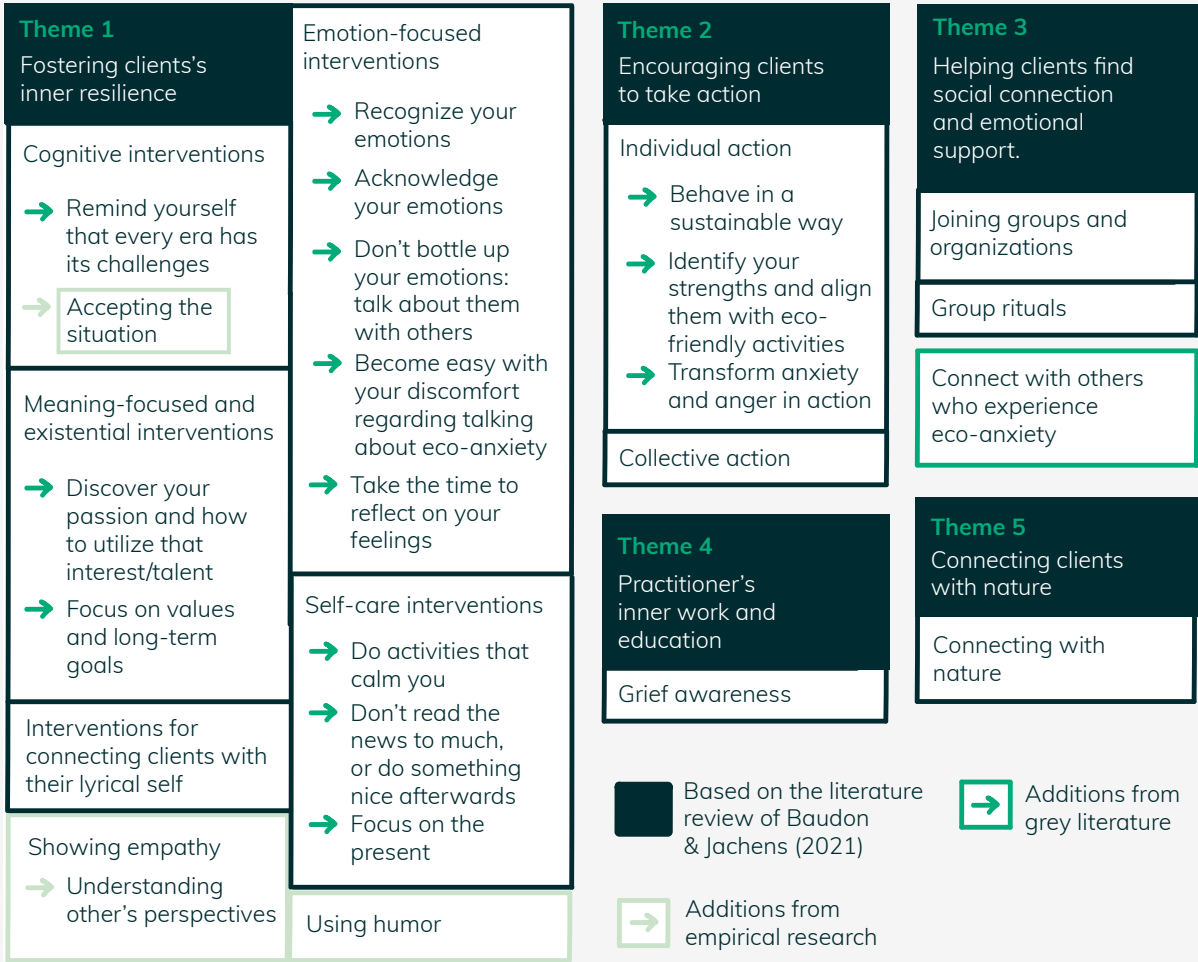


Figure 25: An overview of the coping strategies from literature alongside the new insights from empirical research.



### Finding the right balance

Sustainability is not the only thing on youth's minds, so not all their behaviors are entirely sustainable—and that is okay. It helps them to find the right balance in sometimes behaving sustainably and sometimes doing activities that bring them joy.

### Not effective coping strategies

Some coping strategies do not always result effectively, because dealing with eco-anxiety can be quite nuanced.

### Too much focus on negative eco-emotions

Youth do not appreciate when others have a pessimistic view of the future. It is important to acknowledge the urgency of the issue while maintaining a hopeful perspective.

### Relativizing in the wrong way

When youth express concerns about their future and hear comments like “it will all be fine” or “when I was young, it was

uncertain too,” especially from those less engaged in sustainability, they feel their emotions are not taken seriously.

### Encouraging sustainability discussions

Youth prefer not to engage too much in confrontational sustainability discussions. While these discussions can sometimes be valuable, forming friendships and finding belonging in groups are also important for young people.

### Too much focus on sustainable behavior change

When youth heavily focus on sustainable behavior change, it can lead to feeling restricted. Instead of solely reducing their footprint (negative impact), it is more effective to emphasize increasing their handprint (positive impact). Moreover, youth do not always have the option to behave sustainably due to dependency on their parents and limited financial resources.

## Main takeaways: What are the best ways for youth to cope with eco-anxiety in their daily lives?

### Design opportunities

- The final design could expand on coping strategies that youth feel comfortable to apply, like fostering positive eco-emotions, applying sustainable behavior, and connecting with like-minded people.
- Although youth talk about sustainability with other like-minded people, they do not always express their concerns on an emotional level. The final design could encourage this.
- According to climate psychology, relying solely on climate action is not effective. It can only work in combination with fostering inner resilience and social connection.

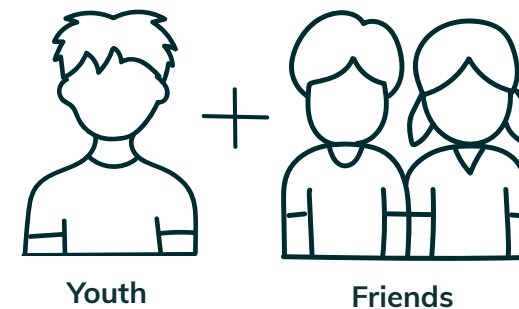
### Design restrictions

- Youth are often dependent on financial resources, their parent's behavior and a busy time schedule. Therefore, the final design should take this into account.
- Youth often do not feel comfortable in discussing sustainability with others who do not share similar concerns. The final design should not promote discussing sustainability when youth feel discomfort.
- Some coping strategies are not effective for youth. Therefore the final design should exclude the encouragement of finding the right balance, using humor or applying cognitive strategies, when people who are less engaged in sustainability.

## 2.3. Who are the key stakeholders regarding eco-anxiety and what are their roles?

### 2.3.1. Who are the key stakeholders regarding eco-anxiety and what are their roles?

This section explores the relationship between youth experiencing eco-anxiety and various stakeholders. It details the expectations youth have of these stakeholders and, in some cases, how the stakeholders perceive their own roles.

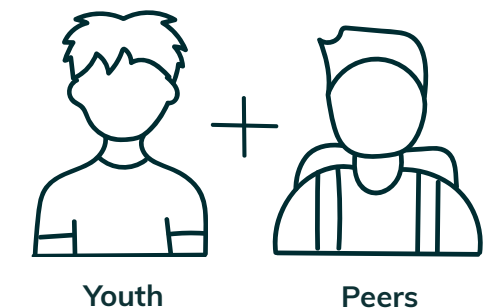


Some participants mentioned having friends who do not hold similar views on sustainability. In such cases, youth did not want to heavily discuss the topic to avoid losing their friendships.

“She is my friend, so I don't want to push too much. I have to find the right balance.” (YP5)

### Youth appreciate it when their friends are:

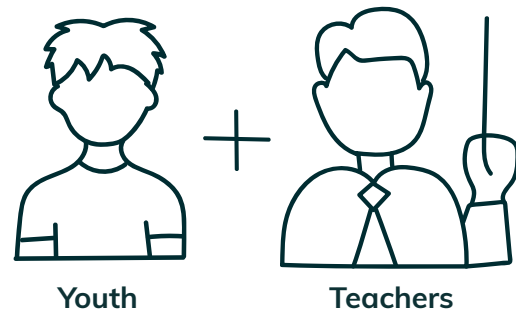
- Being sustainably aware.  
“A friend of mine shares my view on sustainability, for example, he also cycles to school. I like that. It gives me more hope”. (YP3)
- Sharing positivity.  
“It's good to bring up the negative things so that you're aware of them, but afterward, it should be positive”. (YP4)
- Exchanging ideas for sustainable behavior change.  
“When a friend offers a nice idea about sustainable behavior, there is a positive energy.” (YP4)



### Youth appreciate it when peers are:

- Engaging in discussions in a respectful way.  
“If he has another opinion I accept that. But he should have acted more respectful to me, because now it has a lot of influence on my mood”. (YP5)





#### Youth appreciate it when teachers are:

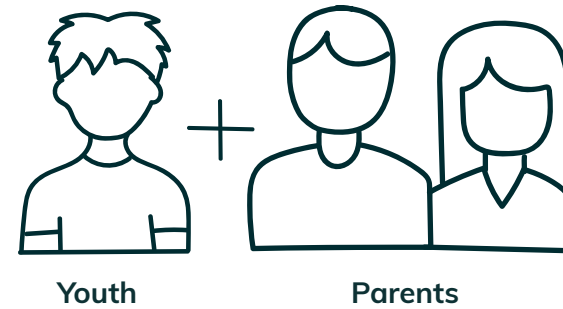
- Providing knowledge about climate change.  
"It is good that teachers show actual news". (YP2)
- Acknowledging their sustainable efforts.  
"I was happy that we got acknowledgement from school by getting permission to go to a XR [Extinction Rebellion] protest." (YP5)

#### Teachers perceive their role as:

- Increasing awareness about the responsibility of citizenship.  
"I sometimes talk about politics, but I try to remain very neutral. What are the positions of the political parties or what are the consequences of their policy choices?" (SP2)
- Facilitating climate discussions between peers.  
"Let students discuss climate change. That's great. I wouldn't interfere with it." SP1
- Providing hope.  
"I would say that there are still many positive things happening as well." (SP2)

 = being environmentally conscious

- Alarming parents when recognizing a low mental health.  
"It could happen that a student suddenly becomes very worried. Perhaps even going further and thinking, 'Why am I even alive?' Yes, then it is really important that parents are involved in this." (SP2)



Note: Only parents were recruited who share similar concerns related to climate change. They might perceive their role differently than parents who are not involved in the climate problem.

