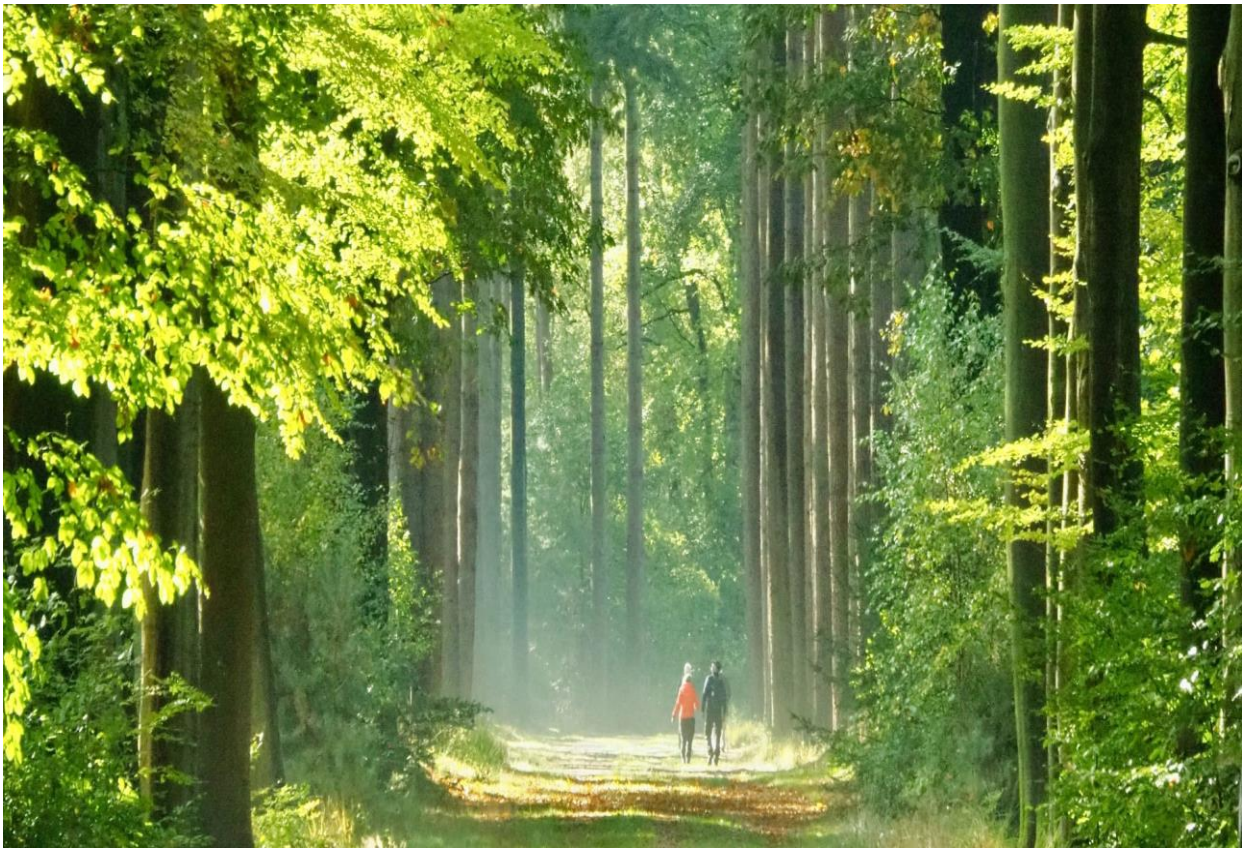
Towards a sustainable Nature Futures Framework: evaluating relational values through stakeholder visions for a desirable future in the Lauwers basin

Luka Blankevoort (reg. nr. 1042818)

MSc Thesis in Climate Studies

2024/07



Supervised by: Jay Marisca Gietzelt & Federico Andreotti

Course code: ESA80436

Environmental Systems Analysis

“Towards a sustainable Nature Futures Framework: evaluating relational values through stakeholder visions for a desirable future in the Lauwers basin”

Luka Blankevoort (reg. nr. 1042818)

MSc Thesis in Climate Studies

2024/07

Supervisors:

1) **Jay Marisca Gietzelt (ESA) jay.gietzelt@wur.nl**
2) **Federico Andreotti (FSE) federico.andreotti@wur.nl**

Examiner:

3) **Kasper Kok (ESA) kasper.kok@wur.nl**

Glossary of terms

Term	Definition
Climate change adaptation policy	Policy for actions to respond to current and future climate change impacts
Climate change mitigation policy	Policy for actions to minimize climate change and, typically, reduce greenhouse gas emissions
Human-nature dichotomy	A worldview that holds a conceptual dichotomy or separation between humans and the natural world
Human-nature values	Principles and beliefs that represent how humans perceive, interact with, and prioritize the natural world
Human-nature relations	The numerous ways humans interact with, depend on, and impact the natural environment
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
Nature Futures Framework	Policymaking tool to envision desirable and sustainable future scenarios for nature and human well-being
Stakeholder	A person on whose livelihood policies have effect, thus who have an interest or concern in policy
Value system	A set of principles and beliefs that guide an individual's or group's behaviour, decision-making, and prioritization of what is important in life
Worldview	A framework of beliefs and attitudes through which individuals interpret and understand the world around them

Preface

This thesis marks the culmination of my academic journey in MSc Climate Studies at Wageningen University and Research. The study experience has been both challenging and deeply enriching, because it allowed me to delve into problematic and regenerative relationships between humans and nature. The focus of this research on relational values has come to me whilst doing my internship at NatuurCollege in 2022, where the concept seemed to pop up often in the context of developing positive relationships with nature. My goal has been to contribute to a more nuanced understanding of how relational values can be integrated into policy frameworks, ultimately leading to more inclusive, effective and sustainable environmental and climate strategies.

I would like to express my gratitude to my supervisor, Jay Marisca Gietzelt, for her guidance, trust and insightful feedback throughout the development and execution of this unconventional research design. Despite my MSc Climate Studies curriculum not including arts-based research methods, Jay supported my interest in this approach. Her critical and helpful reviews of my data analysis and coding process were crucial, and I greatly appreciate her as a supervisor.

My thanks is extended to dr. Federico Andreotti, who took over supervision. Your feedback was very clear and helpful. Thank you.

I am also deeply thankful for the participants of this study, offering their time, perspectives and feedback, which were paramount for the depth of this study.

Two scholars have spent their precious time to keep me self-confident about the research, for which I am very thankful. Thank you dr. Wander Jager (RUG) and Bas Verschuuren PhD (WUR) for your time and support.

Special thanks to my family (Klaas, Martine, Nickel, Mink, Kris, Caspar, Marijn, Moos) and friends (Wytze, Béla, Eva) for their unwavering support.

This thesis is dedicated to all those who strive to understand and improve regenerative relationships between humans and nature. I hope that the findings and insights presented here will contribute to ongoing efforts to create sustainable and harmonious futures for both people and the planet.

Sincerely,

Luka Blankevoort

24/06/2024

Abstract

The Anthropocene necessitates fundamental, radical transformations towards positive and reciprocal relationships between humans and 'the rest of' the natural world. The need for desirable futures and inclusive strategies toward such futures has led the development of the Nature Futures Framework (NFF), which categorizes human-nature values into intrinsic, instrumental and relational values. Scholars have extended and critiqued this tripartite conceptualization, but the adequacy of its foundations remain unclear. It is not studied what is gained and lost by understanding values in terms of these three categories. Against the backdrop of this gap in literature, this study aims to evaluate the NFF by exploring the role of relational values in value systems. It investigates how relational values manifest in value systems of stakeholders in the Lauwers river basin and what this reveals about the adequacy of NFF's categories of intrinsic, instrumental, and relational values. This thesis thereby answers to the calls of scholars 1) to help refine the NFF, and: 2) to explore relational values through qualitative methodologies and context-specific methods. Therefore, we employ qualitative and arts-based methods, such as a visioning exercise, drawing analysis and outdoor walking interview, to gather in-depth and context-specific insights into stakeholders' human-nature values. The participatory methodology emphasizes stakeholder agency, allowing participants to shape the focus of their contributions, thereby reflecting the authenticity of their values. The drawings and interview transcripts were coded and thematically analysed. They were then visually and analytically mapped on to the NFF to uncover challenges in translation from the values on the ground to the framework. The findings of this study indicate several key challenges in translating stakeholder values to the NFF, including (1) uneven distribution over categories with more frequency and variety within relational values as opposed to intrinsic and instrumental values, (2) negative perceptions on instrumental values, (3) overlap between categories, and (4) moving beyond the concept of intrinsic values' human-nature dichotomy. These challenges highlight the limitations of the current NFF structure to accurately capture the plural values of stakeholders on the ground. This suggests the need for a significant transformation of the NFF to accurately represent the plurality of human-nature values held by stakeholders. The discussion provides the groundwork to better understand potential pathways of refining the NFF based on the findings. More research is needed on the question how to transform the challenges posed in this study into opportunities for refining the NFF. Also, future research could explore the power dynamics involved in the development of frameworks like the NFF to understand how to implement necessary refinements effectively.

Key words: Nature Futures Framework, relational values, desirable future visions, arts-based research methods

Table of contents

1. Introduction

Background

Societal context: need for positive visions

There is evidence that in the coming years climate change will confront the world with challenges in ecosystems (Parmesan and Yohe 2003), river basins (Palmer et al. 2008), food security (Wheeler and Von Braun 2013) and human health (Patz et al. 2005). The current trends of human's relationships with the planet have led to the coining of the term Anthropocene (Steffen et al. 2011), defined as the current epoch period of time in which human impact on this planet is forming unprecedented challenges (Gaffney and Steffen 2017). These challenges are driven by unsustainable human practices and worldviews. The Anthropocene necessitates fundamental, radical transformations in human's relationship with the rest of the nature (Cork et al. 2023), from a mode of unsustainable practices and exploitative worldviews towards a mode of interactions characterised by sustainable practices, positive relationships and conviviality amongst living beings.

Such a transformation does not merely require technological or economic developments but also more fundamentally requires a change in the way we view ourselves in relation to the planet and the natural world (Bai et al. 2016). In her book *Braiding Sweetgrass*, (Native) American author and scholar Robin Wall Kimmerer tells one specific story which involves Kimmerer asking her students to name examples of positive interactions between humans and nature (Kimmerer, 2015). The students typically struggle to come up with one example of a positive relationship between humans and nature, but can very well mention numerous negative impacts of humans on the natural world. This is highlighting a broader cultural issue where the focus tends to be on negative impacts rather than positive, reciprocal relationships. It is a commonly held view that a shift in cultural narratives about our relationships with the natural world can significantly contribute to a more sustainable world (Soini and Birkeland 2014).

Scientific and policy context: Plural nature values debate

Positive visions have received considerable attention within academia. It is thought that by thoroughly understanding people's visions on a *desirable* future, we can begin to unravel the complexity and richness of human-nature relationships that are positive, nourishing, and regenerative (Ragnarsdottir 2022). This requires that humans practice and foster their ability to envision futures that are desirable and sustainable (Cork et al. 2023). Therefore, a body of literature is growing that focuses on envisioning desirable futures and pathways towards such futures (Bai et al. 2016; Cork et al. 2023). Both scholars and professionals from multiple disciplines have developed and refined visioning exercises to let humans explore their visions for a desirable future. Previous research has established that by integrating the insights from positive visions into policymaking, it can foster a more holistic and positive approach, ultimately driving sustainable policies and outcomes (Gorddard et al. 2016; Neuhoff, Simeone, and Laursen 2023).

The internationally agreed vision under the Convention on Biological Diversity known as "Living in harmony with nature." is stressing that by 2050, "biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people" (Durán *et al.*, 2023, p.1). Number of studies have highlighted a lack of comprehensive scenarios and models that explore the positive visions for 2050 within the context of "living in harmony with nature." (Durán et al. 2023). To bridge this gap, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystems (IPBES) has developed the Nature Futures Framework (NFF), to promote the development of new scenarios and models that incorporate a variety

of perspectives on desirable futures for nature and people. The underlying assumption is that for policies to achieve their goals, it is important to incorporate diverse perspectives on human-nature values, as adopting these perspectives ensures policies are inclusive and effective (Hensler, Merc, and Vilsmaier 2021; Himes and Muraca 2018). Incorporating diverse human-nature values refers to the process of considering the plural ways various stakeholders can value nature (Hensler et al. 2021). The scientific community poses that transparency and reflection on human-nature values is a step toward more constructive use of diversity (Martin et al. 2024). Incorporating plural values ensures that strategies towards sustainable futures are not dominated by a single vision, but representative of a wide array of values.

Understanding human-nature values

The way human-nature values are understood has evolved throughout history. Human-nature values are defined as the ways in which people perceive, relate to and value the natural world (Díaz et al. 2015). Previously, scholars have operationalized and understood nature values in terms of two distinct types: intrinsic and instrumental values (Arias-Arévalo et al. 2018). Intrinsic values refer to the inherent worth of nature, independent of human use or benefit (ibid.). This perspective views nature as valuable in and of itself, deserving of protection and preservation for its own sake. Instrumental values emphasise the utility of nature to humans, valuing nature for its resources and ecosystem services, such as raw materials, food, and ecological functions like air and water purification (Díaz et al. 2015). Due to wide and broad criticism to this dichotomic understanding, however, fairly recently there has been a significant development among scholars, broadening the binary understanding of nature values with the introduction of a third concept: relational values (Bai et al. 2016; Chan et al. 2016; Chan, Gould, and Pascual 2018).

The concept relational has become a cornerstone concept for those advocating for a more holistic and integrated approach to valuing nature in the domain of policy (Luque-Lora 2022). Relational values have been discussed in literature for decades, but gained popularity since the IPBES used it in the NFF (Chan et al. 2016). Relational values are defined as: the preferences, principles, and virtues associated with relationships between humans and nature and amongst humans in nature, both interpersonal and as articulated by policies and social norms (Chan et al. 2016). Scholars who have used the term relational values argue that it provides opportunities for articulating the kinds of values that are essential for driving transformational shifts towards sustainable futures (Chan et al. 2018; Muradian and Pascual 2018; Pascual et al. 2017). Relational values emphasize that nature and humans are being composed out of and embodied by the relationships that define interactions within the natural world as a whole (Himes and Muraca 2018). Relational values aim to extend the dichotomic understanding of intrinsic and instrumental value of nature, by giving space the consideration of relationships within the web of life.

Problem statement

Poorly known effects of relational values next to intrinsic and instrumental

Understanding human-nature values has commonly relied upon an operationalization of values into three distinct value types: intrinsic-instrumental-relational. This approach is prominently featured in the IPBES and other influential institutes, and widely adopted by scholars alike (Díaz et al. 2015; Martin et al. 2024). Hence, the implications of this operationalization are profound, significantly influencing both research, policy-making and society at large (Díaz et al. 2015; Pascual et al. 2017). However, a deeper interrogation of the foundations underlying this tripartite framework remains in the margins of academic research (Luque-Lora 2022). Such an analysis ensures that the NFF and similar nature value frameworks are robust, inclusive and reflective of how people in reality value and interact

with nature. Insight into how relational values may represent an extension to and improvement of the former dichotomic valuation of nature is required to understand potential ways of valuing and relating to nature that foster sustainable futures.

Research gap

Scholars have devoted much time and attention to the power of positive visions for working towards sustainable futures, the importance of plural values of nature in building strategies towards those visions. A popular perspective is that a tripartite framework of intrinsic - instrumental - relational values holds considerable potential to capture these plural values. However, a perspective that has gained little attention is analysing the adequacy and usefulness of operationalizing human-nature values into these three categories. The NFF has been used in many studies and practical workshops around the world as theoretical and analytical framework, but we do not yet fully understand the implications of the use of three value categories. The implications of incorporating relational values as a third category in valuing nature remain underexplored. Specifically, there is a lack of understanding regarding the potential gains and losses when understanding the values of individuals or groups using these three categories—intrinsic, instrumental, and relational—outlined in the NFF. Research is needed to understand the effects and effectiveness of this tripartite framework in capturing the nuances and complexities of human-nature values.

Researching relationality and how it is manifesting in value systems may contribute to further visioning sustainable futures as well as well-suited and inclusive strategies towards such futures, in the Netherlands and in the world beyond. This highlights the great societal and academic relevance of research into relational values and their role in visions for sustainable futures, and locates a gap in the literature that needs to be addressed. This thesis will address this research gap.