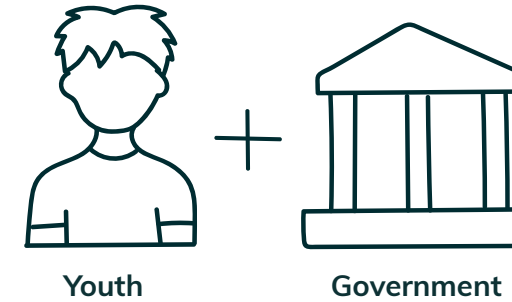
#### Youth appreciate it when their parents are:

- Showing understanding.  
"It felt good to talk about climate change with my mother". (YP7)
- Taking initiative.  
"My family could give me more recognition by considering my perspective or taking a step towards me on their own". (YP6)

#### Parents perceive their role as:

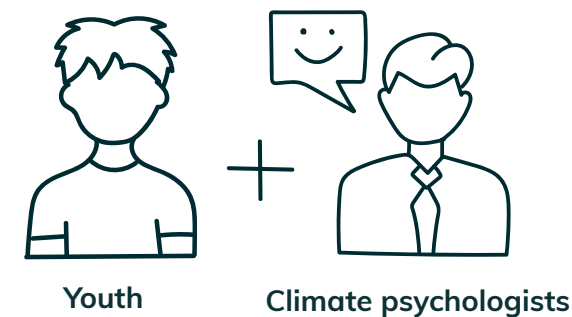
- Providing moral permission.  
"Then I give her a sort of moral permission by telling her it is okay to take the plane." (SP5)
- Providing practical solutions.  
"I would give some concrete examples of solutions. We do see big changes coming, and maybe it is good to leave this city at some point." (SP4)

- Protecting by withholding doom visions.  
"Sometimes I think, gosh, what will your future be like? I don't say that to them. I want to protect them." (SP4)



#### Youth appreciate it when the government is:

- Putting effort in reaching the climate goals.  
"I don't have 100% confidence that the government will achieve the climate goals. I find it difficult, they all say they want to achieve them, but it feels like they're not doing anything about it." (YP4)



#### Climate psychologists perceive their role as:

- Supporting people who experience an intense manifestation of eco-anxiety.  
"The people who come to me often struggle with existential questions. At that point, it is essentially already a depression, and the person is not functioning well". (SP6)
- Providing tips indirectly.  
"Not everyone concerned about climate issues needs to see a psychologist." (SP6)



## Discussion: Who are the key stakeholders regarding eco-anxiety and what are their roles?

### Personal assumptions based on researcher's introspection

- It would be beneficial if others could make room for talking about eco-emotions, even if they don't share the same perspective.

### Who are the key stakeholders regarding eco-anxiety and what are their roles?

The key stakeholders which are analyzed are friends, peers, teachers, parents, the government and climate psychologists. Overall it can be concluded that stakeholders who share similar views on climate change tend to have a positive impact on youth's eco-anxiety, while those with differing perspectives and behaviors often have a negative influence. The closer these people are in the inner circle of youth, the more impact they have on their eco-anxiety.

## Main takeaways:

### Design opportunities

- Like-minded stakeholders positively impact youth's eco-anxiety regarding climate change. The final design could strengthen the positive impact of people who share similar thoughts on sustainability, rather than solely focusing on solving the negative aspects.
- Youth appreciate parents who understand and take initiative in addressing sustainability, so they can play a role in fostering their inner resilience.
- Youth enjoy sharing positivity with friends.
- Youth value mutual understanding and respect from friends and peers with differing environmental values. Therefore the final design could assist in understanding each other's view. Teachers could play a role here, by facilitating climate discussions that take into account positive and negative eco-emotions.
- Teachers like to support their students' sustainable efforts, so the final design could help teachers support youth in discovering their passions and talents related to sustainability.
- Climate psychologists perceive their role as sharing tips through the media. The final design could facilitate tips and tricks from climate psychologists in an engaging way for youth or other stakeholders in managing eco-anxiety.

## 03. General discussion

In this chapter, the main results of the empirical research will be discussed. 3.1. aligns my personal assumptions from the researcher's introspection with the results from the sessions with participants. 3.2. presents two system maps that outlines the synthesis of the results. The chapter will end with 3.3. a list of design opportunities.

### 3.1. Personal assumptions versus empirical findings

This section presents a list of personal assumptions based on researcher's introspection, categorized in two groups: confirmed and proven false by sessions with participants. Most assumptions are confirmed. However, the assumption regarding the acceptance of discomfort in confronting climate change discussions with others proved false. Many barriers were found for youth to initiate such confrontations. One possible explanation could be the age difference between the researcher (25 years old), and the target group. Another explanation could be that the effectiveness of this coping strategy varies depending on individual personality traits.

#### Confirmed assumptions:

- There are many types of emotions related to eco-anxiety which can be felt in just a short moment of time.
- Emotions related to climate change are not always visible on the outside. They can quietly manifest within oneself, unnoticed by others.
- Negative eco-emotions can come and go, they are not constantly at the forefront of one's thoughts. They emerge in response to specific triggers or events, often appearing unexpectedly and at unpredictable times.
- Social influences are a significant aspect of eco-anxiety.
- When experiencing negative eco-emotions, it sometimes might be beneficial to get some distraction, but sometimes it can be convenient to express negative feelings with someone else, who have similar thoughts on eco-anxiety.
- When talking about your feelings related to climate change, it can be inspiring to hear from others how they handle their eco-anxiety.
- It can be very relieving to talk about your eco-emotions with someone who recognizes your feelings.
- It would be beneficial if others could make room for eco-emotions, even if they don't share the same perspective.

#### False assumption:

- Accepting the discomfort of confrontation related to climate change issues is a coping strategy that is not widely known or applied yet.



3.2. System maps

Based on empirical research findings two system maps are created. Figure 26 presents the system map which aligns the individual and contextual factors that trigger eco-anxiety with coping strategies.

The map in figure 27 illustrates how social factors can either positively or negatively impact eco-anxiety experienced by youth. Each stakeholder is marked as environmentally conscious or not, indicated by the presence of a green or a red leaf icon.

Each factor on the maps corresponds to one or more coping strategies that might be an interesting fit within these interactions. All coping strategies that are found in literature and additional coping strategies that are found during empirical research, are aligned alongside the system maps. In certain instances, coping strategies are already somewhat integrated, while in others, there is a need to create space for their implementation.

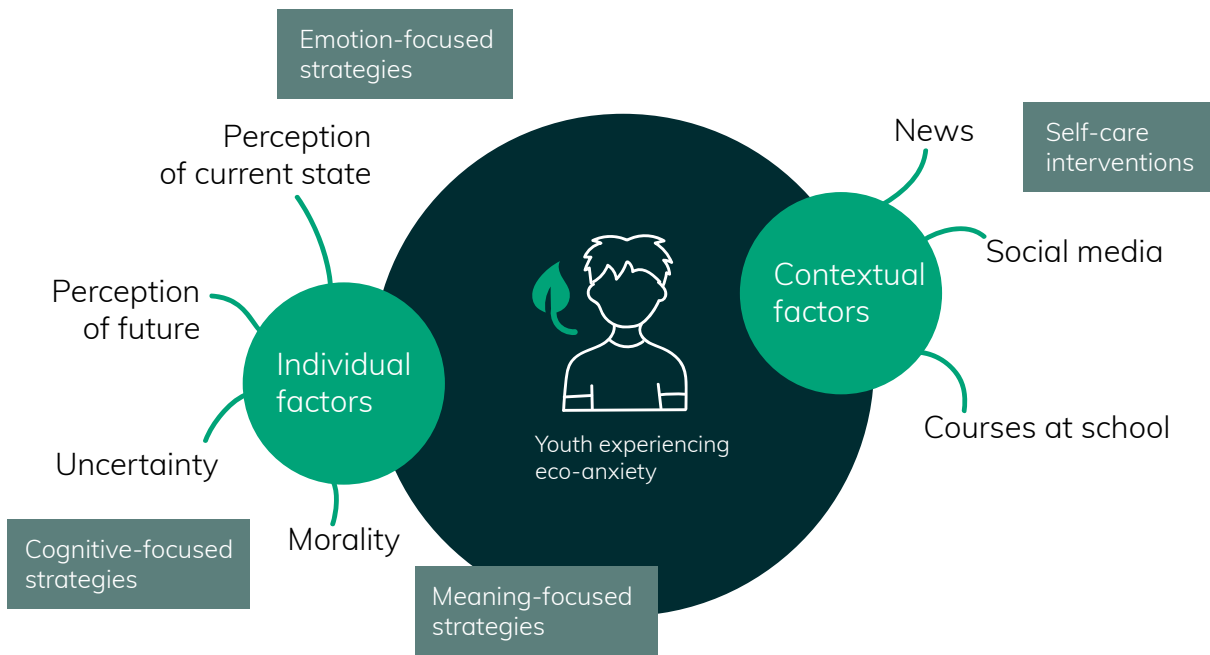


Figure 26: System map that aligns individual and contextual factors of eco-anxiety with coping strategies.

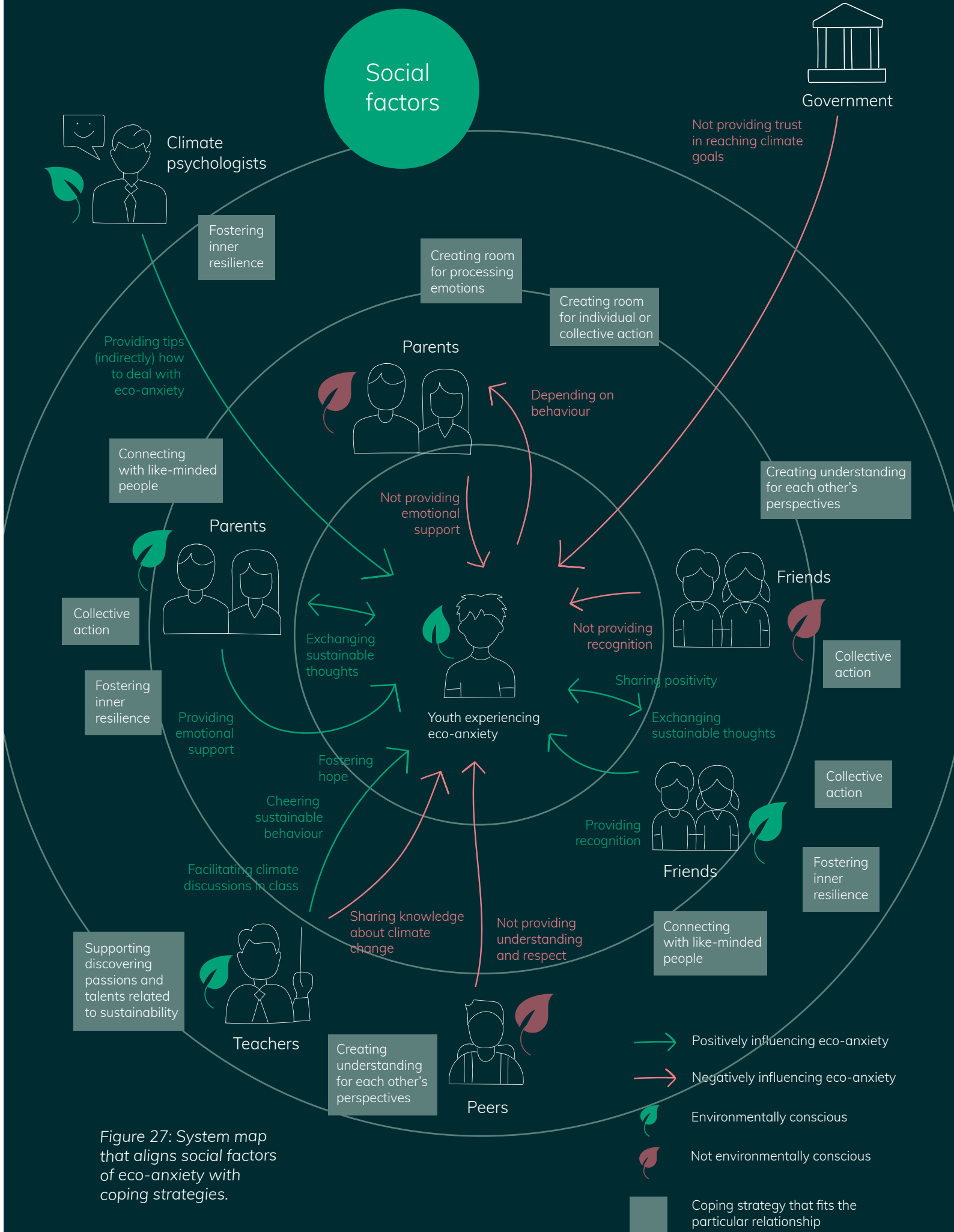


Figure 27: System map that aligns social factors of eco-anxiety with coping strategies.