Thesis goals

This thesis seeks to extent relational thinking by understanding the role of relational values in stakeholders' human-nature value systems. Specifically, it aims to gain insight into the challenges of translating stakeholders' values to a common nature value framework; the NFF. The goal is to understand what is gained and what is lost by operationalizing values in three categories in the NFF to represents the values of stakeholders. This thesis is, therefore, answering to the call of NFF developers to help refine the model (Pereira et al. 2020).

Also, the approach of this thesis aims to amplify the voices of stakeholders in the North of the Netherlands, who will have to deal with the implications of climate change mitigation and adaptation strategies. This will potentially lead to more inclusive and effective climate change mitigation and adaptation strategies.

Lastly, and most importantly, this thesis aims to promote relational thinking and valuation as a way of addressing contemporary challenges. This is in response to and rooted in the critical trajectory of human-nature relationships that have led to current wicked problems mentioned above, and is aiming to recalibrate human's relationships with the planet, contributing to a future where human and ecological well-being are mutually supportive.

Against this problem background and thesis goals, this thesis will answer the following main research question:

In what ways does relationality manifest in human-nature values of stakeholders in the Lauwers river basin, and what does this reveal about the adequacy of the NFF value categories of intrinsic, instrumental and relational?

Thesis outline

Before dividing the main research question into sub-questions, key concepts and relevant literature need to be discussed. Therefore, this thesis will proceed as following: firstly, chapter 2 will review the relevant literature and concepts. Towards the end, three objectives will be put forth and relative sub-questions will be discussed. Chapter 3 will explain the methodology and methods, in which also the case study the Lauwers river basin will be introduced. Chapter 4 will present the findings. Chapter 5 will present the discussion, and finally, chapter 6 concludes the findings and puts forth an answer to the main research question.

2. Literature review

In this chapter, the relevant literature and concepts for this study will be introduced. The sections will proceed as following: firstly, the NFF will be explained, with particular attention to the conceptualization of human-nature values into three categories. Then, the link between NFF and relational values will be explained. The current state of the debate on relational values will be discussed. The aim is to show a gap in the literature which this thesis aims to address. Finally, the research questions will be put forth that will address this gap.

2.1. Nature Futures Framework

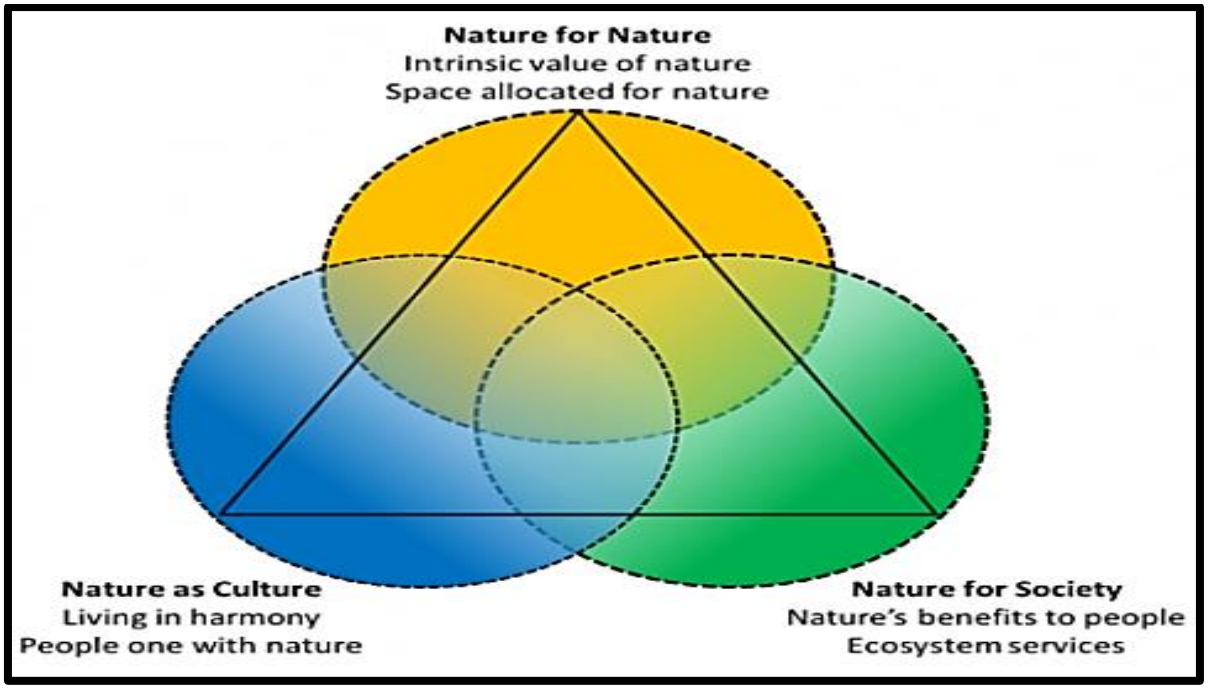


Figure 1: a visual representation of the Nature Futures Framework. Visible is the operationalization of human-nature values into three distinct categories: Nature for Nature (intrinsic values), Nature for Society (Instrumental values) and Nature as Culture (relational values) (Pereira et al., 2020).

The Nature Futures Framework (NFF) is a conceptual tool developed by experts of IPBES (see Figure 1). The NFF aims to be able to support the development of scenarios and models of desirable futures and sustainable pathways towards those futures. The framework aims to provide a structured way to envision and discuss diverse perspectives about sustainable, desirable futures and the role of nature therein (Cork et al. 2023; Pereira et al. 2020). It is designed to capture a diversity and multiplicity of values toward nature (Pereira et al. 2020). The framework can capture the plurality of human-nature values, which is important because diverse (groups of) people can have varied values and relations to nature (Pascual et al. 2017; Tengö et al. 2017).

The NFF is built in a triangle structure, which represents three ways of valuing nature (see Figure 1). The colour gradient in the triangle represents the possibility of overlap in diverse values to nature, acknowledging that individuals and groups can value nature in diverse, often overlapping ways (Pereira et al. 2020). The categorization is, thus, not mutually exclusive but represents a spectrum.

2.1.1. History of development of NFF

It is important to understand the process of development of the NFF, before diving deeper into the concepts. The NFF was developed in 2017 through a global participatory visioning workshop held in Auckland, New Zealand, with 73 participants from 31 countries (Pereira et al. 2020). The participants were selected to represent all United Nations regions, and a wide range of stakeholders including the private sector, NGOs, academia, national government representatives, intergovernmental organisations and indigenous communities, and also encompassed a broad range of sectors that relate to biodiversity (ibid.). Hence, the stakeholder selection was designed to have perspective diversity. The aim of the workshop was to foster bottom-up varied visions for the future, as outlined by Pereira *et al.*(2020). From the articulation of multiple perspectives on future scenarios by the stakeholders, the NFF was drafted to make sure that it is usable to capture the varied and multiple values that stakeholders can have toward nature.

2.1.2. Human-nature values in three categories: intrinsic, instrumental and relational values

The framework represents three ways in which groups and individuals can value nature (Pereira et al. 2020). The angles of the triangle represent the three ways in which people value nature, each angle representing a mode of valuation (see Figure 1):

1) Nature for Nature: This perspective centres on the intrinsic value of nature. It posits that nature possesses value in and of itself, independent of human use or enjoyment. The preservation of nature's diversity and its ecological functions is considered of primary importance under this viewpoint. This perspective aligns with conservation approaches that prioritise the protection of biodiversity for its own sake, emphasising the intrinsic worth of all living beings and ecological processes.

2) Nature for Society: In contrast, the Nature for Society perspective sees nature primarily for its instrumental value, i.e. the benefits or utilities it provides to humans. This instrumental view sees nature as a provider of ecosystem services, such as food, raw materials, and climate regulation, essential for human survival and well-being. Under this lens, nature is often valued and managed to optimise these benefits, leading to strategies that seek to balance the sustainable use of natural resources with economic needs.

3) Nature as Culture: This perspective highlights the relational values humans have towards nature. It perceives humans as an integral part of nature, emphasising the reciprocal and co-evolving relationships between people and their natural environments. This view values the cultural, spiritual, and identity-related aspects of human-nature interactions. It recognizes the ways in which cultural practices, knowledge systems, and worldviews shape and are shaped by the natural world. This perspective often features prominently in Indigenous and local knowledge systems, where nature is seen as a living entity with which communities have a local and possibly ancestral connection.

2.2. Relational values and its link to the NFF

Understanding plural values on nature sets the stage for a deeper exploration of how we relate to the natural world. This brings us to the evolving debate on relational values. Relational values as a concept has roots in various philosophical disciplines, and began to gain significance in sustainability and environmental ethics discourse in the early 21st century (Muraca 2016).

2.2.1. History of intrinsic and instrumental dichotomy

Historically, environmental values were typically understood in terms of two kinds: intrinsic and instrumental values (Chan et al. 2018). Intrinsic values refer to the value nature has in itself, independent of any benefits nature may bring to humans (Arias-Arévalo, Martín-López, and Gómez-Baggethun 2017; Piccolo 2017). Here, the term value is referring to the worth or to a purpose beyond human use, adopting a viewpoint that extends beyond human-centric considerations (Díaz et al. 2015; Pascual et al. 2017). The principle that nature deserves protection for its own merits, not just for what it can provide to humans, is underscored here (Feucht, Dierkes, and Kleespies 2023). Also, institutions advocating for 'rights of nature' are commonly rooted in intrinsic values (Martin et al. 2024). Instrumental values refer to the value nature has for its use for people (Jax et al. 2013; Pascual et al. 2010; Tallis and Lubchenco 2014). These values are dependent on the benefits nature brings to humans, thus underscoring that nature's preservation is crucial for human health and development (Díaz et al. 2015, 2018; Pascual et al. 2017). What is important here, is that instrumental values imply that natural elements can be considered *replaceable*, provided that their substitutes perform identical functions (Himes and Muraca 2018). Ecosystem services are generally perceived under this category (Feucht et al. 2023; Reyers et al. 2012). Ecosystem services are the benefits humans derive from natural ecosystems, including provisioning (e.g., food and water), regulating (e.g., climate control), cultural (e.g., recreational and spiritual), and supporting (e.g., nutrient cycling) services (Pascual et al. 2017).

2.2.2. Overcoming the dichotomy - the rise of relational values

The dichotomy of intrinsic and instrumental values was criticized for overlooking the diverse relationships nature sustains, leading to the adoption of the term relational values, to better represent how humans value and interact with nature (Chan et al. 2016, 2018). Relational values are defined as "preferences, principles, and virtues associated with relationships, both interpersonal and as articulated by policies and social norms" (Chan *et al.*, 2016, p.1). Relational values can also imply responsibilities toward nature, which can manifest as ethical principles and eudaimonic values , reflecting a vision of 'a good life' marked by fairness, well-being, and social accountability (Díaz et al. 2018). It is said that relational values are not established in entities, as is the case with intrinsic and instrumental values, but emerge from relationships with them (Chan et al. 2016). For instance, certain landscapes can hold special significance to individuals who have personal histories tied to these places, and in this case the value is not in the landscape but in the relations to the landscape (Neuteleers 2020). This intertwines aspects of nature with personal and cultural identity (Chan et al. 2016; Feucht et al. 2023; Neuteleers 2020). The difference between relational values and instrumental values of, say, cultural ecosystem services, is that the latter focus on the utilitarian benefits humans gain from nature, such as recreation and aesthetic enjoyment, whereas relational values emphasize the meaningful relationships and interdependencies between humans and nature, beyond mere utility (Neuteleers 2020). Importantly, this highlights the irreplaceability of things with relational value, a key difference from instrumental values (Himes and Muraca 2018). This debate, however, is not settled, as scholars argue that cultural ecosystem services have relational rather than instrumental values (Chan *et al.*, 2016; Arias-Arévalo *et al.*, 2018), or at least possess aspects beyond mere utility (Díaz et al. 2015; Luque-Lora 2022).

2.2.3. Scholars' use of relational values

As relational values gained attention, scholars have elaborated on the concept. For example, Muradian and Pascual (2018) have studied how relational values intersect with notions of wellbeing. Neuteleers (2020) uses an environmental ethics approach to make distinctions between relational and other kinds of values. Also, Sheremata (2018) has studied how relational values have the potential to include perspectives of Inuit people in environmental decision-making. De Vos *et al.* (2018) argued that

studying relational values can benefit from place-focused approaches. Jones and Tobin (2018) argue that relational values can motivate the development of sustainable agricultural practices. Gilliand (2021) has conducted a phenomenological approach to studying relational values and argues that relational values appear as events of participation in and interaction with the (non-)human world. In any way, the IPBES significantly popularized relational values through the NFF, leading to their frequent inclusion in literature and policymaking (Luque-Lora, 2022).

2.2.4. The current debate on relational values

However, more recent scholarly debates have seen some pushbacks against this categorization of values. Critics argue that the compartmentalization into intrinsic, instrumental and relational may oversimplify the complexity of human-nature relationships (Neuteleers 2020), and, moreover, confine rather than promote relational thinking (Luque-Lora 2022). An interesting critique is posed by Luque-Lora (2022), who acknowledges the foundational work of previous scholars but argues that in the eagerness to categorise and distil values on nature into distinct types, there may be an inadvertent yet critical oversight. The term relational values as a sub-category, in his view, inadvertently obscures the relationality inherently present in all human-nature values. This would potentially hinder rather than extend holistic relational understanding of human-nature relations. Luque-Lora's critique (2022) serves as both a continuation and a disruption of the discourse on relational values. While he affirms the importance of relationality as recognized by earlier scholars, he simultaneously challenges the field to reconsider the implications of separating relational values from other forms. He goes on to point out the risk of 'epistemic violence' by ignoring the relationality inherent in all values, epistemic violence against those whose value systems do integrate relationality. An argument also posed by various other scholars (e.g. Urzedo and Robinson, 2023). He strengthens his philosophical argument with ethnographic data on Mapuche people in Chile, which shows that the value systems of Mapuche people seamlessly blend intrinsic, instrumental and relational elements, and which exemplifies the integrated nature of values in indigenous cultures (referenced by Muraca, 2016 and Knippenberg *et al.*, 2018).

2.2.5. Risk of relational values

The current trajectory of relational values as a concept, in Luque-Lora's view, runs the risk of entrenching and fortifying non-relational versions of values. Hence, he warns for the potential consequences of perpetuating injustices against those who perceive values through a profoundly relational lens, as well as the potential of continuing the problematic, non-relational worldview that gave rise to the many sustainability problems the Anthropocene faces. In short, the concept can confine, rather than expend relational thinking (Luque-Lora 2022). Recent research in the analysis presented by Urdezo and Robinson (2023) in 'Decolonizing ecosystem valuation to sustain Indigenous worldviews', sheds light on the limitations of mainstream nature accounting systems and methods, which often rely on utilitarian logics. These mainstream approaches tend to reinforce anthropocentric principles and marketization of nature, while excluding Indigenous knowledge and value systems. Importantly, the article also shows how groups of Indigenous people have contested and decolonized these scientific approaches, asserting the legitimacy of place-based approaches and relational values. These initiatives are diverse and highlight the agency to disrupt the conceptual separation of nature from humanity through practices that embrace and sustain the interconnectedness of social-cultural-ecological systems.

This sets the stage for further empirical investigation - a gap this research aims to address by exploring how relationality manifests in the values and visions of stakeholders in the Lauwers river basin. The question arises: what would be the implications of understanding human-nature values in three categories versus as inherently relational?

2.3. Gap in research and research questions

Unknown relevance and implications of relational values as category in the NFF

Even though the critiques on relational values are societally and scientifically relevant, there is limited scholarly engagement with these concerns. The concept continues to gain traction without fundamentally addressing the scholar's critiques. At the start of this thesis (23/11/2023), there had been three articles in conversation with Luque-Lora (2022). At the time of writing this text (19/06/2024), his paper has been references seven times. The paper which most elaborately engages with the concern is by Feucht, Dierkes and Kleespies (2023). The article studies how intrinsic, instrumental and relational dimensions of values on nature are held by various student groups in Germany, to determine whether certain student groups are more concerned with relational values than others. It conducts a quantitative research method, using a questionnaire with statements that describe pre-determined meanings people can attribute to nature, which represent the three categories of intrinsic, instrumental and relational values. In other words, the approach has used the three dimensions of values to test how these resonate in various student groups. Despite its interesting insights, this research approach does not allow for exploring whether relationality is inherently part of students' value systems. It fails to assess whether relationality is integrated into the first two categories, thus not fully addressing the relevance and adequacy of adding a third category to the operationalization of human-nature values.

Luque-Lora says that people do not value nature in three distinct categories, as theorists such as Feuchts, Dierkes and Kleespies (2023) suggest. He says: "By confining relationality to a third category, the notion of relational values is bound to misrepresent how many people actually value the natural world, paradoxically perpetuating the very non-relational logics that it intended to address," (Luque-Lora, 2022, p.26). Hence, he calls for a shift towards an understanding of human-nature values that acknowledges relationality inherent in how people act and feel towards nature. To my best knowledge, the application of Luque-Lora's critique in a case study setting has yet to be explored beyond his own work in Chile. Consequently, a research gap exists in qualitatively exploring the ways in which relationality manifests in values and the relevance and implications of the NFF three categories of intrinsic, instrumental and relational values.

This thesis will engage with the complexities and controversies surrounding the operationalization of values into three categories. The research approach will seek to apply the critique formulated by Luque-Lora (Luque-Lora 2022). By exploring the interplay and integration of relational values with intrinsic and instrumental values, this research could (1) uncover the ways in which individuals and communities value and desire to engage with their environment and (2) provide insights into the usefulness of the three categories in the conceptualization of values that has gained popularity and is widely used since the IPBES, which may contribute to further refining the NFF.

Research Questions

This research gap gave rise to the following research question:

In what ways does relationality manifest in human-nature values of stakeholders in the North of the Netherlands, and what does this reveal about the adequacy of the NFF value categories of intrinsic, instrumental and relational?

In order to answer this main research question, the following sub-questions have been drafted:

1) How do stakeholders in the Lauwers basin envision a desirable and sustainable future?
2) Which human-nature values underlie these visions?
3) How can stakeholders' values be translated to the NFF's value categories of intrinsic, instrumental and relational?

Table 1 shows the research questions relative to the research objectives and the methods.

Table 1: the research objectives and research questions and methods of this thesis

Objective	Question	Method(s)
To explore the ways in which stakeholders in the Lauwers river basin envision desirable and sustainable futures	How do stakeholders in the Lauwers river basin envision a desirable and sustainable future?	Visioning exercise, drawing and unstructured talk. Through a visioning exercise stakeholders explore their visions for a desirable, sustainable future. Through the subsequent drawing exercise, stakeholders communicate their visions. This is followed by an unstructured, informal talk to enlarge the correct interpretation of the drawing.
To understand which human-nature values underlie these visions	Which human-nature values underlie these visions?	Semi-structured walking interview Through semi-structured walking interview, data is collected on how participants value and relate to nature. The data is analysed by conducting thematic coding, in which themes emerge from the data. The codes represent the values underlying the visions.
To understand the role of relationality in the stakeholders' values and to assess the usefulness of NFF's conceptualisation of values	How can stakeholders' values be translated to the NFF's value categories of intrinsic, instrumental and relational?	Data analysis and critical thinking Through data analysis, it will be analysed how relationality is present in the articulated values of stakeholders. Then, the articulated values are mapped onto the NFF. Critical thinking is conducted to see if and what challenges arise in this translation to the framework

Scope of the study

The scope of this study is to analyse human-nature value systems of stakeholders in the Lauwers river basin. It aims to assess the adequacy the goal of the NFF of capturing plural values, by exploring the ways in which stakeholder values can be translated to the framework. The outcomes of this research will be insight into the challenges of translating, which can be used to refine the framework. It is, unfortunately, not in the scope of this MSc thesis to present a refined NFF. The choice was made to delve deep into stakeholder values to allow us to generate rich, context-specific insights into the role and implications of relational values. The study is further bounded by its geographical focus and the temporal context of data collection, which may limit the generalizability and scope of the findings.

Relevance of the research

First of all, this research helps unravel the complexity and richness of positive, nourishing, and regenerative human-nature relationships (Ragnarsdottir 2022). Integrating insights from positive visions into policymaking fosters the possibility of driving sustainable policies and outcomes (Gorddard et al. 2016; Neuhoff et al. 2023).

Secondly, this study enhances an understanding of how relationality manifests in values and its implications for the NFF. By doing so, this can lead to potential refinements in the NFF and similar nature value frameworks, ensuring they more accurately represent stakeholder values and foster a relational understanding of human-nature interactions.

Thirdly, this research is relevant for the development of inclusive climate change mitigation and adaptation strategies, a goal of the DISTENDER project (see section 3.5.). In DISTENDER, participatory approaches are used that bring scientists, businesses, governments, policy makers and citizens together. Strategies lacking an in-depth understanding of the plural values of stakeholders may not resonate with local values and practices, which may lead to lower strategy acceptance and effectiveness. The scientific community has posed that transparency and reflection on human-nature values is a step toward more constructive use of diversity (Martin et al. 2024).

Fourthly, this study can contribute to a paradigm shift by prompting a reflection on the common ways nature is valued in both scientific endeavours and policymaking processes alike. Integrating a nuanced of how relationality manifests in values, can foster a foster a profound shift in worldviews, how humans perceive their values, their responsibilities and themselves in relation to the natural world. This, in turn, can have major transformational effects on society and on the planet, since humans will likely play key roles in sustainability transformations in the future.

3. Methodology and methods

As highlighted in the literature review, NFF scholars have called for further research to refine the framework. This study engages critically with Luque-Lora's (2022) critique, using it as a starting point to investigate the NFF's foundations. It aims to understand stakeholders' visions for a desirable future, their underlying values, and the role of relationality. By letting stakeholders envision desirable futures and define their values, this study addresses these calls for refinement. This chapter outlines the research design, methodological choices, and methods for data collection and analysis, and discusses the study's authenticity and its relation to DISTENDER.

3.1. Research design

The quality of a study improves when its research foundations are clearly stated (Guba and Lincoln 1994). This thesis is based on two key propositions: 1) social and environmental issues often arise from the organization of social structures and institutions, and 2) these structures, though robust, are flexible and can be transformed through human agency. This study aims to generate knowledge that can contribute to transforming these structures by promoting positive visions and understanding relational values more deeply, emphasizing their importance in creating inclusive, sustainable futures (Jones and Tobin 2018).

The research philosophy is grounded in a constructivist paradigm, which posits that reality is not fixed but co-constructed through human interaction and interpretation (Denicolo, Long, and Bradley-Cole 2021). By adopting this approach, there is room to uncover the meanings that people attribute to phenomena, emphasizing the multiplicity of perspectives and the subjective nature of human values. This philosophy, hence, supports my methodological choice to engage with participants, allowing the data to represent their voices and experiences, thus ensuring that the research findings are reflective of

the diverse realities encountered in the field. We have chosen a qualitative methodology. Yilmaz (2013, p.313) defines qualitative research as "emergent, inductive, interpretive, and naturalistic approach to studying people, cases, and social situations in their natural settings to describe the meanings people attach to their experiences". Qualitative research is relevant for understanding phenomena from the perspectives of the study subjects, aligning with this study's aim to understand relationality in stakeholder value systems. Furthermore, this study is mainly inductive, even though it aims to test the adequacy of a framework. Instead of deductively applying the NFF to the data, an inductive approach is more suited for this study to identify patterns and explanations that can naturally emerge from the data (Thomas 2006). This involves coding raw textual data, developing links between codes, and uncovering underlying structures, helping to identify conflicts, overlaps and gaps (ibid.). These findings can then be used to assess the adequacy of the NFF's three value categories. We have not chosen a deductive approach, which focuses on testing theory by applying the theory on the data (ibid.), because we want the data to be leading in the process of uncovering patterns, and not the other way around. Furthermore, a participatory methodology is relevant for our study of deeply understanding the values of stakeholders. This entails that participants are involved in co-creating the research, questions, and codes, in an iterative process (Spinuzzi 2004). In short, a constructionist paradigm with a qualitative, inductive and participatory methodology were chosen for this study.

Researcher positionality

In a qualitative research process, the researcher is as the main instrument for data collection and analysis, making it essential to offer transparency on the researcher's positionality (Soedirgo and Glas 2020). My interest in relational values and sustainable futures stems from both academic pursuits and personal experiences, including growing up in the Netherlands, a country heavily impacted by instrumental uses of nature. I acknowledge that my background and perspectives inevitably influence the research process. The participants and I, in my role as the researcher, are reciprocally linked. This means that the data collection and analysis are shaped by the values of both the participants and myself. The nature of inquiry was dialogic, meaning that what can be known about visions for desirable futures and values inevitably is unavoidably affected by me. For example, my values may lead me to certain interpretations over others, prompting me to frequently question how my methods represent stakeholders' experiences accurately. To address these reflections, I aimed to give more agency to participants in the data gathering process and verify my interpretations often. I chose to include extensive quotes from participants to provide a 'thick description', borrowed from Geertz (1973), referring to a detailed account of social meanings as described in the data. Importantly, several people rejected my invitation to participate, and this might has to do with my social position. I am a middle-class, female student of 26 years old, with a background in climate studies. It was noted by me that certain people perceive distrust towards me in my role as a researcher, and therefore rejected participation. More information on this issue can be found in the section 3.2.2.

3.2. Methods

Varying methods can be used to study desirable futures and the role of relationality in values. This study has chosen to use methods that are not very standard in scholarly literature. Therefore, the following section will elaborate and justify the choices of these methods.

3.2.1. NFF in this study

The NFF has been the primary lens for analysing visions for a desirable future and the role of relationality in underlying values. This framework is a good fit for analysing the diversity and multiplicity of nature values, especially because it aims to capture three dimensions of values into one framework (Chan et al. 2016). What makes the NFF relevant in the context of this study, is its ability

to accommodate a complex interplay of values, rather than portraying a dichotomy or a single perspective. This is crucial because it mirrors the real-world scenario where people's values toward nature rarely neatly fits into one of the categories. People often hold a fusion of values simultaneously and their values can change depending on context, temporal changes and spatial factors (Chan et al., 2016). The developers of the NFF (Pereira *et al.*, 2020, p.1191) call for future research to focus on refining the NFF. In that light, I have chosen a methodological approach that allows for contributions to the NFF.

The NFF was used in two ways. Firstly, it provided a structured approach to categorise and understand the varied ways in which stakeholders perceive and value nature. By mapping their values onto the NFF, we could visually and analytically gain understanding of the values that underlie their visions. Considering these has been argued to be crucial for sustainability strategies to be inclusive and effective (Hensler et al. 2021; Pereira et al. 2020). Secondly, the NFF is used as a tool to explore the ways in which relationality is present in the value systems of stakeholders, and thereby assess the relevance of relational values as a distinct category in the NFF. This corresponds to the critique of Luque-Lora (2022) that is explained earlier. In this way, the NFF is both a tool for analysis of values and is also critically approached in terms of the foundational conceptualization of the model, with the aim of potentially suggesting refinements to the framework.

NFF and data analysis

In terms of data analysis, the NFF was used to analyse how participants value and relate to nature in the Lauwers river basin and how the translation of the findings to the NFF may inform refinements to the NFF itself. This has involved several steps. Initially, the study examined stakeholders' visions for a desirable future, focusing on how they desire to interact with and relate to nature. This uncovered prevailing desires in relation to nature which were used to understand how nature is valued. Secondly, this study examined the values of stakeholders towards nature, including the perceptions and attitudes towards nature. This part is inductive, meaning that values will arise from the data analysis and not that the framework will determine the data coding process.

The next step involved connecting the articulated values with the NFF. The NFF has been instrumental in this process, as it helped to trace how articulated values can be grouped into the value categories of the NFF. The NFF has guided the analysis in uncovering the adequacy and challenges in which articulated values can be translated to the NFF. This shows the adequacy of the framework, how well the framework allows for stakeholder vales to be represented. This has offered a view of how the current NFF captures and fails to capture the values of stakeholders on the ground.

By mapping the values of stakeholders onto the NFF's value perspectives, the thesis has revealed whether intrinsic, instrumental, or relational values are predominant with the stakeholders. This mapping provided insights into the value systems driving these future visions and how they align with or diverge from the NFF's operationalization of values.

3.2.1. Case study

A single case study was chosen in this study. This thesis aims to qualitatively stud y stakeholder values to analyse the challenges in translating these to the NFF. A common method for qualitative research is the case study, which Yin (2003, p.13) defines as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context." The DISTENDER project (see section 3.5.) employs a multiple case study across six countries of the European Union, including the north of the Netherlands (Groningen, Friesland, Drenthe). Siggelkow (2007) argues that single case studies provide extremely convincing, in-depth data, offering rich insights from a small sample size. A single case study is particularly relevant here, as it fosters the development of more context-specific

understanding of the real-life context of desirable futures and the role of relational values (Li et al. 2018). Research suggests that place-focused approaches can benefit studies on relational values, due to the nature of the topic at hand (De Vos et al. 2018). Hyett, Kenny and Dickson-Swift (2014) argue that a case study should be designed to suit the local context, advocating for a specific approach. To maintain focus and depth, I decided to reduce the scope of this thesis' case study and concentrate on a smaller region in the north of the Netherlands: the Lauwers river basin, which will be introduced below.

Selection and delineation of case study: river basin Lauwers between its spring and the sea

The case study is a specific river basin; the area in which the river Lauwers flows from its spring in a small village Surhuisterveen to the sea in Lauwersoog. The river forms to a large extent the boundary between the provinces Groningen and Friesland (see Figure 2). Using a river basin as the unit of analysis in a case study is particularly useful for addressing issues related to water management (Van Oel, Krol, and Hoekstra 2009) and ecosystem valuation (Comino et al. 2014).

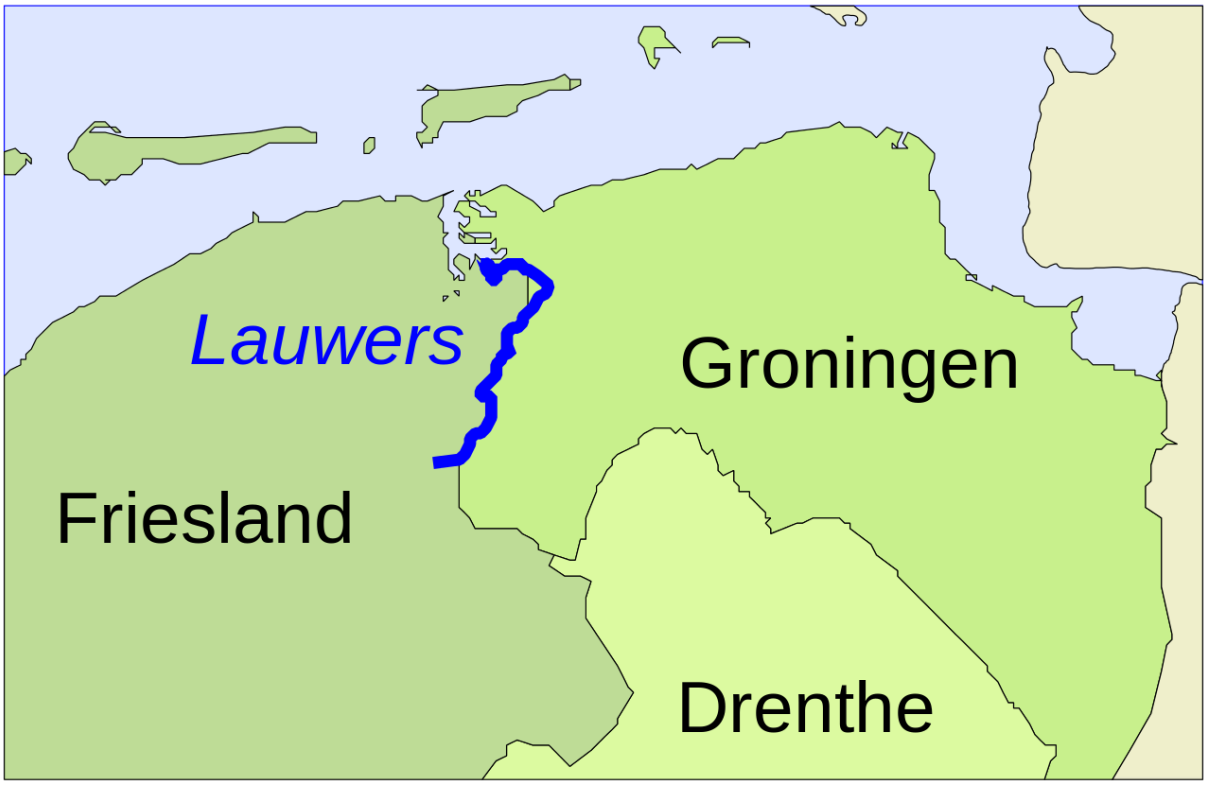


Figure 2: the river Lauwers flows from a small village in Friesland to the sea in Lauwersoog and represents the boundary between Groningen and Friesland provinces. (Source: Wikipedia page "Lauwers (rivier)", derived from https://nl.wikipedia.org/wiki/Lauwers_(rivier) on 21/11/2023)

This case study region offers a rich landscape for exploring diverse visions on sustainable futures and underlying values, for multiple reasons. The area is largely unstudied in scholarly literature, there are no scholarly articles to be found in Scopus with the Lauwers river in its title or abstract. But the area is characterised by unique environmental features, as the river flow is renowned for its old meandering sea arms (due to its past as connected to and part of the sea) and is encompassing the national park Lauwersmeer. This natural setting provides for a unique ecosystem which is rich in biodiversity, as an area also known for its scenes in bird migration and aquatic life (Nationaal Park Lauwersmeer, n.d.(a); Nationaal Park Lauwersmeer, n.d. (b)). The flow from its spring to its end is also marked by a diverse range of landscapes. It passes through rural settings, farmlands with distinctive raised fields to drain the water held by thick sea clay grounds, and parts of historical sites and sea dikes. Also, culturally it is a relevant river basin, as the area is rich in cultural history. The river flows through Dokkum, which

has old breweries that have used the river waters, as well as Zoutkamp with its fishing heritage. It also flows through Winsum, a village recently called the most beautiful village of the Netherlands. Also, the Elfstedentocht (ice skating tour) partly goes through the Lauwers river basin area. This area is also known for its early history of interactions with nature, including terrestrial animals, fowls and fishes (Prummel 2012). The river basin represents different human-nature interactions and also inhabit various groups of people. This diversity in landscape and cultural histories allows for capturing a wide range of stakeholder perspectives, from local residents, to fishermen, to farmers, to water managers, to local government representatives, to entrepreneurs.