### 3.3. A synthesis of design opportunities

This section presents design opportunities based on the findings of the literature review and the empirical research. In general, two main design opportunities were found:

- a. Design opportunity: Improving relationships between youth and stakeholders when they negatively influence eco-anxiety of youth.
- b. Design opportunity: Strengthening the positive impact of people who share similar thoughts on sustainability.

Within these main opportunities, several sub design opportunities are subdivided. These opportunities are linked with involved stakeholders and their influences on eco-anxiety, and connected with involved coping strategies. The design opportunities are listed here after.

Design opportunities to improve the negative impact between youth and their stakeholders.

1. Designing an intervention for youth and their friends so that they can explore ways to engage in sustainable action together.
2. Designing an intervention for teachers to facilitate climate discussions that takes into account positive and negative eco-emotions.
3. Designing an intervention for parents that helps to support youth to better process their eco-emotions.
4. Designing an intervention for youth and their parents so that they can explore ways to engage in sustainable action together.

Design opportunities to strengthen the positive impact between youth and their stakeholders.

5. Designing an intervention that supports youth in fostering positive eco-emotions together with like-minded people.
6. Designing an intervention that helps youth to better process their eco-emotions together with like-minded people.
7. Designing an intervention that supports youth in individual or collective action in an engaging way.
8. Designing an intervention for teachers to assist students in researching climate change information while maintaining a sense of hope.
9. Designing an intervention for teachers that assist them to support youth in discovering passions and talents related to sustainability.
10. Designing an intervention that supports youth in fostering positive eco-emotions.
11. Designing an intervention for parents that helps to support youth to better process their eco-emotions.
12. Designing an intervention for youth and their parents so that they can explore ways to engage in sustainable action together.
13. Designing an intervention that shares tips and tricks from climate psychologists in an engaging way for youth to manage their eco-anxiety.
14. Designing an intervention that shares tips and tricks from climate psychologists for stakeholders to learn how they can support youth in managing their eco-anxiety.

## 04. Conclusion

Three empirical studies were conducted to **01.** explore youth's experiences of eco-anxiety, to **02.** identify effective coping strategies for eco-anxiety among youth; and to **03.** map the relationship between youth and stakeholders related to eco-anxiety. The studies included researcher introspection, contextmapping with youth, and interviews with stakeholders.

### 01. Youth's experiences of eco-anxiety

Eco-anxiety represents many negative emotions to youth, including feelings of anger, sadness and fear. Positive emotions, though less mentioned, include interest, inspiration, hope, motivation and satisfaction. These emotions are triggered by specific events and arise at various times.

Triggers for negative emotions are categorized as individual, social, and contextual factors, with social factors being the most frequently mentioned. Social factors include the lack of social support, social alignment, and social trust.

### (2). Effective coping strategies for eco-anxiety among youth

Youth naturally apply three coping strategies: being hopeful, taking individual action, and connecting with like-minded individuals. They emphasize focusing on positivity rather than dwelling on negative thoughts.

Some coping strategies face barriers. Discussing sustainability and accepting awkwardness involve many obstacles, as youth tend to avoid confrontation. Another challenging strategy is behaving sustainably, as youth often depend on their family's choices, financial resources, and time constraints.

### 03. Relationship between youth and stakeholders related to eco-anxiety

Stakeholders who share similar views on climate change tend to positively impact youth's eco-anxiety, while those with differing perspectives and behaviors often have a negative influence. The closer these people are to the youth, the greater their impact on eco-anxiety.

#### Alignment of results

All results are discussed and organized in a system map. Two main design opportunities are identified, each with several sub-opportunities:

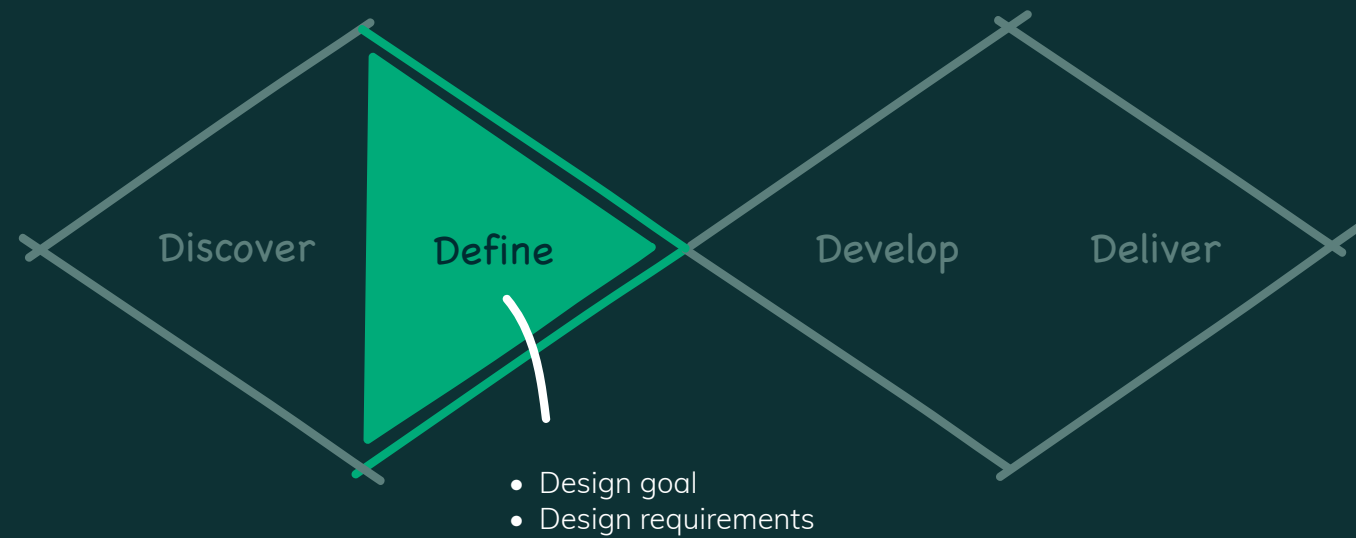
**(a).** Improving relationships between youth and stakeholders when stakeholders have a negative impact on eco-anxiety of youth.

**(b).** Strengthening the positive impact of people who share similar thoughts on sustainability.

Chapter 3 will outline how all design opportunities are evaluated that leads to a design goal.



# Define



## Chapter 03 The Design Goal

This chapter outlines the evaluation of the design opportunities, presents the design goal and ends with a list of design requirements.



## 01. Evaluation of design opportunities

The list of design opportunities presented in the previous chapter are evaluated in order to narrow down a wide range of possibilities into a more focused set of options. This serves as inspiration for the ideation process afterwards.

The design opportunities are evaluated by using a c-box, which serves as a tool to organize and compare various options (Van Boeijen et al., 2020). Within the

c-box, two axes present criteria according to which the ideas are evaluated. The criteria that are selected for this project are inclusiveness and feasibility. Inclusiveness is about how many youth (who experience eco-anxiety) are included within the design opportunity. Feasibility means how easy or difficult the design opportunity can be implemented. Figure 28 illustrates the c-box, including the placement of all design opportunities. Number 5, 6, 10 and 11 are selected to merge into one design goal to work further with.

These design opportunities all focus on strengthening the positive influences on eco-anxiety between two individuals who are environmentally conscious and they all focus on fostering inner resilience.

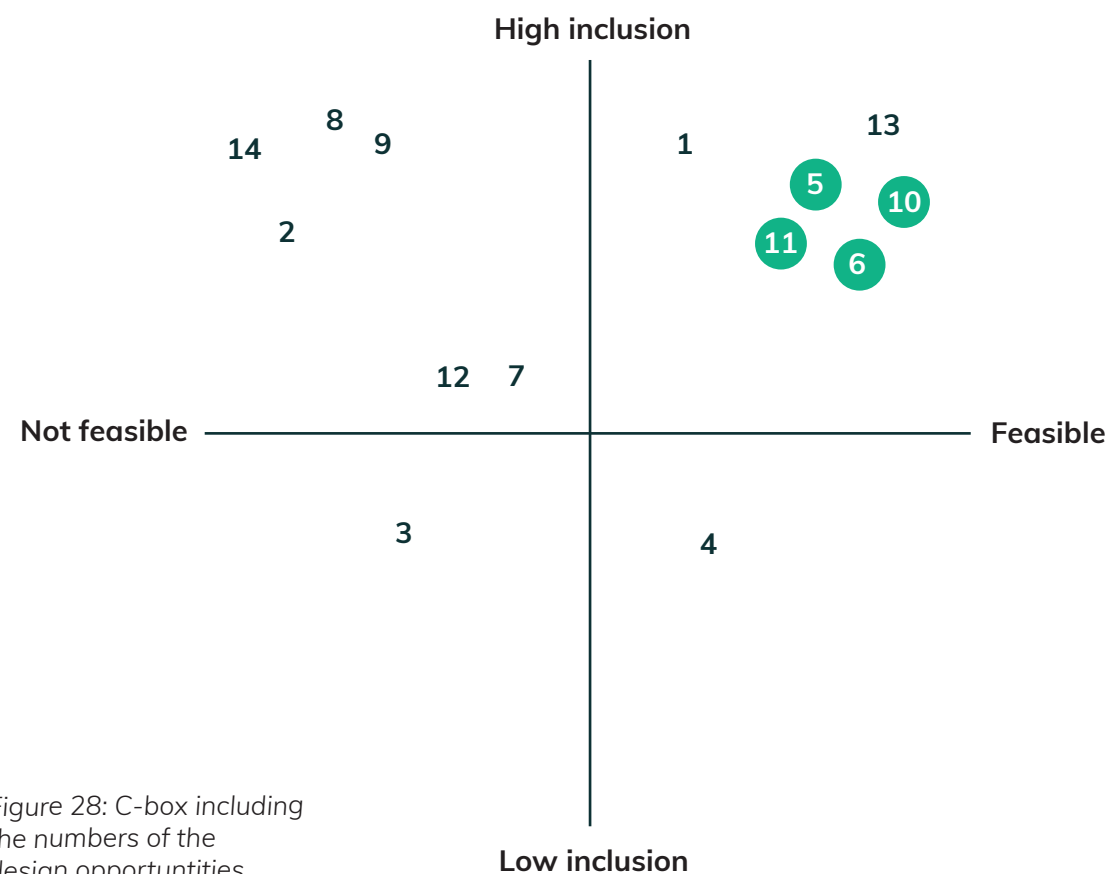


Figure 28: C-box including the numbers of the design opportunities.

## 02. The design goal

Based on the evaluation process of all design opportunities, the following design goal is formulated and visually presented in figure 29.

### Design goal

The design intervention should assist youth (aged 15-21) experiencing eco-anxiety, in **fostering positive eco-emotions with someone who is environmentally conscious.**

This provides support for addressing eco-anxiety when negative eco-emotions arise at a later moment.

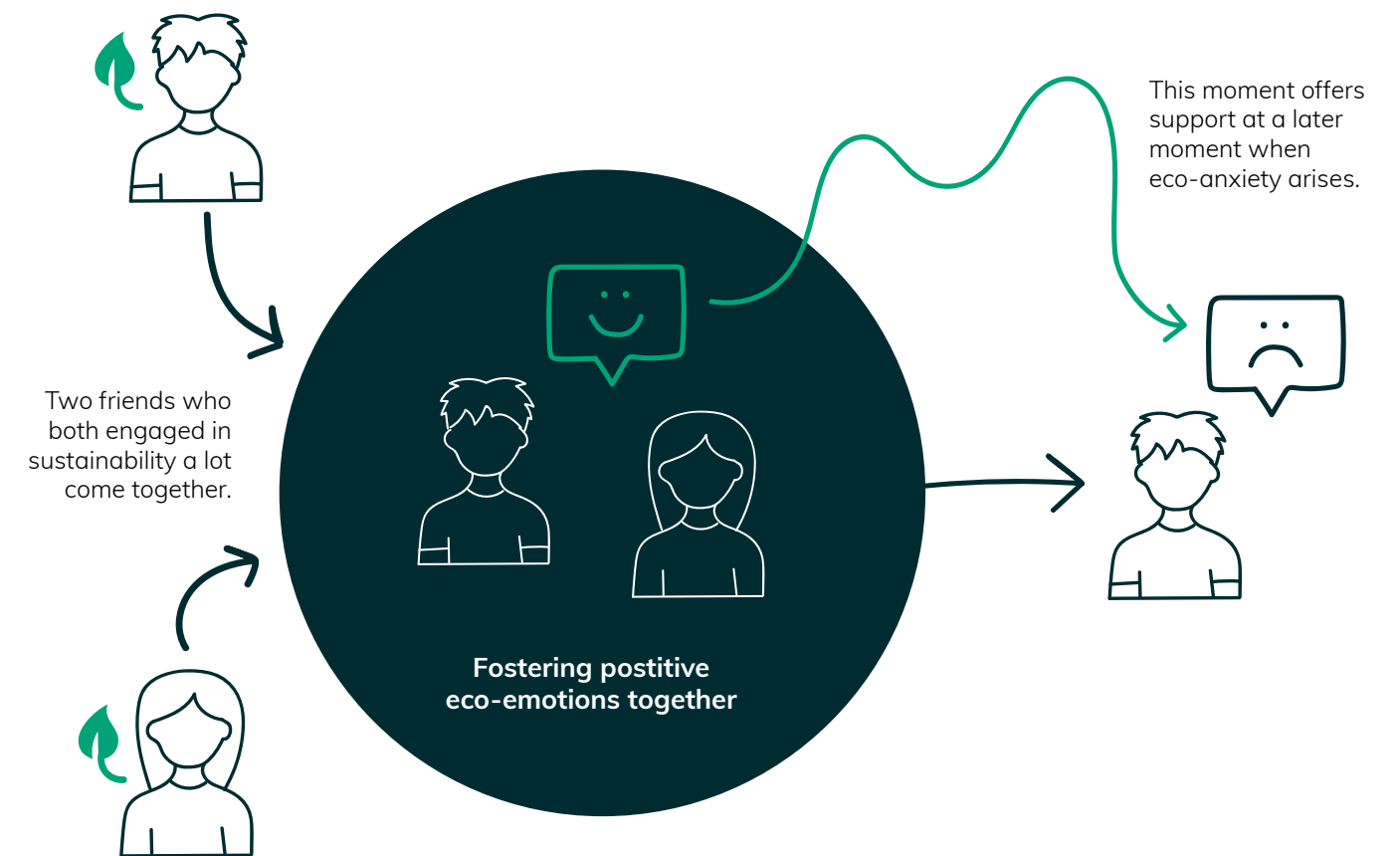


Figure 29: The design goal presented in a scenario.



## 03. Design requirements

Below, the design requirements are listed and categorized into three themes: contextual requirements, psychological requirements and other requirements. Some requirements are based on the design goal, while others are outlined throughout chapter II. Literature Review and III. Empirical Research.

### *Contextual requirements*

- The final design has to be implemented within the daily context of youth, without direct involvement of mental health professionals.
- The final design should have a low threshold to use, without high effort for youth.
- The final design has to be interacted with by multiple users.

### *Psychological requirements*

- The final design should help youth with fostering positive eco-emotions in order to help them to cope with negative eco-emotions.
- The final design should be able to acknowledge negative eco-emotions.

### *Other requirements*

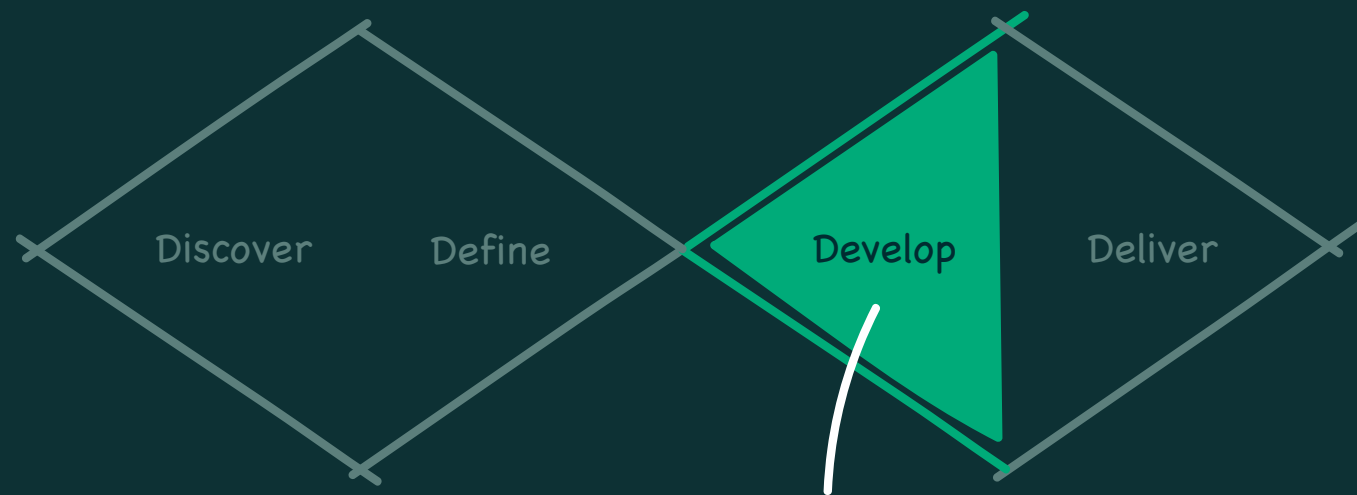
- The final design should include a high inclusiveness of the target group.

## 04. Conclusion

All design opportunities that were found in the discovery phase are evaluated. This led to the objective of designing an intervention that should assist youth (aged 15-21) experiencing eco-anxiety, in fostering positive eco-emotions by interacting with someone who is environmentally conscious. This support is intended to help manage eco-anxiety when negative eco-emotions arise at a later moment. The formulated design goal and the list of design requirements will serve as guidelines and inspiration for the upcoming phase, where design ideas will be explored.



# Develop



- Design exploration:
  - 01. Ideation with experts
  - 02. Initial design concepts
  - 03. Initial user test

## Chapter 04 Design Exploration

This chapter outlines all design activities aimed at exploring ideas within the design goal: 01. organizing two ideation sessions with experts, 02. developing multiple design directions, 03. testing these design directions with youth participants.



# 01. Ideation with experts

Two ideation sessions were organized. The first session climate psychologists were invited as experts on eco-anxiety. In the second session, two young designers experiencing eco-anxiety were invited. The goal of these sessions was to facilitate discussions on potential design directions and to brainstorm ideas together.

## 1.1. Climate psychologists

An online session was organized with a group of 7 climate psychologists (see figure 30). This session included two parts: a presentation about the findings and design goal, followed by an ideation session.

## 1.2. Young designers experiencing eco-anxiety

An ideation session was organized with two 25-year-old designers who experience eco-anxiety. During this session, they tested some low-fidelity prototypes and brainstormed together (see figure 31 and 32) on ways to foster positive emotions and process negative eco-emotions.

### 1.3. Main takeaways

- The revised design goal is validated by the climate psychologists. This means the project can now build further upon this design goal.
- Fostering positive eco-emotions is beneficial when you do this together with like-minded people.
- Discovering your personal strengths, talents and roles is valuable when coping with eco-anxiety. However, as the young designers mentioned, this is not an easy task for young people and sometimes might even feel like a quarter life crisis. Therefore, climate psychologists recommend thinking in small steps.
- Talking about personal values and linking them to the climate issue was received positively. It helps in understanding and articulating why climate action is important to you. Moreover, it offers recognition to hear about other's (similar) values.
- There are many tips and tricks to process negative (eco)-emotions, like mindfulness, mediation or writing. In addition, expressing negative eco-emotions by talking about them with like-minded others can be a powerful coping strategy. While there is a risk in drawing others in negativity, there are also many benefits, like getting recognition and acknowledgement from both sides.



Figure 32: Testing low-fidelity prototypes with designers



Figure 31: Brainstorming with designers

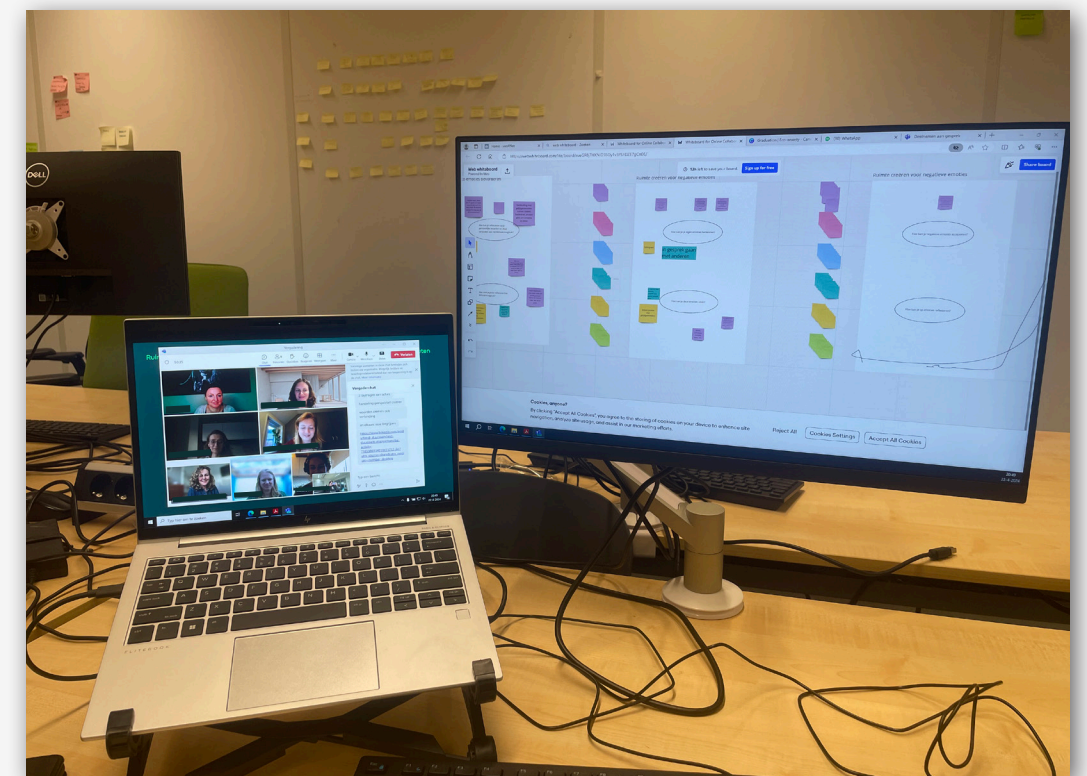


Figure 30: Online ideation session with climate psychologists



## 02. Initial design concepts

Through ideation and quick testing sessions, three design concepts were developed. All concepts follow three principles identified as effective in empirical research: **2.1.** fostering positive eco-emotions, **2.2.** connecting with like-minded individuals who share environmental values and **2.3.** combining social connection with fostering inner resilience.