The area is also particularly relevant in the face of climate change adaptation, because the region faces environmental challenges such as biodiversity conservation, water management, dike restoration and nature preservation. According to the Centraal Planbureau voor Statistiek (CBS), the region of northern Friesland and Groningen is also extremely poor: more than half of the eighty-three most poor municipalities are located here (CBS, 2016). These socio-economic challenges provide an extra layer of interesting context for exploring visions on sustainable futures and human-nature values.

3.2.2. Participants selection, limitations and interviews conducted

Participant were selected using the snowball effect method, which is a widely recognized technique in qualitative research (Noy 2008). This method starts with a small number of initial participants who meet the study's criteria and asks them to refer others who also qualify. This is effective for reaching hard-to-access populations or when the researcher lacks a local network, and the latter was the case (Noy 2008). One limitation of the snowball method is the potential for single source bias, where initial participants may only refer individuals from their own network, leading to a homogenous group of participants. This can be addressed by ensuring diversity in the initial selection (Kirchherr and Charles 2018), and select a varied set of participants from the final list of potential participants (Merriam and Tisdell 2015). To mitigate single source bias in the initial selection, I used Google to find news articles mentioning environmental, social and governmental organisations and individuals in the Lauwers region. I contacted these people to ask for a verify their interest and profession related to the Lauwers basin and asked for further referrals. This process led to a longer, diverse list of participants. To mitigate single source bias in the final selection, participants were contacted from the final list, to specify the following criteria: their geographical location, profession, educational background, age and gender.

In this process, I have spoken to forty-one potential participants. Eighteen of them wanted to participate and nineteen did not have time for an interview. Four individuals did not want to cooperate in a scientific study ‘out of principle’. These were all farmers who expressed a distrust in governmental representatives and in scholars whose work contributes to policymaking. This notion of distrust among certain stakeholder groups and their subsequent underrepresentation in this research, has important effects on the validity of this research. It is crucial to acknowledge this, as it can affect the study's external validity – the extent to which the results of this study can be generalized to the broader population. For more reflection on this issue, see the limitations of this study in section 5.2. Addressing this limitation involves recognizing the inherent biases introduced by the participant selection process. Also, I have decided that at least two farmers should be represented in the final participant list. However, the farmers included in this study may not fully represent the typical farmers in the region. Lastly, this notion provided a key take home message: the emphasized need to include diverse stakeholder value perspectives, in order to ensure they both feel and are genuinely included in decision-making processes (which may directly enlarge their trust in governance and science).

Finally, participants were selected based on diversity in the following criteria:

- Related to the Lauwers river basin, by working or living in this area
- Diverse in terms of professional background
- Gender balanced
- Age diverse
- Representing multiple knowledge systems and educational backgrounds

Overview of interview participants

Between November 2023 and February 2024, twelve visioning exercises and interviews were conducted with participants. The pool of participants consisted of out six female and six male participants. Their geographical locations were much spread out throughout the Lauwers basin. The occupations vary and include NGO work, academia, farming, education, entrepreneurship, art, student, government official, healthcare and full-time parenting. This sample is perceived as representative of the region's population. One interview was, not purposefully, not recorded by me, and has therefore been cleared from the data. Additionally, the quality of two recordings of interviews were compromised by wind, a direct consequence of conducting interviews outdoors while walking. The drawings of these participants remained usable, however, the point of the research was to understand values underlying the visions, hence the choice was made to base the results section on nine participants. In these excluded drawings and interviews, no important deviations were noticed by the researcher, compared to the included data. So, despite these challenges the remaining data does provide valuable and robust data for this study. This research has provided first-hand, unique insights into the phenomenon of relationality in human-nature value systems. The variety of occupational backgrounds, gender and age are listed in the table 2 below.

Table 2: Overview of interview participants

Participant #	Occupation	Gender	Birthyear	Duration of the interview
1	NGO ecology	m	1982	66 min
2	Scientist human-nature relations	m	1958	87 min
3	Cattle farmer	m	1968	56 min
4	Visual artist	f	1967	96 min
5	Retired teacher in geography and German	f	1959	75 min
6	Entrepreneur in food and visual artist	f	1961	55 min
7	Student	f	1994	64 min
8	Municipal officer	m	1980	57 min
9	Organic cattle farmer & NGO nature	f	1989	63 min

	conservation			
10 (Not recorded)	Healthcare	m	1975	55 min
11(Wind-ruined recording)	No occupation, mother and wife of fisher	f	1991	51 min
12 (Wind-ruined recording)	Scientist in landscape architecture	m	1958	65 min

3.2.3. Methods for data gathering

In qualitative case study research, the researcher can combine multiple data collection methods at the same time (Devers and Frankel 2000). The benefit of using multiple data collection methods is that the researcher can obtain more comprehensive insight into the subject of research (Hafiz, Baxter, and Jack 2008). The following multiple methods were used to collect data in line with the objectives (see section 2.1. Table 1).

Thematic literature review and snowball effect method

For the literature review, a thematic analysis through the snowball effect method was employed to ensure in-depth understanding of relational values and its use in the NFF. The decision to conduct thematic literature review was driven by the need to focus on specific themes and issues around relational values, ensuring a focused analysis (Snyder 2019). Thematic analysis was preferred over comprehensive analysis, as the aim was not to provide an exhaustive overview of all relevant literature but on identifying and analysing key themes and important issues that have arisen within the literature (ibid.). The process began with extensively searching through Scopus, focusing on the main articles related to the history, use and critique of "Nature Futures Framework" and “relational values”. These searches were designed to capture the most relevant recent literature, providing a foundation for the review. The literature review was enhanced by utilizing the snowball effect method. The snowball effect method is a well-recognized technique in scholarly research, often employed to delve deeper into a specific area of study (Wohlin 2014). The process involved examining the reference lists of key articles identified in the initial search. Through reviewing the citations, I was able to uncover additional relevant studies and sources that might not have appeared in the initial search results, but do add important nuances and extensions in the debate. This iterative process allowed for a more in-depth exploration of the current debate on the NFF and relational values. By using Mendeley software, a total of forty-eight papers were stored and reviewed for the literature review. By combining initial searches on Scopus with the snowball effect method, I ensured a robust thematic literature review.

Visioning exercise, drawing and unstructured conversation

The first objective of understanding how stakeholders in the Lauwers basin envision a desirable future, entails an exploration of how participants view a future scenario that is desirable for them (see section 2.1. Table 1). For this, the choice was made to employ a futuring technique called a visioning exercise (O’brien and Meadows 2007). This was chosen for visioning exercises can enhance the creativity and depth of participants’ insights (ibid.). Doing this with a guided meditation can generate more creative and novel ideas of what such a future might look like (Ragnarsdottir 2022). Visioning exercises are methods that help participants envision a detailed and vivid picture of a desired future (O’brien and Meadows 2007). It has been used in prior research in climate change adaptation and mitigation

strategies, and has been hailed for its participatory nature and capacity to use co-creation in order strengthen inclusive decision-making and planning (Nalau and Cobb 2022). Interestingly, it was found by Nalau & Cobb (2022) that most scholars who adopt visioning exercises conduct predictive (what will happen) and explorative (what could happen) visioning exercises, while only few scholars use the more normative (what is desired to happen) approach, although the latter generates more transformative thinking. This latter approach is well-suited for the aim of our study, and therefore the normative approach of visioning a *desirable* future was chosen, as outlined below in the description of the visioning exercise.

Visioning exercises often rely on supporting tools to facilitate discussions around the visions (ibid). For this study, a drawing exercise was chosen as arts-based tool for discussing the visions. The choice could have been made, like is common, to use as a tool quantitative scenarios generated by researchers and experts, which communicate to participants data-driven predictions (ibid.). These scenarios help participants understand potential future developments and consider the implications for their visions. However, we made the decision to let participants envision without having to take into account the experts' views on what is likely to happen. We wanted the participants to desire any future possible, not influencing their visions by the researcher or experts. Therefore, the use of drawing exercise was chosen to facilitate communication about the visions. This is the second most commonly used tool in visioning exercises (Nalau & Cobb, 2022). Here, drawings serve as an effective means for participants to express their visions. A benefit of drawing is that it is an intuitive practice which does not require high levels of literacy (Wesche and Armitage 2014). The use of drawings allows participants to convey their ideas visually, making the exercise accessible and engaging. Drawing gives the agency to stakeholders to decide what they want to focus on, and thereby contributes to the participatory methodology of this study. Finally, an unstructured, informal conversation between the researcher and the participant was conducted to enhance the accurate interpretation of the vision depicted in the drawing. This method was included because drawings can be challenging to understand, open to diverse interpretations, and often abstract (Neuhoff et al. 2023; O'brien and Meadows 2007). An overview of the drawings can be found in the Appendix 1 'Drawings'.

In the following, an outline is given of these methods.

1) Description of visioning and drawing exercise.

   For the visioning exercise, participants have engaged in a guided meditation in an outdoor setting. They were asked to focus on what they perceive as desirable for their community, natural surroundings and sector, not having to deal with the achievability of this perspective. The exercise entailed guiding questions to visualize a scenario in 50 years from now in the area, and make vivid various aspects of that future. In the next step, participants are asked to draw their visions for a desirable future in the Lauwers river basin area, on a poster.

2) Procedure of the methods:

   The visioning and drawing exercise began with a short, guided meditation in order to feel grounded and make contact with deeper layers of conscience. Several guiding questions followed to prompt the visualisation of a desired future in the Lauwers river basin. The questions included: What are the first images or scenes that come to your mind? Think about the community living in this area in 50 years from now. How has it evolved? What kind of interactions do you see between people and the environment? Now, turn your attention to the natural environment. What changes do you observe in the landscape? Focus on the emotional and sensory experiences in this

envisioned future. What sounds, sights, or smells are most prominent? How do they make you feel? Closing the visualization: As we conclude this visualization, what are the key elements of this future scenario that you find most compelling or important for a sustainable and harmonious existence? After the closing of the visioning exercise, participant was asked to draw the key elements of their vision on a poster. This was supported by guided prompts to help participants draw and articulate their visions on a poster. The guiding questions included: what did your vision of a desirable future look like? How did the people interact and value nature? What is different between now and the future, and what is the same? Are the key elements of your vision included in the drawing? In the unstructured, informal conversation that followed, the participants were invited to explain elements of the drawing, and sometimes asked for further explanations. The conversation was closed by a brief summary from my side of the drawing, in order to verify my correct interpretation.

3) Outcomes:

The visioning exercise aimed to foster an image of the desired future visions as perceived by the stakeholders, encouraging them to think creatively and out of the box. The drawing exercise has yielded the outcome of a visual representation of the visions, forming the foundation for the data analysis on the values, and a base for a discussion on values during the walking interview.

Semi-structured walking interview

The second objective of this study entails an exploration of how participants value and relate to nature (see section 2.1. Table 1). While also having considered a focus group as data collection method, the objective of gaining in-depth understanding of an individual's values made individual interviews more suited. After a consideration of structured, semi-structured and unstructured interviews, a semi-structured interview was deemed most appropriate (Bowen *et al.*, 2017). A semi-structured interview is based on a predetermined set of topics, but also allows for unanticipated responses and issues to emerge (Ryan, Coughlan & Cronin, 2009). The choice to conduct the semi-structured interview while walking was made in order to capture data that is deeply informed by the environment (Evans and Jones 2011). The physical context in which interviews are conducted plays a crucial role in shaping the content and quality of the interview (ibid.). The objective of this thesis to explore stakeholders' values to nature, and this necessitated a method that is sensitive to environmental contexts and is able to draw on place-based narratives. Therefore, a walking interview is well-suited for capturing participants' values on nature in a context-relevant setting. Each interview was about one hour and was conducted in the following manner:

1) Description of the semi-structured walking interview:

The semi-structured walking interview complemented the visioning and drawing and involved walking with the participant through a specific area of their choice within the Lauwers basin. This method facilitated direct engagement with the natural surroundings, allowing participants to express their values and ways they relate to nature in a context-relevant way.

2) Procedure of the method:

Before our meeting, participants were asked to choose a walking route that they usually walk of approximately 45 minutes. During the walk, I have asked several guiding questions with the aim of eliciting how participants value and relate to nature. The questions were informed by the literature review and considered the following themes: meanings attributed to nature, ways of relating to and interacting with nature,

personal connection to Lauwers basin, ways in which professional and recreational time is spend in nature, critiques on certain interactions with nature, significant factors influencing these themes. The interview was semi-structured, so that not all questions had to be asked, as some answers might already be given during the conversation. Also, this provided the flexibility to adapt the conversation to the local contexts encountered during the walk. However, it maintained structured enough to ensure that the resulting data was comparable, which is essential for making meaningful contributions to potentially refining the NFF. The outdoor setting of the walk aimed for participants to communicate observations in response to the surroundings, allowing for a context specific conversation that is especially relevant to studying the role of relational values.

3) Outcomes:

The walking interviews were recorded, transcribed and thematically analysed to elicit codes which represent the values. The outcomes of the walking interview and subsequent thematic analysis revealed the complex and varied ways in which stakeholders in the Lauwers basin value and relate to nature. This outcome has provided insight into the role of relational values in participants' value systems, which was part of the third sub-question of this study.

3.2.4. Ethical considerations

In ensuring ethical considerations are respected, the participants have signed a consent form (see Appendix 3: Consent form). This form has explained the goals of the research, the methods that were employed and how the data would be used and stored. Also, at the conclusion of each interview, the participants were asked if they are willing to review and provide feedback on the analysis once it was completed, to verify whether my interpretation of their input was correct. This resulted in post-interview communication between the participants and the researcher, which enlarged the chance of correct interpretations of data and hence enlarged internal validity of the findings. This approach aligns with the ethical standards of academic research and reinforces the participatory nature of this thesis, where participants are active, informed collaborators in the research process.

3.3. Methods for data analysis

Data analysis and critical thinking

The objective of understanding the challenges of translating stakeholder values to the NFF involved a detailed process of data analysis and critical thinking (see section 2.1.Table 1). Developing an analytical strategy is essential for case study analysis (Yin, 2003, p.115). This research employed thematic analysis of data, a method suited for qualitative research identifying and analysing specific themes and patterns within the data , as it best aligns with the study's aim of gaining in-depth understanding of relationality in human-nature values (Williams and Moser 2019). This was preferred over content analysis, which is used more if the aim is to systematically uncover the reoccurrence of concepts in data (Vaismoradi, Turunen, and Bondas 2013). The object of our coding process was to arrange the transcripts in an order to make the data "segregated, grouped, regrouped and relinked in order to consolidate meaning and explanation" (Williams and Moser, 2019, p.49).

All interviews were transcribed on the same day of conducting, making sure that words were written down the way they were said, for example including utterances (Bailey 2008). They were then coded using Atlas.ti software, enabling codes to appear 'In Vivo' from the data. This means that the participant's words form the basis for the codes, and not the interpretation of the researcher

(Khamung, Miller, and Hsu 2007). The coding was iterative - after the initial round of reading the interviews, the emerging thematic codes were noted and used to code the interviews (Khamung et al. 2007; Williams and Moser 2019). Subsequent reading of the data led to the identification of new codes. This process ultimately resulted in the discovery of 144 codes. These were reviewed, merged, accepted or deleted until 101 codes remained. These codes were grouped into three categories: - visions for a desirable future (29 codes); - human-nature values (31 codes), - references to place, methods, or real-time interactions (41 codes).