### 2.1. Fostering positive eco-emotions

Youth find it important to focus on positivity rather than staying in pessimistic thoughts about the future concerning climate change.

### 2.2. Connecting with like-minded individuals

During the empirical research, every participant noted that they know someone who shares their concerns about climate change and with whom they enjoy discussing sustainability. This familiar context feels comfortable to them, resulting in easy to engage.

### 2.3. Combining social connection with fostering inner resilience

According to a climate psychologist, social connection is key. Especially when it comes together with improving inner resilience.

### 2.4. Initial design concepts

Youth find it important to focus on positivity rather than staying in pessimistic thoughts about the future concerning climate change.

#### 1. The positive dilemma game

*Meaningful coping*

The goal of this design concept is that youth together explore their personal values, reflect on them and link them to the climate issue.

#### 2. The green compliment

*Being recognized*

This concept aims at giving and receiving recognition of being engaged in the climate issue.

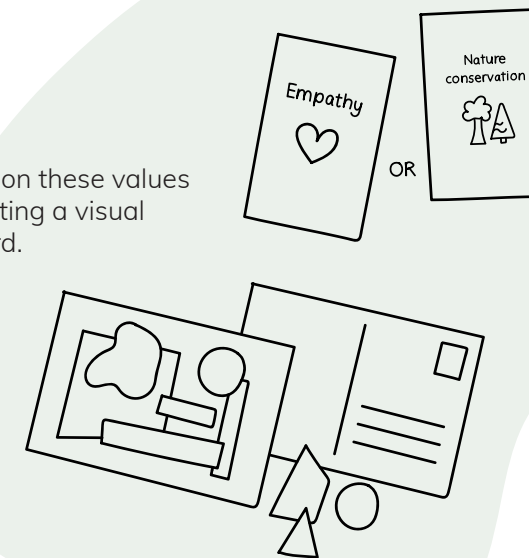
#### 3. The green inspiration tower

*Doing it together*

The goal of this design concept is realizing that climate action is a group effort, everyone having their own personal role within this issue. In addition, it is aimed to feel connected to others who are environmentally engaged and to draw inspiration from them.

### 1. The positive dilemma game

Reflect on these values by creating a visual postcard.



Think about your most important values by playing the positive dilemma game.

### 2. The green compliment

Write a green compliment about each other and read out loud.



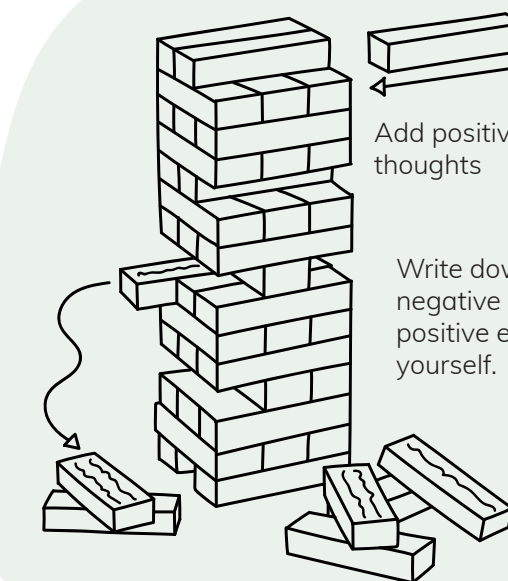
Put the note in a digital jar to always bring positivity with you.



### 3. The green inspiration tower

Add positive thoughts

Write down a negative and positive experience yourself.



Get rid of negative experiences



# 03. Initial user test

To evaluate the three design directions, a test session was organized where youth could interact with the concept designs.

## 3.1. Process

A test session is organized in a cafe, in which two friends who experience eco-anxiety are invited (see table 3). The test session was facilitated by the designer. After each concept was tested (see figure 33, 34 and 35), some follow-up questions were asked. Both participants received a voucher of €25 as compensation.

Participant number	Age	Gender	Involved before?
YP5	17	Female	Yes
YP8	17	Male	No

Table 3: List of participants in the user test

## 3.2. Assessment

The three concept directions are assessed by using a Harris Profile. A Harris Profile supports visualizing the strengths and weaknesses of the three concept directions (Van Boeijen et al., 2014).

### 3.2.1. Assessment criteria

For every concept, the following criteria are assessed.

#### 1. Achievement of the concept goal

- Is the concept simple and clear?
- Does their reaction fit the intended concept goal?

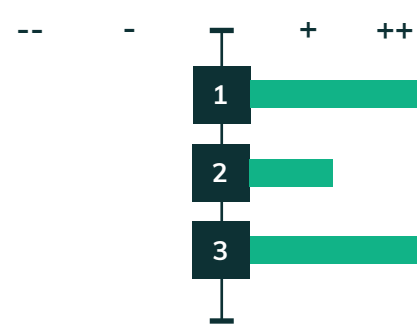
#### 2. Interaction with the concept

- Do youth enjoy interacting with the concept?
- Does it give a spark to interact with the concept?
- Does the concept improve the social connection between youth?

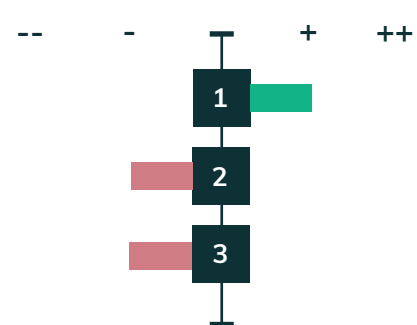
#### 3. Connection with future experiences

- Is it expected that youth will recall this experience at a later moment, during/ after experiencing negative eco-emotions?

The positive dilemma game



The green compliment



The green inspiration tower

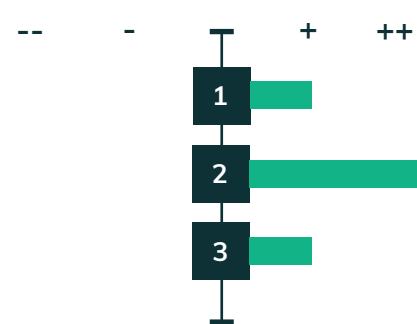


Figure 36: Harris Profile assessment



Figure 33: Testing the positive dilemma game



Figure 34: Testing the green compliment



Figure 35: Testing the green inspiration tower



### 3.2.2. Results and discussion

The Harris Profile visually presents the evaluation of each concept on the achievement of design goal, the interaction with the concept and the connection with future experiences (see figure 36). The results are listed here after.

#### *The positive dilemma game*

The goal of the positive dilemma game is well received, since the participants were able to reflect on their personal values and link it to climate change. One participant mentioned the interaction was helpful, since it serves as a reminder to know what they are doing it for. The participants enjoyed the creative part and were proud of their creations. After finishing their postcard, one participant said:

*"I am really proud of what I have made. I am going to place it on my fridge."* (YP8)

#### *The green compliment*

Although the participants liked it to give each other a compliment, it did not feel very special to them. One participant mentioned they need more time to give a compliment on a deeper level.

*"It is always nice to get a compliment, but this is something that we do more often. The other two concepts felt more new and special."* (YP8)

#### *The green inspiration tower*

The goal of fostering a feeling of "doing it together" was well received, since one participant mentioned they felt connected to the people who wrote a message on the blocks, although they are not in the same room. Interesting about this concept was that the negative thoughts of others were received even better than the positive thoughts, because the negative thoughts are very relatable.

*"I expect that it will make me laugh again, when I will think about that quote in the future, the one about the uncle eating twice as much meat."* (YP8)

The concept stimulated the participants a lot, they were laughing and enjoying themselves.

### 3.2.3. Final concept choice

Based on the Harris Profile, the positive dilemma game and the green inspiration tower are assessed quite equally. However, since the positive dilemma game is expected as having a higher link with future experiences and since this design concept is more feasible, the positive dilemma game is chosen as the final concept idea. Based on the test session, this concept has been improved.

## 04. Conclusion

During the exploration phase, various design activities are conducted to generate initial ideas and concepts focused on promoting positive eco-emotions. Two ideation sessions involving experts were held to gather insights into strategies beneficial for fostering these emotions. These insights have resulted in three initial design concepts, each aiming to promote positive eco-emotions based on different principles.

**01. The positive dilemma game** encourages discussion about personal values.

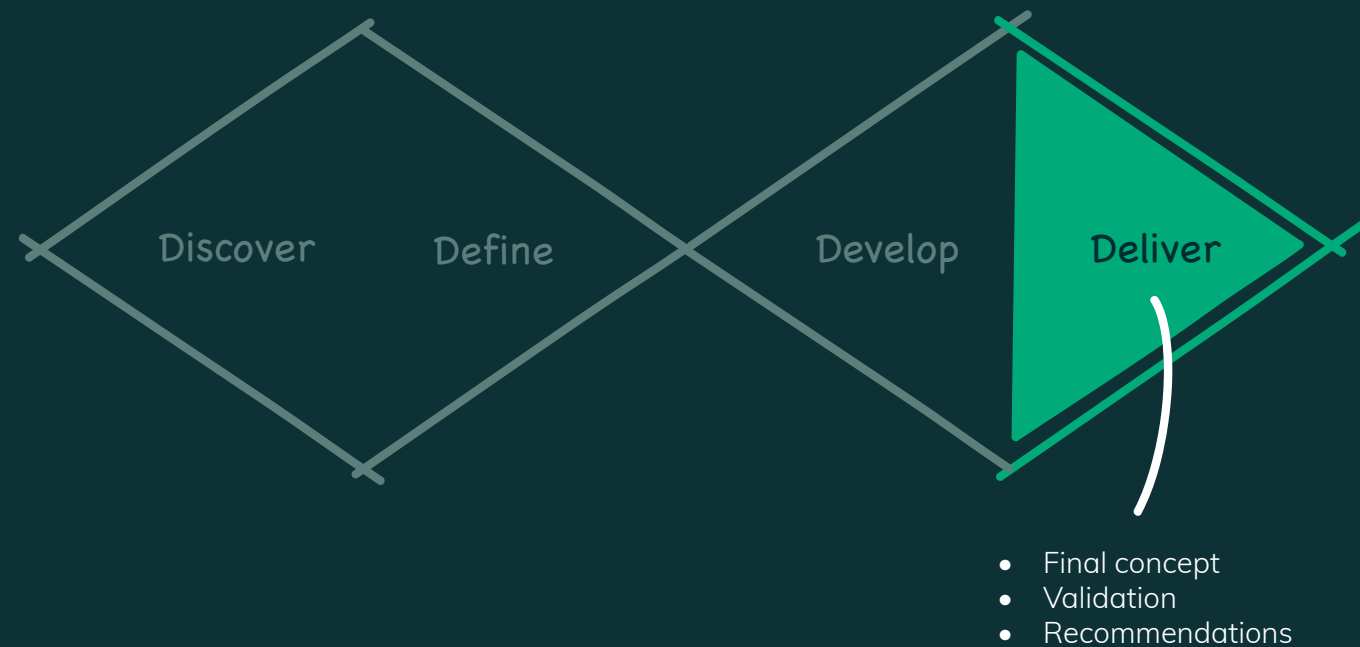
**02. The green compliment** involves giving and receiving recognition through compliments.

**03. The green inspiration tower** creates a sense of collective sustainability efforts.

After testing three initial design concepts with youth participants, the positive dilemma game emerged as the most promising. This concept will be improved and high-fidelity prototyped in the next phase.



# Deliver



## Chapter 05 Final Concept: Dear Future

This chapter introduces the final concept: Dear Future. First, an overview of Dear Future will be provided. Then, the user experience with Dear Future will be explained, including the interaction steps, user context, and implementation.



# DEAR FUTURE



## 01. A glimpse into Dear Future

Dear Future encourages youth experiencing eco-anxiety to reflect on their personal values and connect them to climate change. This is done in a setting with one or more people they already know who share similar environmental values. Users are encouraged to discuss what they find important in life and to envision what a hopeful future looks like to them.

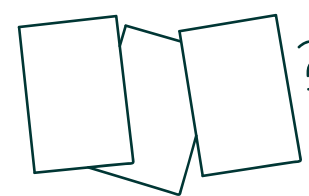


## 02. How do users play with Dear Future

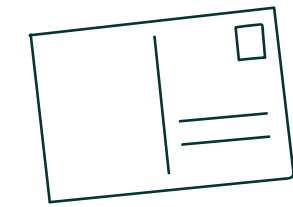
This chapter describes the user interaction steps of Dear Future, it explains the positive dilemma game and the reflection activity step by step. It also presents the user context and discusses how Dear Future can be implemented into the daily lives of youth.

### 2.1. User interaction

Dear Future consists of two main activities:



**01.** Discovering personal values through the positive dilemma game.



**02.** Reflecting activity by crafting a postcard.

These activities are guided by an instruction folder (see figure 37), and all materials are presented in a small box (see figure 38). On the next pages the interaction steps are explained as they are presented in the instruction folder.

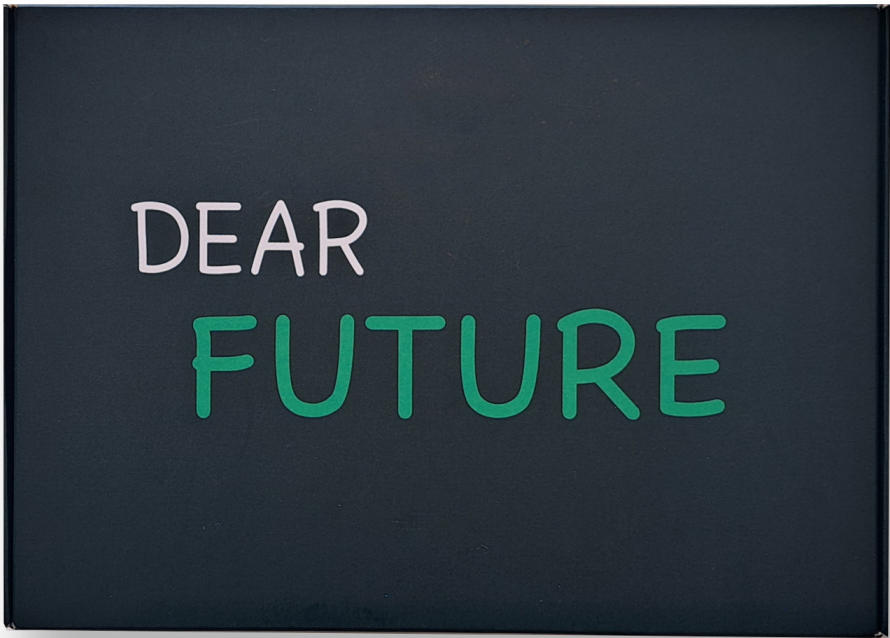


Figure 38: All materials are presented in a box.

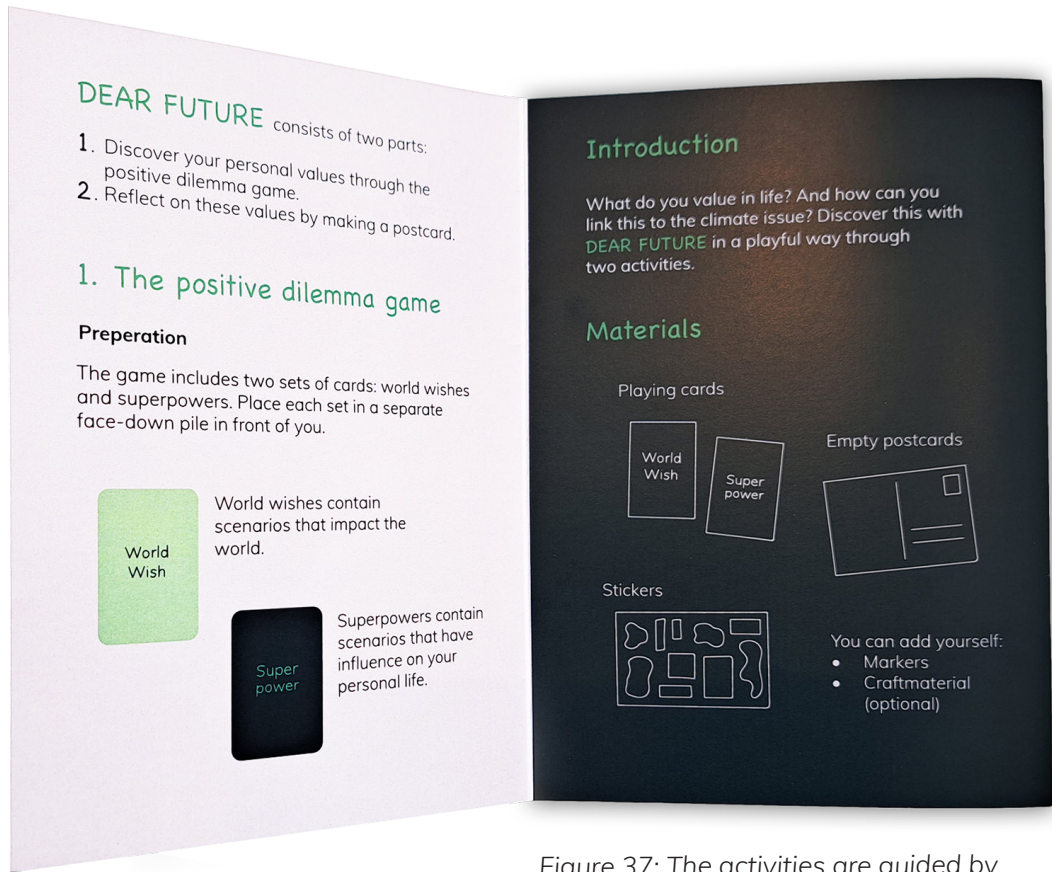


Figure 37: The activities are guided by an instruction folder.





# Instructions

2-3 15+ 30-60 min

**Introduction**  
What do you value in life? And how can you link this to the climate issue? Discover this with DEAR FUTURE in a playful way through two activities.

**Materials**  
Playing cards 1

World Wish Super power

Stickers 2 Empty postcards 3

## 01. The positive dilemma game

**Preparation**  
The game includes two sets of cards: world wishes and superpowers. Place each set in a separate face-down pile in front of you.

**World wishes** contain scenarios that impact the world.

**Superpowers** contain scenarios that have influence on your personal life.

**Purpose of the game**  
The game ends when every player has two world wishes and two superpowers.

**Gameplay**

1. Start with the world wishes. The first player places 3 cards face up on the table, chooses 1, explains why and shuffles the remaining cards back into the deck. Repeat this for all players\*
2. After all players have chosen one world wish, it is time for the superpowers. The gameplay remains the same.
3. Continue playing the game until each player has a total of four cards: two world wishes and two superpowers.

\*Exchanging is allowed!  
Before a player discards cards and shuffles them into the deck, other players may take one of these cards and exchange it for a card they already have from the same category.

## 02. Create a postcard

**Purpose of the game**  
Visualize the chosen values on the postcard and share them with each other. You get to keep your postcard!

**Gameplay**

1. Each player selects one value from their two world wishes and one from their two superpowers. The values are listed at the bottom of the cards.
2. Each person takes a blank postcard and writes these two values on the back.
3. Visualize these two values on the front of the postcard. You can use sticker sheets for this, but feel free to add your own materials such as pens, markers, or pictures from magazines.
4. Ready? Tell each other about your postcard!

- Why did you visualize your postcard this way?
- How does climate change affect these values?



### 2.1.2. Theoretical background

#### Positive dilemma game

The positive dilemma game builds upon insights from Bos-de Vos (2020), who presents a framework for navigating values. The values that are applied in the positive dilemma game are based on this framework.

Only values that serve as guiding principles are selected. These values act as criteria or principles that individuals use to give meaning to what is considered important in life. Values as guiding principles are categorized into two types: individual-level values and group-level values. In the positive dilemma game, individual-level values are termed “superpowers,” including values and scenarios that impact personal life. Group-level values are referred to as “world wishes,” including values and scenarios that affect the broader world. Figure 38 illustrates two examples of superpowers and world wishes.



Figure 38: Examples of superpowers and world wishes

### 2.1.3. Theoretical background

#### Reflection activity

The reflection activity draws on the insights of Sleeswijk Visser et al. (2005), who discuss how creating designerly artefacts can facilitate self-reflection. This process involves making drawings, collages, and models. By engaging in these creative activities, individuals can reflect on, re-live, and even re-feel their experiences. Dear Future encourages participants to exchange thoughts and experiences.

The stickers are designed based on several guidelines from Sleeswijk Visser et al. (2005) in creating a set of collage images and words.

- The image content is diverse.
- There is a balance between concrete and abstract images.
- Images are open for interpretation.
- Subject-related images are kept to a minimum.

### 2.2. User scenario

Figure 39 presents a potential user scenario for Dear Future. The scenario illustrates two environmentally conscious friends who come together to interact with Dear Future. The scenario presents how Dear Future supports them in coping with negative eco-emotions that arise later.