The next step was identifying patterns within the data, specifically instances where stakeholder values correspond, conflict or extent beyond the NFF value categories. This led to the creation of three groups in the codes – intrinsic, instrumental and relational – and highlighted the ways in which the data corresponds or conflicts with the NFF. Also, the various instances were coded in which the categories were doubly or triply represented in the data. This led to the marking of instances that were labelled 'Integration and interplay of values', where values were interplaying in three ways: 'overlapping and coinciding', 'conflicting and contradicting' and 'extending beyond and objecting'. Also, I have used the Atlas.ti tool of memo-writing to write into words the patterns that were visible. This mapping of the In Vivo codes on to the NFF provided insight into the challenges of translating the articulated values to the three value categories. During the coding process, also some codes were identified that later were deemed not relevant to the scope of this research and were hence removed from the list.

3.4. Autonomous thesis as part of DISTENDER project

This thesis project can be seen as part of the DISTENDER project, an EU-funded project that is committed to developing inclusive and responsive climate adaptation and mitigation strategies, through EU-wide participatory case studies. The aim of the project is to conduct and analyse participatory approaches that promote active involvement of citizens, scientists, governmental actors and businesses. For the purpose of this MSc thesis, I have designed the research independently of DISTENDER's specific aims, tailoring it to my personal interests and academic requirements. Despite that this thesis is part of DISTENDER, the research was conducted autonomously. I am committed to the integrity of this research and to advancing our collective understanding of how relational values can inform more inclusive and effective environmental policies. The results of this thesis have informed a workshop in the DISTENDER project. More information about DISTENDER can be found online at www.distender.eu.

4. Results

This chapter will present the results, organized to offer a 'thick description' (Geertz 1973) of stakeholders' visions for desirable futures (Q1 in section 4.1.), underlying values (Q2 in section 4.2.), and the ways in which and challenges that arise in how these findings can be translated to the NFF framework (Q3 in section 4.3.). This structure aims to guide the reader to understand what results were achieved in relation to the thesis objectives.

4.1. Vision elements of desirable futures in the Lauwers basin

The visions for desirable futures are as varied as each participant is, each paying attention to different, specific elements of the future. However, various themes could be uncovered throughout the visions of stakeholders, which contribute to harmony between human societies and natural ecosystems. In the following, the collective themes that emerged from the visions will be presented, each elaborated through an explanation of the elements under these themes, accompanied by a piece of the drawings. An overview of the drawings can be found in the Appendix 1 'Drawings'.

4.1.1. Theme 1: Changes in mindset, awareness and norms

From the analysis of visions, a theme emerged concerning a shift in mindset towards nature and an increased awareness of our connectedness with, and responsibility towards, nature and future generations. This theme is composed out of the following elements:

From human-centric to eco-centric societal mindset

Many visions are based on the notion that for a desirable and sustainable future, society must evolve to respect nature and feel a responsibility towards the natural world and future generations. According to stakeholders, the societal mindset is changed from a human-centred perspective in 2024 to an eco-centric mindset, one that involves not only the wellbeing of humans but also of the natural environment and future generations (participants 2,3,4,5,7,8,9).

Awareness of interconnectedness

Participants envision an increased awareness of individuals in terms of their perceived interconnectedness between humans and nature (interviewees 2, 3, 4, 5, 7, 9). Some link the quality of human life directly to the quality of the environment (interviewees 2,4,5,7).

Norms and responsibility towards nature and future generations

There is an emphasis on an increased sense of responsibility towards nature and future generations (interviewees 2,3,4,7,8,9), referring to acting in ways that allow for the thriving of these future (non-human) generations. Stakeholders envision a society where individuals and the national government are both more aware of their responsibility towards future generations, ensuring their actions support the health and wellbeing of these generations. This awareness is present both in personal, individual mindsets (interviewees 2,3,4,7,9) and in governmental policies (interviewees 2,4,7,8,9) that prioritize long-term ecological health over short-term gains.

Spiritual and existential connections

Additionally, a significant aspect of the visions involves increased spiritual and existential connections people perceive in nature (interviewees 1,2,3,4,5,7). These connections are crucial for developing a sense of responsibility towards the environment (interviewees 2,3,4) and fostering life itself, including future generations (interviewees 2,3,4,5,7).

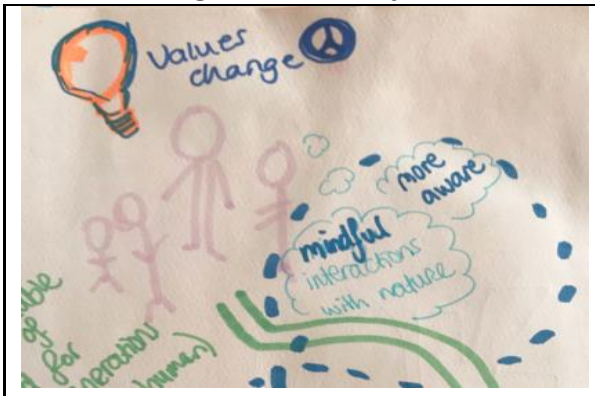
Time

Importantly, participants also envision changes regarding available time for spending in nature. They envision that people have more time to enjoy and recreate in nature (interviewee 1,2,5,6,7), thus strengthening physical and emotional ties to the environment.

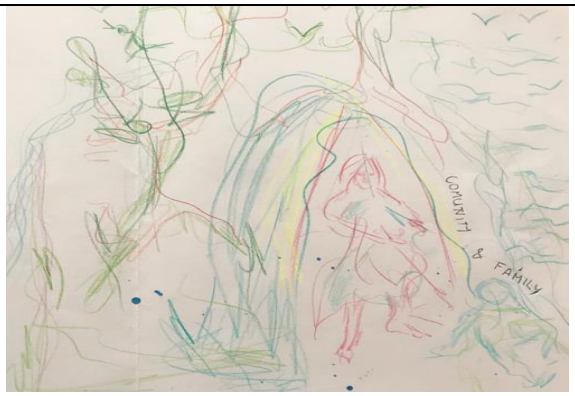
Direct nature interactions

In terms of practical ways of work towards these increases and shifts in mindset, awareness, norms and responsibilities, stakeholders emphasize direct, personal interactions with nature, mostly in groups, fostering a connection to and respect for the environment (interviewees 1,2,3,4,5,7). These groups can include educational classes, families, friends, and colleagues. The goal of these interactions is to foster a personal connection with nature, which is seen as a pathway to personal wellbeing (interviewees 1,2,3,4,5,7) and as essential to cultivating a societal ethos that values and actively supports ecological wellbeing (interviewees 1,2,3,5,7). Participants suggested creating more community green spaces (interviewees 2, 7) and accessible natural reserves (interviewees 2,5,7) where people can engage directly with nature.

Theme drawings and summary

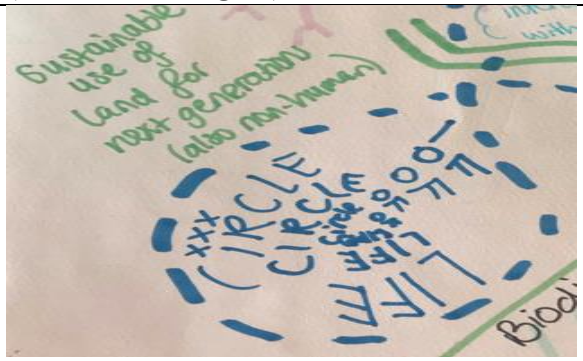


(Source: drawing # 3)



(Source: drawing #1)

(Source: drawing #2)



(Source: drawing #3)

In short, this theme holds the idea that a change occurs in societal and individual mindsets, awareness, norms and responsibilities towards nature and future generations, especially through direct, personal interactions with nature. Practical ways of fostering these direct, personal interactions with nature include community green spaces, outdoor education, family leisure time spent in nature. According to stakeholders, this leads to societies where humans are engaged in learning and playing in nature, and where a sense of responsibility to care the preservation of landscapes and the flourishing of future generations, have become part of societal values and mindsets.

4.1.2. Theme 2: Physical interaction with nature

From the analysis of visions, a theme emerged concerning a shift in how humans physically interact with nature. This theme is composed out of the following elements:

Biodiversity enhancing practices

Stakeholders envision a future in which various practical efforts aim to preserve and enhance biodiversity. The practices that were most frequently mentioned include: efforts of reforestation by planting trees (interviewee 2, 3, 4, 5, 7, 9), green corridors in the form of hedges and trees between grass lands to promote mobility and habitats for plant and animal species (interviewee 1, 3, 5, 8, 9), cultivating strips of flowers, herbs, reeds and shrubs (interviewee 1, 3, 5, 8, 9), keeping the water levels high to allow for animal species like meadow birds to thrive (interviewee 1, 2, 7, 8), promoting growth of green in cities and human spaces (interviewee 2, 7), and cyclical tree cut management that allows for continuous plant undergrowth and animal habitats (interviewee 7, 9).

Nature-led land use

Stakeholders envision 'nature-led land use'. This refers to a shift in how humans use the land and interact with their natural surroundings, moving from an imposed human control over landscapes, towards practices that respect and incorporate natural typographies, hydrologies and ecological processes as the primary determinants of land use, planning and development. A word that often emerged in the data was 'nature-led', and it was frequently mentioned in varying contexts: nature-led landscape design, nature-led restoration of landscapes, nature-led agriculture (see section Sustainable food production below), nature-led water management and nature-led built environment. Specific nature-led land use practices that were mentioned are: restoring the natural flow of meandering rivers (interviewee 1, 2, 3, 5, 6, 7, 8), letting the sea and rivers determine the land-use in a landscape (interviewee 1, 2, 7, 8), ensuring that the landscape determines the agricultural methods (interviewee 1, 2, 8), letting the natural terrain dictate the functions for different areas (interviewee 1, 2, 8), human buildings on the higher plots of land (interviewee 1, 2), giving the lowest areas in the landscape to the sea and rivers for water storage (interviewee 1, 2), and water management that allows for tidal influences in inland rivers (interviewee 2, 5).

More space for wild nature

This vision element focuses on allocating substantial areas of the landscape to remain wild, free of human consumption and managed minimally, specifically for the purpose of allowing natural habitats to thrive and expand. Stakeholders emphasize the importance of dedicating parts of the landscape to wild nature (interviewee 1, 2, 3, 5, 8).

Sustainable food production

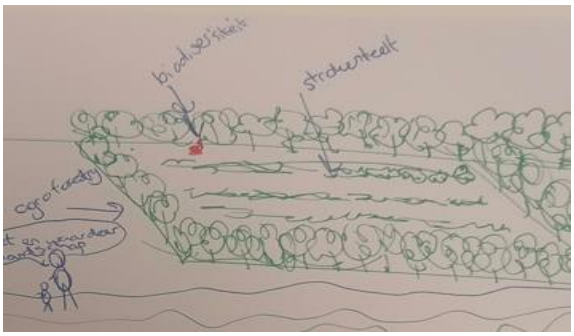
Across all stakeholders, attention was paid to sustainable food production in different forms. Nature-inclusive agriculture has emerged as a central element across the visions (interviewee 1,2,4,5,7,8 9), which emphasizes farming practices that harmonize with natural ecosystems, promoting biodiversity, soil health, and ecological resilience. Another vision element is nature-led agriculture, in which the landscape determines the course of agriculture. Stakeholders suggested the use of land for agriculture according to its natural characteristics (interviewee 1,3,5,6,8,9). Mentioned elements include utilizing medium-low lying regions for agriculture, allocating the lowest areas for water storage as needed, and reserving elevated regions for less water-resistant agricultural practices (interviewee 1, 2). Also, certain landscape elements (e.g. a row of trees) are actively preserved and agriculture happens around those elements (interviewee 3, 5, 6, 8, 9). Another example is farms predominantly being built near rivers for irrigation purposes (interviewee 1, 2). Next element is integration of multiple functions on agricultural land, advocating for agricultural land allows for the coexistence of farmland with cultural, recreational and natural purposes (interviewee 2, 3, 7, 8). This also includes the clearing of fences when possible, to allow passengers to respectfully walk through farmers' property (interviewee 5, 7). Another element under this theme is centred around small-scale, local food production and consumption. This refers to societal structures that support community-involved agricultural practices and involves the production and consumption of local food (interviewee 1,2, 5).

Climate effects led land-use and water management

Stakeholders envision numerous ways of adapting to the effects of climate change, through practices of land use and water management. Rather than working against the effects (e.g. heightening dikes), these practices often refer to letting climate change effects lead planning and development. This includes letting future water levels in sea and rivers determine land-use (interviewee 1, 2, 7, 8), letting future climate change effects determine the course of agriculture (interviewee 1, 2, 8). It also includes

that human-built environment is limited to the higher plots of a landscape (interviewee 1, 2), and giving the lowest areas in the landscape to the sea and rivers for water storage (interviewee 1, 2). Also, water management practices that allows for tidal influences in inland rivers are seen as desirable ways of working with climate change, rather than struggling against (interviewee 2, 5). Furthermore, stakeholders envision leaving more space in the landscape for river and sea floodings (interviewee 2,3) and managing the rivers so as to enlarge their water storage capacity (interviewee 2,5). Altogether, these practices aim to use and develop the land and waters in order to work with, rather than against, the effects of climate change.

Theme drawings and summary



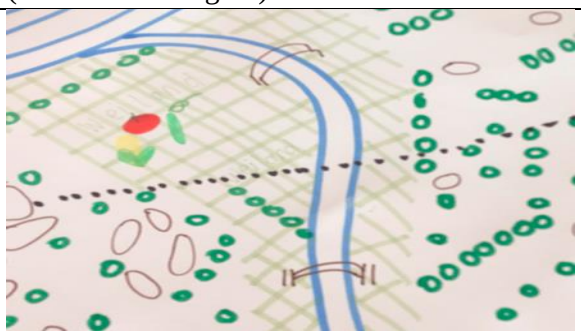
(Source: drawing #9)

(Source: drawing #5)

(Source: drawing #6)

(Source: drawing #6)

(Source: drawing #8)



(Source: drawing #7)

In summary, a theme emerged concerning a shift in how humans physically interact with nature. Stakeholders envision biodiversity-enhancing practices, such as reforestation, green corridors, and cultivating diverse plant strips. They advocate for nature-led land use, which respects natural typographies and hydrologies, and propose sustainable food production methods like nature-inclusive agriculture. Additionally, there is an emphasis on allocating more space for wild nature and adapting land use and water management practices to accommodate climate change effects, promoting resilience and ecological harmony.

4.1.3. Theme 3: Knowledge, learning and the role of education

From the analysis of visions, a theme emerged concerning a shift knowledge, learning and the role of education. This theme is composed out of the following elements:

Knowledge and learning

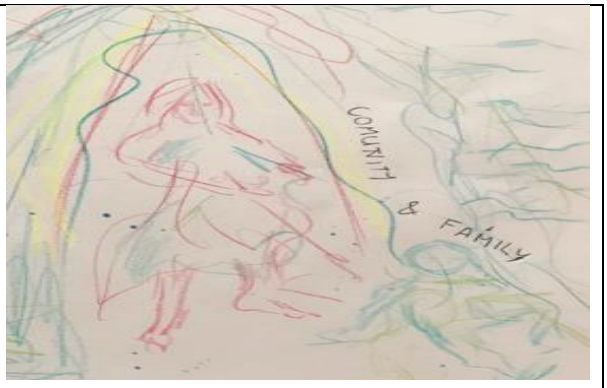
Stakeholders envision increased importance of knowledge about nature in the future (interviewee 1,2,4,5,7,8,9). Knowledge about nature is not transferred in traditional, indoor, school buildings, but is experiential, outdoor in nature (interviewee 3,5,7). Knowledge about the environment is seen as a heritage, passed down through generations (interviewee 3,5,7). This intergenerational transfer of knowledge often happens informally, through family and community interactions. Learning about nature is often envisioned as playful interactions with the natural world from childhood onwards (interviewee 1,2,3,5,7). In that, the importance of an embodied learning process is emphasized.

Role of education

Stakeholders envision that formal education systems have a critical role in institutionalizing outdoor education about nature. Stakeholders point out the necessity of integrating outdoor environmental education formally into school curricula (interviewee 1,2,3,5,7). The emphasis on early education is particularly strong, with stakeholders advocating for the introduction of nature-based learning environments from primary schools onwards (interviewee 2,5,7). These settings could include outdoor classrooms, school gardens, and field trips to local natural sites. Engagement with nature from an early age is deemed essential for developing a lifelong respect and understanding of the environment (interviewee 1,2,4,7).