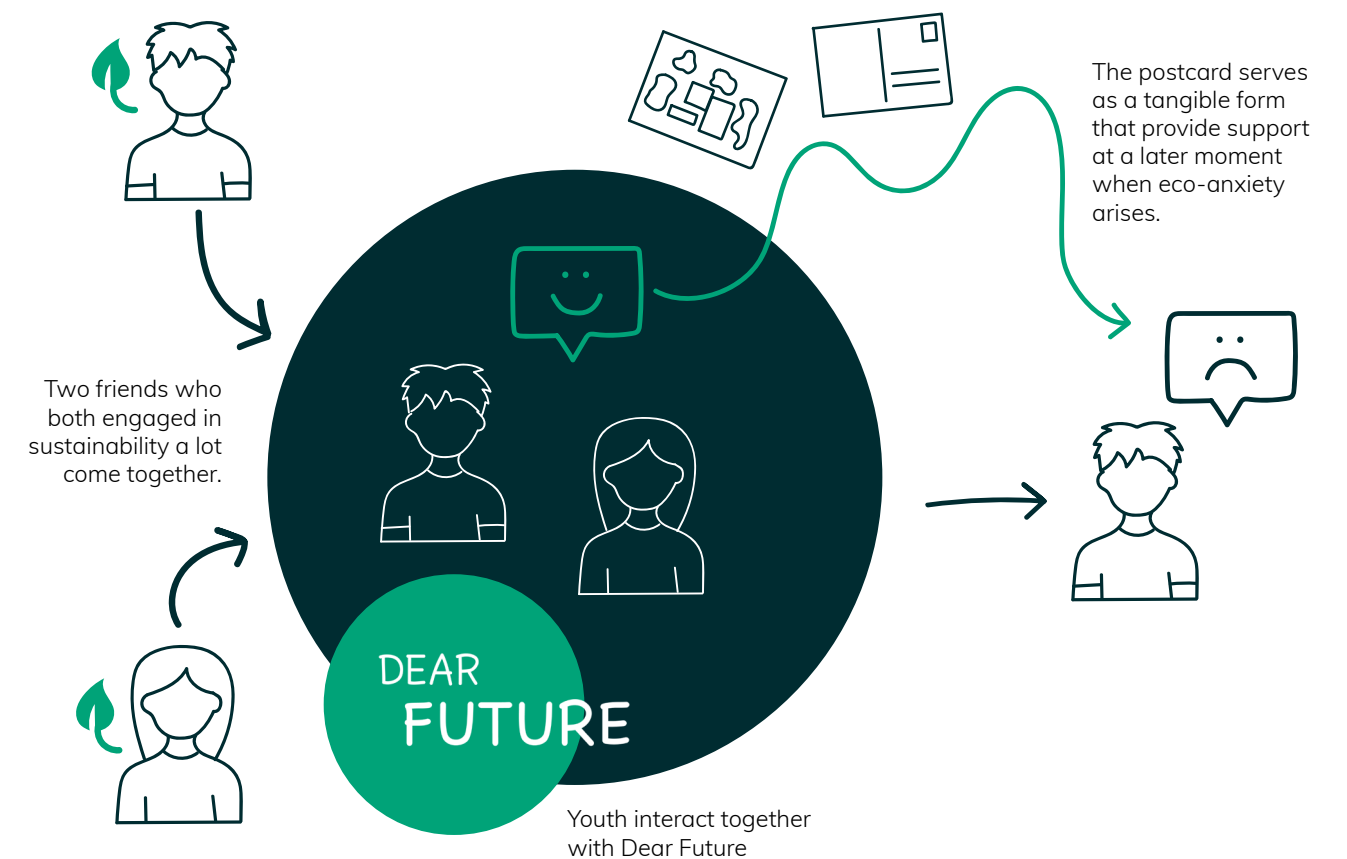


Figure 39: User scenario of Dear Future



## 2.3. Implementation

Several options are proposed how Dear Future can be distributed and implemented within the daily life of youth who experience eco-anxiety.

### Youth organizations

- Dear Future can be distributed to youth organizations connected with the Ministry. The Ministry of Health, Welfare, and Sport collaborates closely with youth organizations involved in general mental health. Similarly, the Ministry of Economic Affairs and Climate Policy has many connections with youth organizations focused on climate action. Here, many environmentally conscious youth can be targeted.

### Education

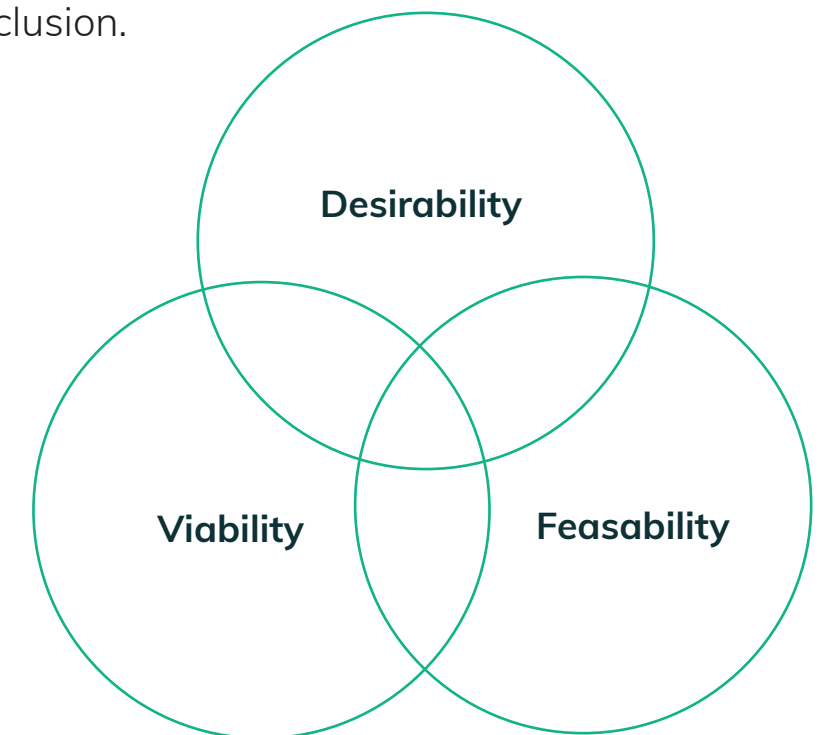
- Dear Future could be implemented at school courses like philosophy or sociology. Inspiration can be drawn from “Didactics of Hope” (Universiteit Utrecht and Stichting Technotrend, 2023), which is an initiative that provides course material for addressing eco-anxiety among youth during geography courses.
- Dear Future could also be implemented in studies that extensively cover climate change, such as biology or sustainability sciences. These fields attract many environmentally conscious youth.

### Online

- Dear Future can be featured on [www.klimaatpsychologie.com](http://www.klimaatpsychologie.com). On this website, there is a section dedicated to eco-anxiety tools for practitioners, where Dear Future can be made available. Practitioners and other experts who work closely with youth can be reached.
- Furthermore, Dear Future could be featured alongside toolkits that promote positive psychology at places like [www.thepositivepsychologyshop.com](http://www.thepositivepsychologyshop.com)

# Chapter 06 Validation

To validate the desirability, viability, and feasibility of Dear Future, multiple evaluation activities were conducted involving youth, policy advisors, and climate psychologists. This chapter outlines the procedures of each evaluation activity, presents results based on desirability, viability, and feasibility, provides a discussion on Dear Future's implications and ends with a conclusion.





## 01. Research process and methods

This section explains the procedures of the evaluation activities with youth, policy advisors and climate psychologists.

### 1.1. Participants

Participants of the validation sessions include youth, policy advisors and climate psychologists. Table 4 provides an overview of all participants. Some participants are recruited by re-asking from empirical studies, while others have not been involved in the project yet.

Participants first signed a consent for (see appendix 5). The session began with a brief explanation of Dear Future's context, after which participants interacted with the tool uninterrupted by the researcher. After finishing the interaction, some follow-up questions were asked. Youth participants received a €25 voucher as compensation. Figure 40, 41 and 42 shows pictures of the validation sessions.

## 1.2. Procedures

This section outlines the validating procedures conducted with youth, policy advisors and climate psychologists.

### 1.2.1. Youth

Two validation sessions were held with youth participants (n=3). One session involved two friends, while the other included a mother and daughter.

## List of youth participants

Participant number	Type of participant	Involved before?
YP1	Youth (19 years old)	Yes
YP7	Youth (21 years old)	Yes
YP9	Youth (19 years old)	No
SP6	Climate psychologist	Yes
SP7	Climate psychologist	No
SP8	Parent of YP7	No
PA	Policy advisors (n=5), part of team 'mental health' at the Ministry at HWS.	Yes

Table 4: List of participants for validation tests



Figure 40: Youth interacting with Dear Future.



Figure 41: Youth interacting with Dear Future.

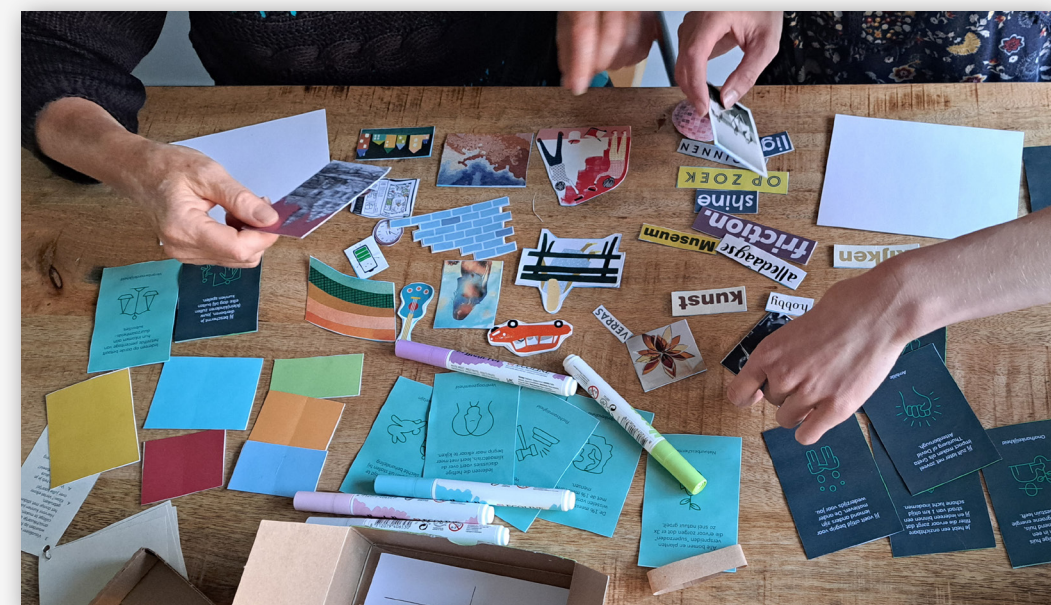


Figure 42: Mother and daughter interacting with Dear Future.



1.2.2. Policy advisors

An interview session was conducted with policy advisors from the Ministry of HWS (n=5) to assess the concept's long-term value (viability) and technical feasibility. The session began with a presentation of Dear Future, followed by additional questioning. Notes were taken manually.

1.2.3. Climate psychologists

Dear Future was digitally sent to climate psychologists (n=2) for feedback.

1.3. Data analysis

Data retrieved from the evaluation sessions with youth is analyzed by the following activities. First, the audio recordings are manually transcribed. Then, relevant quotes from participants are anonymously written down on post-its on a Miro board. Patterns and repeated ideas were found and these ideas were linked in overarching themes, reflecting the assessment criteria results.

Data from evaluations with policy advisors and climate psychologists is analyzed by writing down relevant quotes on a Miro board.

02. Results of desirability, viability, and feasibility assessment

This section presents the results of the desirability, viability and feasibility assessment.

"Normally it scares me to think about the future, because I think we will not reach the climate goals. But this concept let me think again about the future, but in a hopeful way." (YP9)

2.1. Desirability

The desirability is assessed by validating whether the design goal is achieved and whether the concept experience is evaluated as positive.

2.1.1. Achievement of design goal

The design goal is achieved when users are able to 01. reflect on their personal values and experience positive eco-emotions, 02. feel connected with each other, and 03. feel like the concept supports them during future experiences of eco-anxiety.

01. Can users reflect on their personal values and does this bring positive eco-emotions?

The users reflected on their personal values very well. Figure 43 presents one of the results of the reflection activity. Although all scenarios were desired, they had to think about which value they would really put on number 1. Sometimes it seemed like a user did not end up with their most preferable value, since another user already took it.

"It was interesting to think about what is important to me. All these scenarios are interesting, but what is really my number 1 value?" (YP1)

In addition, multiple positive eco-emotions were mentioned. Hope is mentioned 4 times, interest 3 times and motivation once.