Theme drawings and summary

(Source: drawing #5)



(Source: drawing #1)

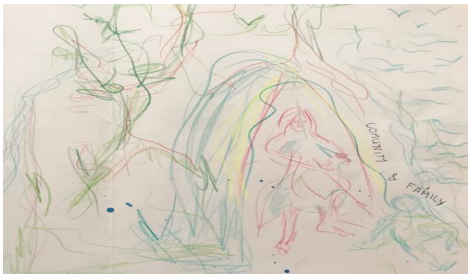
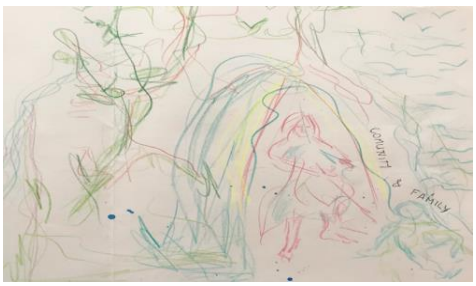
(Source: drawing #4)

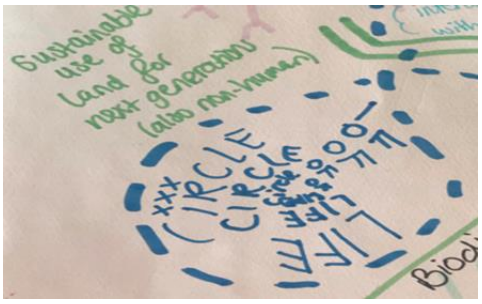
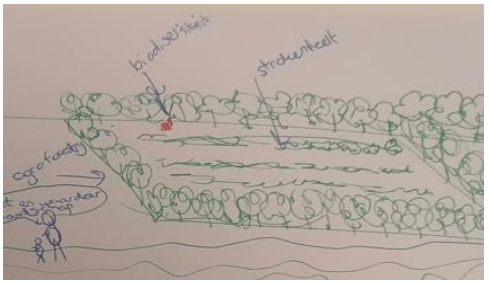
In short, both formal educational strategies and personal learning processes that incorporate play-based learning and exploratory activities in natural settings, are viewed as critical. The value of personal, direct experiences with nature is predominantly emphasized by stakeholders as essential for fostering a genuine connection to nature.

4.1.4. Concluding note

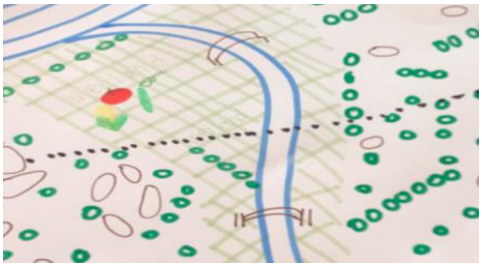
In summary, the visions for a desirable future by stakeholders in the Lauwers basin focus on three themes: mindset and awareness, physical interactions with nature, and knowledge and learning. Stakeholders envision a shift in mindset and awareness, intergenerational responsibility, and spiritual connections to nature. In terms of physical interactions with nature, practices such as biodiversity-enhancing practices, landscape-driven actions, sustainable food production, and climate-led land use are frequent elements of stakeholders' visions. Lastly, emphasis is put on increased knowledge about nature, experiential learning processes and the role of education in cultivating a connection to nature. Special concern goes out to the inclusion of young children into these learning activities. In the following section, we will give more body to these vision elements by uncovering and analysing the underlying human-nature values of stakeholders. Table 3 provides an overview the findings of this section

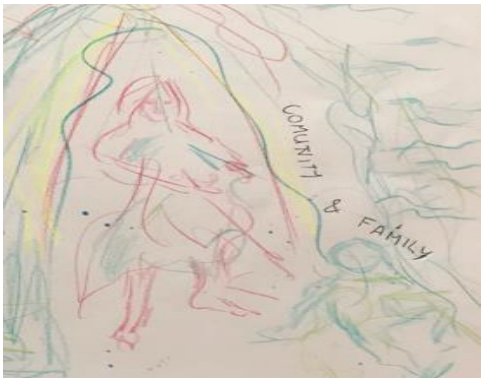
Table 3: Overview of visions: themes, key elements, short descriptions, and illustrative drawings by participants.

Theme	Element	Brief description	Image of drawing
Mindset and awareness	Eco-centric mindset	A mindset perspective that includes the health of the natural environment and future generations	
	Available time	More available time for spending in nature	
	Spiritual and existential connections	Spiritual and existential connections with nature, which are crucial for developing a sense of responsibility	
	Interconnectedness	Increased awareness about interconnectedness between humans and nature	

	Responsibility towards nature	Acting in ways that allow for the thriving of nature	
	Responsibility towards future generations	Acting in ways that allow for the thriving of future generations.	
Physical interaction with nature	Biodiversity enhancing practices	Practical efforts that aim to preserve and enhance biodiversity.	
	Nature-led land use	Land use determined by natural typographies, hydrologies and ecological processes, including built environment on higher plots	
	Meandering rivers	Restoring the natural flow of meandering rivers	

	Landscape-led agriculture	Practices in which the landscape determines the allocation of agriculture and the use of agricultural methods	
	Land for water	Giving the lowest areas up to the sea and rivers for water storage	
	Tidal water management	Water management practices that allow for tidal influences in inland rivers	
	Wild nature	More space for wild nature	
	Nature inclusive agriculture	Agricultural practices that promote biodiversity, soil health, and ecological resilience.	

	landscape-led agriculture	Utilizing medium-low lying regions for agriculture, reserving elevated regions for less water-resistant agricultural practices	
	Climate change adapted land use	Working with rather than against the effects of climate change, letting those be the guiding force in determining land use practices.	
	Climate change adapted water management	Practices of working with rather than against the effects of climate change, letting those be the guiding force water management practices.	
Knowledge, learning and the role of education	Learning is playful	Learning is experienced through ongoing, often playful interactions with the natural world	
	Embodied learning	In embodied learning processes, knowledge is not transferred but is experienced in outdoor nature settings	

	Intergenerational transfer of knowledge	Intergenerational transfer of knowledge often happens informally, through family and community interaction	
	Formal nature-inclusive education	Outdoor learning from pre- and primary schools onwards, which include outdoor classrooms, school gardens, and field trips to local natural sites	

4.2. Human-nature values articulated by stakeholders

The second goal of the research is uncovering the values of stakeholders towards nature (see section 2.1. Table 2). In the following, a thick description (Geertz 1973) of how stakeholders value and relate to nature will be presented. I advise the reader to carefully read the quotes, opening one's senses to what is being said, because the quotes aim to deeply capture the experiences of stakeholders. The quotes provided serve as an example, with the number of interviews in containing each value listed under the column '#Nr.'. Sometimes, multiple example quotes are included either because of subtle variations or their rich content. In 'Articulated value' column lists the articulated value distilled from each quote. For the sake of the third research question, which will be answered section 4.3., the 'Value category' column will be used. Table 4 below gives an overview of the findings for RQ 2. An overview of the interview transcripts can be found in Appendix 2: Interview transcripts.

Table 4: Categorization of stakeholder values: articulated values, interview #nr., and representative quotes, listed according to respective NFF value category.

NFF value category	Articulated value	#Nr.	Quote (#interview source)
Intrinsic	Preservation of nature	2, 4, 6, 9	*[…] to make sure that we can preserve the landscape, make sure that it stays the way it is and was meant to be. I think that's the most important thing. (#9)*
	Appreciation of beauty of nature	5, 7, 8, 9	*I really appreciate this landscape for what it is. […] It's really beautiful. (#4)*
	Inherent worth regardless of	4, 9	*To me, it is about understanding and appreciating the inherent worth of the natural world. It's not just about the*

	human ends		*economic or utilitarian value of nature, but also about its intrinsic value. (#8)*
Instrumental	Subsistence and livelihood	3, 7, 8	*For me, nature… there's the economic side too. Healthy nature means healthy farming, better products, happier customers. (#3)*
	Profits over Planet and People	2, 4, 5, 7, 8	*What I really find very problematic is when people talk about nature as a resource, that's a very anthropocentric perspective. Considering nature as something inferior to us, that we basically have a kind of God-given, or economical given right to harvest from. We plainly consider nature as a kind of economic resource. [...] And it positions in a way humans above nature. Which creates a kind of duality between the human species and nature, which I think is very problematic. And fundamentally problematic, if we continue to see ourselves as outside of nature, this is where all the trouble inherently came from so we should definitely turn this around into something more fruitful. (#2)*
	Nature for mental wellbeing	3, 4, 5, 7	*Sometimes I take a little time off, maybe go for a walk along the riverbank. It's a great place to clear your head, just watch the water flow by, see the wildlife. [...] There's something about just being outside in the fresh air that's just... well it's calming isn't it? (#3)*
	Nature for physical wellbeing	1, 3, 4	*I like to sport outside so you have fresh air and you're not restricted at a course. I always have my specific favourite route where I feel very free (#1)*
Relational	Connection via childhood	1, 2, 3, 4, 7, 8, 9	*"That sense of wonder, the joy I felt as a kid exploring the fields and being with the animals, that's still a big part of me. So, yeah, how I interacted with nature as a kid laid the groundwork for how I relate to it now. It's changed, evolved, but the core of it, that love and respect for the land, that's always been there." (#3)* *"No, [I do not feel really connected to this place] because I only lived here for a year. So to me, it's still… it's not really familiar. Like the place where you grow up and you know every corner, every inch, played in it outside for years, that's where you feel connected. For me, this is a new surrounding." (#8)*
	Responsibility to future generations	2, 3, 4, 7, 8, 9	*We got to think about the future too, right? Making sure we leave things better for the next generation. (...) Also, there's this sense of responsibility, you know? We've got to leave things better than we found them. It's not just for us, it's for our kids, their kids. I think a lot about that. How what we do today shapes the world they'll live in. (...) I want to leave it better than I found it, make sure there's still a healthy, beautiful place for them to live and work. (#3)*

			[...] thinking about your life and the life of what is it 7 generations after you, this long-term perspective, I think that's very important. (#2)
	Emotional connections	2, 3, 4, 5, 7, 8	*"You know, for someone like me, a dairy farmer, living and working so close to nature, it's not just a job or a responsibility. There's this... deep emotional bond. Sometimes, it's like the land speaks to you. When you're out there, whether it's in the fields at dawn or watching the sunset after a long day, there's a feeling you get. It's hard to put into words, but it's powerful. It's peaceful, grounding." (#3)*
	Sense of place	1, 2, 3, 4, 7, 8	*I started craving a deeper connection with nature. I wanted to be surrounded by it, to live in it. When I first visited the area around the Lauwers river, it was like a light bulb went off in my head. I thought, "This is it. This is where I need to be."* *(#4)*
	Identity	2, 3, 4, 5, 7, 9	*When you spend every day working the land, you develop this connection to it. You notice the small changes, the way the land responds to different treatments, the signs of the seasons changing. It's almost like the land becomes a part of you. (#3)* *So yeah, that's why Visvliet. It's not just where I work; it's a big part of who I am, you know? (#3)*
	Value in biodiversity	1, 2, 4, 6, 8, 9	*Biodiversity is the cornerstone of life on earth, its richness sustains ecosystems and us. (#8)*
	Existential connections	1, 2, 3, 4, 5, 7	*As human you are just a part of nature and when you stay in a special place or in a special nature area, you become part of it. Yeah, that's a good example, you're just part of it and you're just in it. You just are. (#1)* *It's a big love that I feel when I think about nature. It's so all around that I can hardly start to describe it. It's existential. (#7)*
	Awareness	1, 2, 4, 7, 9	*[For some people] it's just a nice background, or resource to take from, but it does not have the special value. They are not aware of that. (#1)* *OK, so the most important themes for me when it comes to these themes, is, I think, the state of awareness, that I do not find in certain groups of people like in masses actually in the Western world, but that I hope will be found again, just by going into nature. (#7)*
	Reciprocity	3, 4, 7, 8, 9	*Well, first off, it's about keeping things balanced. Like, you can't just take and take from the land and expect it to keep giving, right? It's a two-way street. (#3)*

			It [Research on nature- inclusive agriculture] is a way to still use nature or the landscape, but not only taking but also a bit giving. (#8)
	Care and respect	2, 3, 4, 8, 9	*I guess what I'm trying to say is, the most important thing to me is making sure we're living in a way that's kind to our environment. It's all about respect, really – respecting the land, the water, the wildlife, and each other. We're all part of this big, beautiful, complicated world, and we've got to take care of it. That's what matters most to me. (#4)*
	Cultural traditions	2, 3, 4, 9	*So, being a part of that, continuing those traditions, while also bringing in new, sustainable practices, it's kind of an honour, really. (#3)* *[Land in the region is not consolidated (translated from "ruilverkaveling")] so, if you work here, it's a lot less efficient than if you have larger parcels. Yeah, and I'm proud of that. I'm farming here and we're used to it. So yeah, we have never knew another way. [...] And so it's part of it's part of our way of farming. They [hedgerows] have always been there. And you know, we don't know any other way of farming. (#9)*
	Sensational connection	2, 3, 5, 7	*The sounds fill my ears with joy and inspiration, and the air I can breathe, it's the basic, the basic way of being. And it is the air and the water and the elements, that's what make me live. [...] I go to the dike, to the Wad. And there I go view the, it's the endlessness that I love about it. It's a feeling of joy and belonging to a place. It's still the dike, so it's industrial but me, myself I enjoy it so much there, it's so nice and I in the summer then I go and lay down in the water and super yeah so nice. (#5)*
	Leisure as connection	3, 4, 5, 7	*And of course there's just being outdoors with the family. Maybe a picnic or a bike ride through the countryside. The kids love it and it's a great way for us to connect not just with each other but with the environment around us. (#4)*
	Web of life	2, 4, 7	*It's about recognizing that nature is a vast, interconnected system where every element, from the smallest insect to the largest river, has its own role and importance. (#4)*
	Spiritual connection	2, 4, 7	*And when I'm out there, just sitting and sketching, I sometimes think, "Man, this is it. This is what it's all about." Connecting with something bigger than myself. That's what the Lauwers landscape means to me. It's not just a place; it's a part of who I am. (#4)* *I mean having this deep spiritual connection with nature is very important. [...] I think one of the big issues is how can you create circumstances for people to become more aware and get more this spiritual connection. (#2)*
	Prerequisite	1, 7	*Without nature, there's no human. So, it's very basic, I*

	for life		*think, nature can without humans. But humans cannot be without nature. We are interlinked. (#1)* *[Nature is], it's why I live. It's a prerequisite for living, for life on Earth. It is life on Earth. I see it as this word 'Barbelo', it's what I read in a book. It's mother earth. She gives life. She is life. I am her. And she is me. So, I love her the same way I love myself, the same way I love my child. And more than that. (#7)*
	Parenthood	2, 7	*So, I'm related to this area because I moved there and now I have my kid there. And in this way, I'm just growing some roots in this area, but I'm relatively new to it. (#7)*
	Landscape heritage	8, 9	*Because I know where I am, I can almost like picture before me how it was formed and how it was created. So, I see and especially if I turn around, I look at Niehove now, and I see the hill with the church on top. And the houses scattered around it. And I feel... not really deeply connected because I did not grow up here. But I really appreciate this landscape for what it is, how it was given over to us. (#8)*

4.2.1. Concluding note

In summary, the interviews in this study give a rich overview of human-nature values. In total three values emerged that can be grouped under intrinsic values, relating to the preservation of nature, appreciation of beauty and inherent worth. Four articulated values can be identified as instrumental values, including subsistence and livelihood, profits over planet and people, nature's utility for human physical well-being and for human mental wellbeing. Relational values emerged as a varied and rich component of Table 4, with stakeholders expressing emotional, spiritual, and cultural connections to the natural world. These values include connection via childhood, future generations, emotional connections, sense of place, identity, value in biodiversity, existential connections, awareness, reciprocity, care and respect, cultural traditions, sensational connection, leisure as connection, web of life, spiritual connection, prerequisite for life, parenthood, landscape heritage.

4.3. Challenges in translating articulated values to NFF value categories

The third goal of the research is identifying the challenges of translating the findings to the NFF tripartite categorization of nature values, aiming to reveal the adequacy of the categorization for capturing plural values. The analysis highlights several key challenges. Firstly, there is an uneven distribution of articulated values across the three categories, with a predominant frequency and variety in relational values. Next, instrumental values are often perceived negatively by stakeholders in this study, complicating the instrumental value category in the NFF. Third, several overlaps emerged in the articulated values, which blurs the distinctions that the tripartite model establishes. In the following, the results will be presented.

4.3.1. Uneven distribution over three categories

The data shows that the articulated values by stakeholders cannot be distributed evenly over the three NFF value categories of intrinsic, instrumental and relational. Three articulated values are grouped under intrinsic, four under instrumental and nineteen under relational values. Table 5 exemplifies the uneven distribution over the categories.

Table 5: Articulated values grouped into intrinsic, instrumental and relational values results in an uneven distribution with a higher frequency and variety of relational values.

Intrinsic values	**Instrumental values**	**Relational values**
Preservation of nature	Subsistence and livelihood	Connection via childhood
Appreciation of beauty of nature	Profits over Planet and People	Responsibility to future generations
Inherent worth regardless of human ends	Nature for mental wellbeing	Emotional connections
	Nature for physical wellbeing	Sense of place
		Identity
		Value in biodiversity
		Existential connections
		Awareness
		Reciprocity
		Care and respect
		Cultural traditions
		Sensational connection
		Leisure as connection
		Web of life
		Spiritual connection
		Prerequisite for life
		Parenthood
		Landscape heritage

Notably, intrinsic and instrumental values are more seldom referenced by stakeholders. In stark contrast, the bulk of the values emerging from the data were relational. This predominance suggests that stakeholders place a significant emphasis on the relations between humans and nature, valuing aspects such as emotional bonds, spiritual connections, and the embeddedness of human activities within the natural landscape. In conclusion, this analysis reveals a significant discord in the distribution of values articulated by stakeholders towards the relational values category, as opposed to intrinsic or instrumental values. This finding underscores the complexity of relationality in human-nature values as perceived by the stakeholders and highlights the need for climate adaptation and mitigation strategies that are attuned to these relational values.

4.3.2. Negative perception associated with instrumental values

The next challenge arises in that the data reveals that stakeholders predominantly regard and refer to instrumental valuation of nature in a negative way, particularly in the context of agriculture. That is, instances where instrumental valuation of nature were spoken of, often carried a negative connotation, emphasizing critiques to the ways nature is exploited and commodified in farming practices. An

illustrative example is provided by Interviewee 5, who describes the extensive mowing practices of a local farmer.

> *"This is what I wanted to show you. Do you see this grassland? It belongs to that farmer over there. If you see how far they go with mowing... They don't leave a thing for [wild] animals to roam through. They mow until the water stream, here, and deer and rabbits and other animals will not come here anymore. It's terrible. Yeah, this is ridiculous. So, every single centimetre, they use for the profits of their farms. Like that. So, they also take the grass from this slope, until the water right down there. The contrast is extreme [pointing to the tree covered land we have previously walked on]. They take nature and use it for profits, and they don't allow any deer or birds or anything else to grow here apart from their dairy cows. No, no, no, no, no, they, they they don't enjoy nature. They they have dollars in their eyes, yeah. And they call themselves farmers. But for me farming means working with nature." (Interviewee 5).*

Echoing the same negative perception, Interviewee 8 criticizes the over-efficient, non-organic farming methods that they witness in the local landscape, further describing the negative consequences of instrumental valuation of nature:

> *"The surroundings are all farmland and most of the farms are just regular, non-organic farms, and they all have it really, really clean and efficient. Yeah. So, there's this Engels Raaigras that they mow everything until the water or until the road. And it becomes too efficient for my taste, and too barren too. That's something I don't like. It's a bit too efficient and there's not a lot of room for spontaneity or nature in a way, it's all very barren. [...] I do not like it when people use nature like instrumentally to their economic means and they don't leave any room for nature itself, so they just take without leaving something left. It's not only taking, but taking like 110% in a way. It is so efficient that everything on the short run, but the landscape becomes like depleted in a way. One of the things we are actively working on, is to facilitate research on nature- inclusive agriculture. It's a way to still use nature or the landscape, but not only taking but also a bit giving." (Interviewee 8)*

Interviewee 2 speaks of the anthropogenic perspective that problematizes instrumental valuation of nature:

> *"What I really find very problematic is when people talk about nature as a resource, that's a very anthropocentric perspective. Considering nature as something inferior to us, that we basically have a kind of God-given, or economical given right to harvest from. We plainly consider nature as a kind of economic resource." (Interviewee 2)*

In sum, instrumental values are often negatively perceived, predominantly in the context of instrumental uses of nature through farming practices in the area, which are seen as overly exploitative and are contrasted with the stakeholders' held values. They see this as harmful and opposite to farming practices that are sustainable. This has implications for the use of instrumental values in the NFF, which will be discussed in the discussion below (see Chapter 5).

4.3.3. Overlap of instrumental values with relational values

The next challenge occurs in the overlap that emerged in the data between instrumental and relational valuation of nature. While instrumental values refer to the use of nature for economic gains, the

reflections of stakeholders show these are frequently interwoven with relational values that emphasize among others emotional bonds, gratitude, and reciprocity. This is illuminated through the practices and ethical considerations articulated by the participants in this study, notably those engaged in agriculture within the Lauwers basin. These individuals demonstrate that instrumental valuation of nature are fundamental components of the relationships that they have with the land. The broader ideals of respect for the land and reciprocity become tangible in the actual processes and interactions involved in deriving instrumental value from nature. For instance, Interviewee 8 articulates a practice of farming that is profoundly influenced by a relational appreciation of the land. They spoke about the significance of future generations and non-human flourishing in their approach to farming. They describe their economic activities as intentionally designed not to deplete the landscape but to allow for the coexistence and flourishing of diverse species. This is an illustration of how reciprocity, respect and relations with the land are embedded within the concrete practices of extracting economic value from nature for human ends.

> *"For me, as a dairy farmer, it's really about seeing how crucial a healthy environment is. It's more than just fields for cows or water. It's about balancing what we take from nature with what we give back. Like, making sure we don't mess up the whole ecosystem, keeping the biodiversity thing going, you know? It's not just about using nature for farming and all. It's more like, respecting it, working with it, not against it. We got to think about the future too, right? Making sure we leave things better for the next generation. It's not just about having enough grass for the cows or enough water. It's the whole picture – the birds, the bees, the... you know, the whole ecosystem. You start to see how everything's connected. If one thing goes off balance, it will mess up a lot of other things. And, yeah, there's the economic side too. Healthy nature means healthy farming, better products, happier customers. But it's more than just profits. It's about doing the right thing, for the land, for the community, for the future. [...] As a dairy farmer, the land isn't just where I work; it's a huge part of who I am. [...] I feel like I'm a caretaker of the land, not just using it. It's about working with the land, understanding its rhythms and cycles. I need to know when to plant, when to let fields rest, how to manage the soil. It's this ongoing conversation between me and the earth, kind of a partnership. It's about care, respect, and a deep sense of connection. [...] There's this... deep emotional bond. Sometimes, it's like the land speaks to you. When you're out there, whether it's in the fields at dawn or watching the sunset after a long day, there's a feeling you get. It's hard to put into words, but it's powerful." (Interviewee 3)*

This quote demonstrates how the stakeholder does use the land as a resource for economic benefit whilst also perceiving the land as a partner in a reciprocal relationship. While acknowledging the economic aspects of farming—"*Healthy nature means healthy farming, better products, happier customers*"— the stakeholder clearly states that their practices are "*more than just profits*." This indicates an understanding that economic benefits derived from nature are balanced with ethical considerations and practices that nurture rather than exploit the land. Here, the instrumental value of nature (providing resources for dairy farming) is seamlessly integrated with relational aspects (respect and care for the ecosystem). Furthermore, the stakeholder's description of their connection with the land—"*It's like the land speaks to you*"—reveals an emotional and almost spiritual relationship with nature. This bond informs their practices towards nature, driving them to use the land in a way that respects and fosters its wellbeing. This connection elevates the practice of farming from a purely instrumental act to one imbued with relational ethics, where care, respect, and a deep sense of connection guide the interaction with and valuation of nature.

Also, the following instance interviewee 8 shows an overlap between instrumental and relational values towards nature. They first express a preference for a landscape that maintains place for biodiversity and wilderness to thrive, and then critiques the overly efficient approach that leads to a barren landscape, typical of non-organic farms in the Lauwers basin region. Then they go on:

> *"One of the things we are actively working on, is to facilitate research on nature- inclusive agriculture. It's a way to still use nature or the landscape, but not only taking but also a bit giving. I think nature is more than just separate plants and animals. For me it's the landscape, and what that facilitates. What species could grow and live there. [...] A lot of people who maybe do not have a professional or even personal connection to nature, they see nature as 'outside' and they cycle through the land and they say wow, everything is so green here. But when I look at such a grassland, I see just like a desert, like a green desert. And to me, its not nature, I mean of course its nature, but it's not. It's more of a broken landscape. You see that it's broken. It's a very poor landscape, because species cannot grow there. Its basically just economic needs fulfilling nature, but I don't call that nature." (Interviewee 8)*

Note how they discuss their efforts in facilitating research on nature-inclusive agriculture, which is inherently instrumental as it still involves using the landscape for farming. However, the approach is backed by a commitment to ensuring that such use does not solely extract value but also gives back to the ecosystem. This reflects a relational ethic, as the stakeholder considers the broader ecological impacts of farming practices. Notably, these relational values are present in the concrete processes involved in extracting instrumental value from nature. They explain that nature-inclusive agriculture nature is instrumentally valued whilst also ensuring that other species can thrive. Note, too, how they consider the broader ecological roles of a landscape: "*I think nature is more than just separate plants and animals. For me it's the landscape, and what that facilitates*." This preference shows a valuation of nature that goes beyond its immediate utility.
In sum, stakeholders demonstrates that, while farming practices are instrumental in essence, driven by human needs for food and income, these activities are intertwined with a relational understanding of the landscape. Coding their perspective on nature as merely instrumental would downplay the relationality that is also present in their perspective. The implications of this finding are discussed in the discussion (see Chapter 5).

4.3.4. Overlap in intrinsic values with relational values

The next challenge occurs in the overlap between intrinsic and relational values toward nature among stakeholders. This overlap is particularly evident in the context of biodiversity, preservation of nature, nature's worth regardless of human ends, and appreciation of nature's beauty. The data shows that some stakeholders explicitly couple expressions of intrinsic values with expressions of relational values. As explained in the methodology chapter, the process of identifying values of stakeholders, was by coding interviews for expressions where nature is valued inherently, independent of any human benefit. However, it was frequently observed that when stakeholders articulate an intrinsic value toward nature, it was soon coupled with an expression of relational values towards nature, highlighting emotional bonds with non-human species and relations of reciprocity. This shows that intrinsic values can be explicitly interwoven with and overlapping relational values. For instance, the perspective of interviewee 4 when speaking about their vision:

> *"In this future, the natural beauty of the Lauwers area is preserved very well, and not only that but also enhanced actually. The rivers, the fields, they're all thriving, not just as a background for us to live in, but because they deserve to thrive." (Interviewee 4)*

At first, interviewee 4's vision emphasizes Lauwers area's natural beauty. The motivation to preserve the natural environment is because it deserves to thrive, speaks to an intrinsic appreciation of nature. Nature in this case is being valued for its own sake, beyond any utilitarian use it might offer to humans. This expression of intrinsic values aligns with our coding framework, which seeks to identify when stakeholders value nature based solely on their inherent worth. However, interviewee 4 goes on to reveal relational values toward natural beauty:

> *"In my art, I strive to capture the beauty of nature, hoping to inspire others to appreciate and protect it. In a way, each brushstroke is a tribute to the wonders of the natural world and a call to cherish and preserve it." (Interviewee 4)*

This subsequent statement shows how Interviewee 4's intrinsic valuation of natural beauty is interwoven with a relational valuation natural beauty. The act of creating art that reflects nature's beauty is more than an appreciation of nature for the sake of nature itself - its also an activity guided by and embedded in relations. Their act of painting serves as a medium through which the beauty of nature is communicated to other human beings, in an effort to contribute to preservation of that natural beauty. Thereby, it is also an act of guardianship, aiming to foster a collective appreciation of and responsibility toward environmental preservation. It shows that the values interviewee 4 holds toward nature encompasses intrinsic values, but cannot be understood in its core as completely, purely intrinsic values toward nature. Also, interviewee 7 demonstrates a similar explicit interconnection between intrinsic values expressions and relational understanding of and engagement with nature:

> *"Nature is not just the living trees or the mosses, or the things that turn brown in autumn or the birth of a little bird or another animal, but it's also the clouds and the immense mountains. Of course, these things are immensely beautiful by and for itself. These elements of nature exist not for what they do for us, but for their own sake. Each component of the natural world has its own right to flourish and be. But, like, what a sight at those things can do to you as a person. Yeah, it is humbling and empowering at the same time, I actually value nature with the bottom of my heart. I love nature." (Interviewee 7)*

This quote firstly expresses intrinsic valuation of nature, irrespective of what nature does for humans. Then, it goes on to touch upon the personal impact of seeing natural elements and demonstrates how an expression of intrinsic valuation of nature can go hand in hand with a deep, personal connection and appreciation that motivates feelings of love - values that are regarded relational.

> *"(...) So for example, I'm feeling down, I can go outside and make a walk and what I will see, what I see in nature, it calms my mind. So in that sense, it helps me. For example, I have a fight with my husband. I go out. And I see some birds, being peacefully together in a pond. And sometimes, you know, squeaking and making funny noises or having a small bird fight that I can watch from a distance. And this makes me, that I can relativize, it makes it easier to deal with my own problems in a way, so it's kind of a place where I search calmth and I get resilience from it. So, it helps me to live." (Interviewee 7)*

In sum, these intrinsic valuations are embedded in relational values, characterized by a personal connection with nature, which regards natural elements as more than an object of admiration and rather a source of personal resilience and emotional strength. The implications of this findings will be discussed in the discussion (see Chapter 5).

4.3.5. Intrinsic values and humans as part of nature

The final challenge arises from the ways in which intrinsic values are articulated by stakeholders versus in the literature. In literature, intrinsic values are commonly defined as the inherent worth of nature, independent of any utility it may provide to humans (Chan et al. 2016). However, the data reveals a deeper complexity where expressions of intrinsic values also encompass the view of humans as an integral part of nature. The data shows that there are stakeholders that intrinsically value nature 'for its own sake', including humans, who are seen as an inherent part of nature. Such expressions seem intrinsic valuations at first but contain more than just intrinsic values because they speak of integrated relationships between humans and the natural world. This is exemplified by the following quote:

> *"We must shift toward recognizing and valuing nature for its own sake, understanding that we are an integral part of it, not apart from it. [...] What I usually say is the problem is that we often see this duality between mankind and nature, and there's barbed wire between us. You do not touch nature. That's a reserve, and there, that's human society. And I think that's deadly wrong. It only perpetuates the track that we have wrongfully gotten into. [It] is also emerging still from the exploitation perspective on nature. We have to realise that we are, as a species, ecosystem engineers. We have done a lot of damage to ecosystems. But we have also the opportunity of really contributing to nature as we are nature. [...] [I value] in particular also the people that are very outspoken against the nature preservation. These people are usually very deeply connected with the nature, but they don't want it to turn into a kind of protected park with all kinds of signs of things that you're not allowed to do. Because these people have been living there for a long time. They're part of nature. And it's also like they feel they're being excluded through having these kinds of preservation rules on that. [...] [Usually] it positions in a way humans above nature, which creates a kind of duality between the human species and nature, which I think is very problematic. And fundamentally problematic, if we continue to see ourselves as outside of nature, this is where all the trouble inherently came from so, we should definitely turn this around into something more fruitful. [...] So I'm very interested in, for example, projects here where they built artificial reefs in the Wadden sea, and the return of sea grass. And in Africa, you have the Green Zone, the reforestation projects, and so on. And I think these are typical projects that originate from a deep love for nature and that carry their value in that humans really are active part of nature and contributing to biodiversity." (Interviewee 2)*

In sum, the idea that intrinsic value of nature can be entirely independent of any utility it may bring to humans, does not hold in the cases of participants of this study. Hence, the interconnected perspective challenges the classical concept of intrinsic values, which conceptually sees humans as separate from nature. In these cases, intrinsic values fail to include the integrated relationships between humans and the natural world that stakeholders spoke of. The implications of this finding for the use of intrinsic values in the NFF will be discussed in the discussion (see Chapter 5).