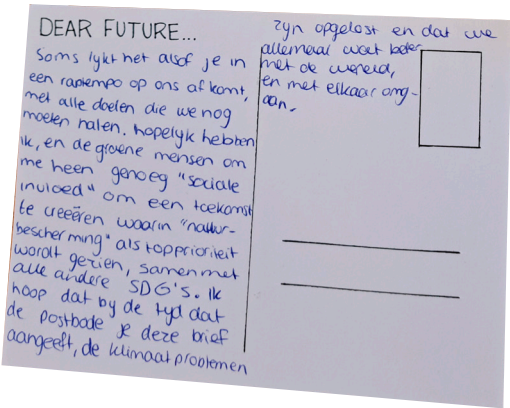


Figure 43: One of the results of the reflection activity.

Both climate psychologists agreed on the benefits of reflecting on personal values to cope with climate stress. They also suggest enhancing the concept by encouraging young people to think about small, concrete steps they can take that align with their own values.



**02.** Do users feel connected with each other?  
Dear Future serves as a conversation starter about the meaning of climate change and eco-anxiety.

"If you do not dare to talk about eco-anxiety, then this is an easy way to talk about it." (YP9)

"Whenever I feel negative about climate change, I know this person can support me because we share similar values. And I can share my worries with her, because she listens to me." (YP7)

"The aspect that the game is meant to be played with 2-3 people is particularly good. It makes it less individualistic." (SP6)

**03.** Does the concept provide support during future experiences of eco-anxiety?  
Some days after the session, all the users mentioned they placed their postcard somewhere at home, like on the fridge (see figure 44) or on their wardrobe. Two users mentioned the postcard brings positivity, everytime when they see it.

"Every time I look at the postcard, it makes me smile." (YP7)



Figure 44: one of the participants placed their postcard on the fridge.

**2.1.2. User experience**  
To determine how the concept experience could be improved, the design was evaluated using several criteria. These criteria were partly derived from the User Experience Questionnaire (Schrepp et al., 2014) and included attractiveness, perspicuity, stimulation, and novelty. Each criteria was measured through observations and follow-up questions.

**01.** How did the users experience attractiveness?  
Overall, not much was said about attractiveness, except for the green color of the box.

"It is green. It looks positive." (YP1)  
"I feel like the title and design are exactly right." (SP6)

**02.** How did the users experience perspicuity?  
In general, the concept was clear and well-received. It was especially helpful that the main activities were presented on the inside of the lid, allowing users to easily understand what to expect. However, some parts of the instruction booklet were unclear, particularly regarding the ability to swap values and the sticking images. These ambiguities have been addressed in the final version of the concept.

**03.** How did the users experience stimulation?  
All users felt stimulated when interacting with the concept. They felt interested, inspired and joyful. One user found it hard to visualize their values on the postcard.

"This scenario is hilarious!" (YP1)

**04.** How did the users experience novelty?  
The concept started a conversation between the users, which sometimes led to learning new perspectives from each other.

"I actually expected that you would choose world peace instead of responsibility."  
...  
"Aha, I have not considered this yet." (YP7)

**2.2. Viability**  
The viability was well assessed, since the concept aligns with the action plan: Good Mental Health for All, discussed in the introduction.

"This concept is valuable for our action plan, because this tool aims at prevention, it provides emotional support and it is a conversation starter." (PA)

**2.3. Feasibility**  
The policy advisors at the Ministry of HWS suggested several youth organizations that can distribute both physical and digital versions of the concept. These organizations can share the concept with either professionals or youth. The context in which the concept is implemented is important for youth. It was suggested that the concept could be placed in the office of the sustainable organization they are part of.

"I would play this game with others. But only when the timing is right and when the right type of person is there". (YP1)



## 03. Discussion on Dear Future's implications

This section explains how Dear Future addresses eco-anxiety through its three core principles: meaningful coping, social connection, and support for future experiences of eco-anxiety. These principles are discussed in relation to the assessment results and theoretical justification.

### 3.1. Meaningful coping

#### 3.1.1. Results assessment

Youth enjoy reflecting on their personal values and they are able to connect these values to the climate issue. Finding the value that truly matters most was a challenge for them, however, it resulted in a moment of reflection. Since Dear Future is played in a light-hearted and positive manner, reflecting on personal values offers hope.

#### 3.1.2. Theoretical justification

Desmet and Pohlmeier (2013) developed a framework for positive design that includes three key components: design for pleasure, design for personal significance, and design for virtue. These elements aim to enhance people's subjective well-being.

Dear Future aligns with two of these components. It encourages youth to reflect on their personal values (design for virtue) in a light-hearted and creative way (design for pleasure). Youth are not

only encouraged to reflect on their values but also to consider how these values are impacted by climate change. This approach fosters sustainable behavior driven by intrinsic motivation rather than problem-solving. This theory is supported by Ojala (2012), stating that children who draw on beliefs, values, and existential goals in response to climate change experience greater life satisfaction.

Besides that living a morally good life enhances well-being, reflection on personal values offer further benefits in addressing eco-anxiety. Climate psychologist Busschots (2023) notes that it can be challenging to determine if you are doing "enough" for sustainable behavior. Rather than comparing your actions to global needs, the most reliable source of satisfaction comes from measuring your "enough" by staying true to your values. Busschots also argues that discussing personal values can be helpful in conversations about climate change, especially with those who are not very engaged with the issue.

### 3.2. Social connection

#### 3.2.1. Results assessment

Dear Future serves as a conversation starter among users, encouraging emotional and meaningful interactions. This strengthens social connections between them. Additionally, when users experience negative eco-emotions over time, they can rely on the supportive social connections they developed through Dear Future.

#### 3.2.2. Theoretical justification

Dear Future encourages youth to discuss their personal values with others who share similar beliefs. Finding social

connection with like-minded people is effective in addressing eco-anxiety, as supported by literature. The Australian Conservation Foundation et al. (n.d.) highlight the importance of sharing concerns, thoughts, and feelings about climate change with trusted friends and colleagues, noting that relationships have a powerful and positive effect on coping with eco-anxiety. Similarly, Mock et al. (2019) found that maintaining social relationships with like-minded individuals who share common goals significantly contributes to subjective well-being.

### 3.3. Support for future experiences of eco-anxiety

#### 3.3.1. Results assessment

Dear Future translates the positive eco-emotions into a personalized tangible postcard. Youth expressed a desire to keep these cards and display them somewhere visible. Several users have noted that positive feelings arise when revisiting the postcard.

#### 3.3.2. Theoretical justification

The visual reflection activity on a postcard makes use of the IKEA effect: the more involved you are in creating something, the more you value the end result (Norton et al., 2011).



## 04. Recommendations for further exploration

This section outlines several recommendations for follow-up research.

### *Integrating sustainable action steps*

Dear Future could inspire youth to take small actions that align with their values. This approach helps them feel more committed to their values and gives them a sense of perspective in addressing climate issues.

### *Implementing Dear Future*

The final validation sessions focused on interaction between the product and youth, but research on implementing Dear Future is limited. This project suggests several options for implementation, but further research is recommended to effectively implement Dear Future.

### *Validating long-term effect*

More research is needed to validate the long-term effects of Dear Future. This should be done with a variety of youth experiencing eco-anxiety. It would also be interesting to test its impact on other age groups, such as young children and young adults.

### *Designing interventions for processing negative eco-emotions*

Dear Future focuses on positive eco-emotions to manage eco-anxiety. While fostering positive emotions is crucial, acknowledging negative ones is equally important. This project did not address negative eco-emotions due to time constraints. Therefore, it is recommended that follow-up research should focus on designing interventions for processing negative eco-emotions.

### *Incorporating values in climate discussions*

Youth have responded positively to reflecting on personal values and connecting them to climate change. One participant suggested playing Dear Future with an older generation to bridge the abstract nature of climate change. Follow-up research on integrating values into climate discussions, especially with differing perspectives, is recommended.

## 05. Conclusion

This section concludes whether the design goal is achieved based on the validation results.

Youth do foster positive eco-emotions by interacting with Dear Future. Reflecting on personal values with a like-minded person sparks meaningful conversations that offer recognition and support. Children who draw on beliefs, values and existential goals in response to climate change experience greater life satisfaction (Ojala, 2012). Furthermore, the light-hearted and creative activities within Dear Future provide stimulation and joy.

Although it is not clear whether Dear Future supports youth when negative eco-emotions arise at a later moment, it does offer supportive elements. Youth like to display the self-made postcard in visible places. When they look at it, it brings back positive memories. Additionally, one young person mentioned they now know where to seek support when negative eco-emotions arise, because they had a meaningful conversation with someone who shares similar values.

Improvements to Dear Future can be made by exploring how sustainable action steps can be integrated into the concept. Additionally, further research is recommended to explore effective implementation strategies and to validate the long-term effects of Dear Future, including ways to address negative eco-emotions. Lastly, follow-up research on incorporating Dear Future into climate discussions with people of differing perspectives could provide an interesting new direction.

### Design goal

The design intervention should assist youth (aged 15-21) experiencing eco-anxiety, in **fostering positive eco-emotions with someone who is environmentally conscious.**

This provides support for addressing eco-anxiety when negative eco-emotions arise at a later moment.



# Chapter 07

## Afterword

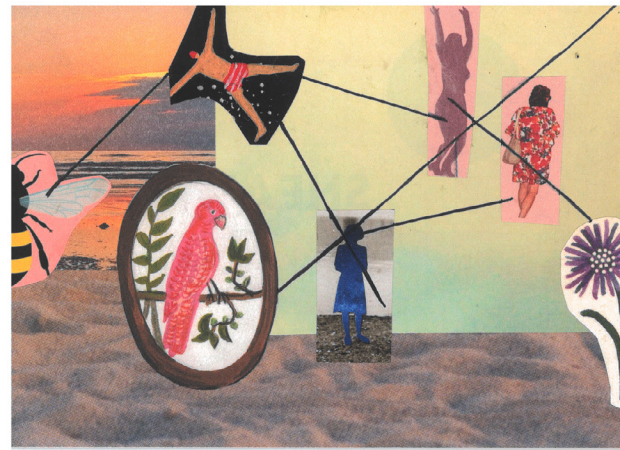
### 1. Personal reflection

My thesis has provided me with valuable experiences in project management, design activities, academic writing, and insights into government work. However, what I will carry with me most throughout my life is learning how to personally cope with eco-anxiety.

I have always been engaged with sustainability, but I have never delved so deeply into the emotional aspects until now—and it has been a great learning experience. Initially, I was skeptical about hope as a coping strategy and I questioned whether this truly considers the urgency of our environmental challenges. Yet, through my thesis, I have come to understand hope in a different way. Hope is not just about optimism for a positive outcome but finding personal meaning and purpose in what matters most to me.

From now on, I will derive my motivation in acting towards sustainable goals from my own personal values. I have no control over what happens in the world, but I do have control over how I choose to behave. This realization gives me confidence that pursuing these values will bring me happiness, regardless of uncertainties that could trigger eco-anxiety.

To keep my thesis close to heart, I have created a personal postcard myself. I found my personal values through the positive dilemma game: connection with nature and responsibility. This postcard now hangs on my wall at home.



### 2. Word of thanks

This project was made possible with the help of several individuals whom I would like to thank.

First, I would like to thank my IDE supervisors, Jotte de Koning and Zhuochao Peng, for their enthusiasm in guiding the project. I greatly appreciate all the feedback I received throughout the project.

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# Chapter 08

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