4.3.6. Concluding note

In summary, this section aimed to answer the question how stakeholders' values can be translated to

the NFF's value categories of intrinsic, instrumental and relational. The results have shown several challenges in translating stakeholder values to the NFF. These are: 1) uneven distribution across categories - the values articulated by stakeholders are not evenly distributed across the three categories, with a higher frequency and variety in relational values. Intrinsic and instrumental values are more seldom referenced, and when instrumental values are mentioned, they are often perceived negatively by stakeholders. 2) Negative perception of instrumental valuation: stakeholders predominantly regard and refer to instrumental valuation of nature negatively. This perspective is particularly evident in particular in the context of farming practices and in broader, conceptual terms as well. 3) Overlap between categories: there is a notable overlap between instrumental and intrinsic values on the one hand and relational values on the other hand. We have shown that, particularly in the context of agriculture, where utilization of nature is balanced with ethical considerations, practices that nurture the land in reciprocity and emotional bonds. This blend challenges the tripartite categorization of nature values by demonstrating how values that may initially appear instrumental—such as the economic use of nature—can be intertwined with relational aspects like respect, gratitude, and a broader, holistic understanding of nature. Similarly, there emerged an overlap between intrinsic and relational values, as stakeholders explicitly couple intrinsic values toward nature with integrated relationships between humans and nature. 4) The traditional concept on intrinsic values is challenged by stakeholders who value nature for its own sake whilst holding the perspective that humans are an integral part of nature. This challenges the traditional concept because intrinsic values conceptually perceive humans as separate from nature. The implications of these findings are discussed below.

5. Discussion

The following section will discuss the findings with the aim of answering the main research question. Firstly, the contributions to the literature will be discussed, then, the limitations of this research, and lastly, the implications of this study as well avenues of future research.

5.1. Contributions to the literature

This study indicates that stakeholders' values toward nature cannot be adequately translated to the NFF value categories without significant challenges. Based on the findings, the key challenges are: (1) relational values prevalent in stakeholders' value systems, (2) negative perception on instrumental values, (3) overlap between categories, and (4) moving beyond the concept of intrinsic values' human-nature dichotomy.

Relational values prevalent in stakeholders' values

We found that the values articulated by stakeholders are not evenly distributed across the three categories, with a large prevalence in variety and frequency within the category relational values (section 4.1. Table 4). Under intrinsic values, three articulated values were categorized: Preservation of nature, Appreciation of nature's beauty, Inherent worth regardless of human ends. Also, under instrumental values three articulated values were groped: Profits over planet and people, Nature for mental wellbeing and Nature for physical wellbeing. Contrarily, under relational values, nineteen articulated values were grouped: Connection via childhood, Responsibility to future generations, Emotional connections, Sense of place, Identity, Value in biodiversity, Existential connections, Awareness, Reciprocity, Care and respect, Cultural traditions, Sensational connection, Leisure as connection, Web of life, Spiritual connection, Prerequisite for life, Parenthood, Landscape heritage.

A possible explanation for this difference in variety and frequency can be found in the paper of Maier and Feest (2016). They pose a critique to the IPBES for their attempt to combine intrinsic, instrumental, and relational values in the NFF, despite the fundamental differences in meanings and applications of these three value concepts. The authors point to an important 'conceptual mismatch'. Intrinsic and instrumental values refer to normative aspects of value, concerned with the question of what is good, worth and valuable. The main difference between intrinsic and instrumental is where the worth is derived from, in the former that is in the entity that is valued, in the latter that is in "the extent to which they satisfy human preferences and desires" (Maier & Feest, 2016, p.9). On the other hand, relational values refer to descriptive aspects of value, describing the relations and their significance. Relational values describe the varied cultural, emotional and spiritual relations that people experience with nature. Maier and Feest (2016) state that these categories are "not merely different categories of value, but entirely different subjects" (Maier & Feest, 2016, p. 8). This finding presents a significant implication in terms of the relevance of the NFF, as it shows that the three value categories used, do not have the same fundamental meanings. Rather, the fact that they hold fundamentally different meanings, stresses the need to harmonize the foundations of this model, which we will come back to below.

Instrumental values and its link to exploitative worldviews

Our study found that stakeholders often perceive the instrumental valuation of nature negatively (section 4.3.). A reason is that stakeholders link instrumental values to exploitative practices and worldviews. Stakeholders find it problematic when people perceive nature as a resource from which they have the right to harvest, because this attitude has extensively contributed to contemporary sustainability problems. This finding is echoed in literature that outlines that instrumental values are rooted in commodified economics (Luque-Lora, 2022) and in utilitarian logics that reinforce the marketization and appropriation of nature (Muradian and Pascual 2018; Urzedo and Robinson 2023). Interestingly, Chan *et al.* (2016) use exactly the same reasoning to argue for relational values to be added to nature value frameworks. However, the NFF has incorporated relational values alongside intrinsic and instrumental values without changing the role of instrumental values. This could continue a discourse grounded in utilitarian logics and the subsequent commodification and exploitation of nature, a criticism noted by the developers of the NFF (Chan et al. 2016; Maier and Feest 2016; Neuteleers and Deliège 2020).

Instrumental values embedded in relational values

Several overlaps have emerged in value categories (section 4.3.), problematizing the use and role of each separate category. Firstly, stakeholders can value nature instrumentally in a relational way, especially in agriculture when economic uses of nature are coupled with ethical considerations, emotional bonds and practices that nurture the land in reciprocity. This finding challenges the concept of 'purely' instrumental values, by demonstrating that values that may appear instrumental at first can be intertwined with, embedded in or practiced through relational aspects like respect, gratitude, and a broader, holistic understanding of nature. This finding aligns with Luque-Lora's interpretation (2022), who argues that instrumental values are often a simplified subset of more complex relational modes, and that purely instrumental views can only be reasonably justified by abstracting from the inherent relational complexity of these values.

Intrinsic values coupled with relational values

The data also shows an overlap between intrinsic and relational values. Stakeholders can couple intrinsic with relational values, for example when valuing natural elements irrespective of their utility to humans and then discussing the impact of those natural elements on their personal and emotional

connections with those natural elements, i.e. values that are regarded relational. Furthermore, some stakeholders challenged the concept of intrinsic values by viewing humans an integral part of nature. This implies that intrinsic values do sometimes fail to capture the nuances of stakeholders' experiences. This aligns with scholars' arguments, who say that intrinsic values perpetuate the human-nature dichotomy (e.g. Liburd, Blichfeldt and Duedahl, 2021). Also, it aligns with Piccolo's (Piccolo 2017) critique on intrinsic values, which he argues are unhelpful as a concept for developing sustainable futures, because they often reinforce an anthropocentric worldview. Intrinsic values are conceptually separating humans from nature, thus perpetuating a human-centred (anthropocentric) perspective that fails to recognize the interconnectedness of all life forms (eco-centric) (ibid.). He stressed the need of moving beyond the limitations of anthropocentric thinking. In effect, we argue that the concept eco-centric worldviews may provide a meaningful pathway for further research about which values might help in bringing about desirable and sustainable futures. As such, this study can be regarded as a contribution to the growing body of literature on ecocentrism, by having provided specific accounts of what such eco-centric perspectives may entail.

Similarities between Indigenous and western value systems

Another significant contribution to the literature is that this study points to the similarity between value systems in the north of the Netherlands and those of Indigenous value systems previously studied. The results of this study are similar to numerous scholars' findings, who discuss the limitations of traditional nature values frameworks in representing indigenous values (e.g., (Díaz et al. 2018; Luque-Lora 2022; Sheremata 2018; Tengö et al. 2017; Urzedo and Robinson 2023). For instance, both Indigenous peoples in the literature and the western stakeholders in this study emphasize relational perspectives that highlight the interconnectedness of their local social-cultural-ecological systems. In specific, the focus on intergenerational responsibility and community practices reflects a relational worldview similar to that observed in many indigenous cultures. Therefore, this study contributes to the literature on plural valuation of nature by demonstrating that relational value systems are not only pertinent to the inclusion of Indigenous perspectives but are also relevant among stakeholders in the western world. It underscores the importance of recognizing and integrating diverse value systems in environmental management and policymaking, beyond the traditional dichotomy of western and indigenous frameworks.

5.2. Limitations

As is common in scientific practice, the limitations that occurred during this research will be addressed here. Participant selection bias was identified as a potential bias in the data collection process (Lehner et al. 2008). Out of forty-one potential participants, nineteen did not have time for an interview and four declined to participate 'out of principle'. Notably, these four decliners were farmers who expressed a distrust in scientific research and in policymakers. This has potentially led to an underrepresentation of certain stakeholder groups, which has significant implications for this study external validity, or the extent to which the results of this study can be generalized to broader populations. Although two farmers were included in the final participants list to ensure representation, they may not fully capture the perspectives of typical farmers in the region. In qualitative research, it is common to work with smaller sample sizes, as the focus is on gaining in-depth insights and understanding complex phenomena rather than achieving broad generalizability. While the limited sample size may constrain the ability to generalize findings to the broader population, this limitation can be addressed by recognizing the value of qualitative research in uncovering nuanced understandings that might be overlooked in larger-scale studies (Kirchherr and Charles 2018). Additionally, clearly documenting the research context and participant characteristics allows others to

assess the applicability of the results to different settings. Therefore, to further mitigate this limitation, transparency was offered on the selection process and criteria.

A notable limitation is the relatively small sample size of stakeholders. While this allowed the researcher to gain an in-depth understanding of each participant's vision and values, it may have compromised the generalizability of the findings. The intimate sample size enabled detailed and lengthy data collection, fostering the depth of the exploration of human-nature values within the stakeholder group. However, this depth may come at the expense of breadth, as the limited number of participants means the results may not fully represent the wider population. Future research should aim to include more participants to enhance the generalizability and external validity of this study.

A limitation was the socio-economic participation bias, referring to a restricted demographic of participants, covering predominantly those with sufficient time and financial resources to participate in research (Elston 2021). Due to this study's inability to provide financial compensation for participants' time, the study predominantly included individuals who were not constrained by time or financial pressures. Consequently, this excluded various demographic groups, notably minorities, lower-income individuals, and those who could not afford to miss a day of work due to financial necessity. The scope and financial resources available for this study did not enable the researcher to address this limitation.

Regarding data analysis, subjective bias was a concern, referring to the influence of opinions, preferences or beliefs of the researcher to influence the interpretation of the data. To address this, iterative feedback loops with both peer reviewers and stakeholders were employed. Interim findings were discussed with stakeholders, and interview transcripts with codes and interpretations were sent to them for confirmation and feedback. All interviewees were given this opportunity, and five out of twelve responded, leading to minor adjustments. Peer consultations were also conducted during the coding process. Additionally, substantial portions of raw data and interview scripts have been shared in this document for transparency and verification by the reader. Thereby, these measures have contributed to a reduction of subjective bias.

Another limitation regarding data collection entailed that the interviews were conducted in English for the purpose of transcription. All interviewees were Dutch and, hence, English was not their mother language. However, the researcher asked whether the interviewees were comfortable conducting the interview in English and all interviewees consented to it. In order to address this bias, the researcher had expressed the possibility of doing the interview in Dutch or turning to Dutch at any given time during the interview. This has happened once, during which a stakeholder expressed that they preferred Dutch in order to nuance their expressions. This research serves as a segway for more local research into relational values, in which interviewees can talk in their mother language to further enhance local understanding of relational values.

Tying limitations to future actions

The identified weaknesses, including selection and socio-economic participation biases, and the use of a non-native language for interviews, have been weighed against the research questions and project goals. To address these issues in future research, offering financial compensation to participants is recommended to include underrepresented groups. Additionally, conducting interviews in the participants' native language will further enhance the accuracy and depth of the data. These adjustments will improve the external validity through generalizability, contributing to a more comprehensive understanding of relational values in diverse contexts. Furthermore, employing

additional methods, such as focus groups can provide a wider range of perspectives and can foster interaction between participants. Combining focus group discussions with existing drawing exercises and walking interviews can offer a richer understanding of plural values and can offer rich insights into how these can be captured for policymaking processes. Another benefit of organizing a reoccurring focus group is also that the post-interview communication between researcher and participant may take less effort and time.

5.3. Implications and avenues for further research

This research provides the first qualitative exploration of relational values in stakeholder value systems to assess the adequacy of the NFF's categories of intrinsic, instrumental and relational values. The findings have significant implications for both academia and society.

Academic implications

The study reveals that stakeholders value nature in multiple and diverse ways, demonstrating the importance of understanding these values for policymaking. Unlike previous quantitative studies ((Feucht et al. 2023), this research qualitatively and inductively explored relational values, offering bottom-up insights that contribute to refining of the NFF. This approach has uncovered valuable insights that help the NFF to more accurately represent and incorporate plural values into their decision-making processes. This study has found several challenges in translating stakeholder values to the NFF, which implies that the NFF is currently not suitable for capturing accurately the values of people on the ground. These insights, however, only serve as a basis for further research, which should be directed towards understanding what transformations the NFF can go through in order to incorporate relational values in a more accurate way. The concept of eco-centric worldviews (Piccolo 2017) holds considerable potential for an avenue for further development of the NFF.

Further research should investigate the power dynamics involved in the development of the NFF. Understanding these processes is crucial for determining how refinements to the NFF can be integrated into the mainstream. This concern is shared by scholars such as Luque-Lora (personal communication, 10/04/2024) and Baard (2024), who have noted that despite relevant critiques of the NFF, there appears limited engagement from the scientific community. Future studies could examine the dynamics within IPBES or similar institutions, identifying the factors necessary to influence and implement changes effectively.

Societal implications

Climate change and other problems pose fundamental threats to our future livelihoods, economies and nature. The contributions of humans to these problems are irrefutable, and a transition to sustainable worldviews and practices is considered indispensable. The NFF was developed to understand the ways in which visions for a desirable future can be created, and to capture and represent the plural values of stakeholders for policy-making purposes. In terms of policy, this research has demonstrated that the NFF which is now widely used by policymakers is until now failing to accurately represent the value systems of people on the ground. This is because the findings of this study could not be translated to the NFF without significant challenges. This is a problematic finding as it indicates that current policy is not effective in realizing its objective of being inclusive of stakeholders' values. From the data it emerged that significant alterations need to be implemented in the NFF to change this trend. The incorporation of relational values into the framework has been a good step forwards in terms of representing the values of stakeholders. But the continuation of instrumental and intrinsic values in the framework does not incorporate the critique of many people on the ground, nor of many scholars who

echo the same sentiments, and fosters the risk of continuing exploitative discourse, worldviews and practices around nature.

The societal implication of not considering this study's findings, is the risk that a discourse is continued in policymaking that does not accurately represent stakeholder values. The NFF's inclusion of instrumental values has been criticized by both stakeholders and academics and may reinforce exploitative practices and the marketization of nature. Additionally, the inclusion of intrinsic values in the NFF can contribute to a perpetuation of the problematic human-nature dichotomy, which does not accurately represent the ways stakeholders consider and relate to nature. Giving greater emphasis to relational values, which are shown to be significantly present in stakeholders' value systems, policies can better reflect the plural values of stakeholders. Based on the findings, a transformation of the NFF is needed to more accurately represent stakeholders' values. Policies grounded in the actual values of stakeholders are more likely to gain public approval and be sustainable.

6. Conclusion

In this concluding chapter, the aim is to answer the main research question. This thesis has set out to explore the role of relational values in stakeholders' value systems and to evaluate the adequacy of the NFF in capturing these values. The main research question was: In what ways does relationality manifest in human-nature values of stakeholders in the Lauwers river basin, and what does this reveal about the adequacy of the NFF value categories of intrinsic, instrumental, and relational?

The first sub-question and aim of this study was to explore how stakeholders envision a sustainable and desirable future in the Lauwers river basin in fifty years. This was important because we needed to know these visions before being able to understand the values underlying positive visions for the future. The analysis revealed that stakeholders' visions encompass three main themes: mindset and awareness, physical interactions with nature, and knowledge and learning. Stakeholders envision a shift in mindset and worldviews towards nature and increased awareness of interconnectedness with and responsibility towards nature and future generations. They also envision a change is physical interactions with nature, emphasizing biodiversity-enhancing practices, sustainable food production, and climate-led land use. Additionally, stakeholders envision increased knowledge on nature and stress the importance of outdoor education and embodied learning to cultivate a connection with nature, particularly among young children.

The second sub-question and aim was to uncover the human-nature values underlying these visions. The study identified twenty-six human-nature values: preservation of nature, appreciation of nature's beauty, inherent worth of nature, subsistence and livelihood, profits over people and planet, nature for physical wellbeing, nature for mental wellbeing, connection via childhood, responsibility to future generations, emotional connections, sense of place, identity, value in biodiversity, existential connections, awareness, reciprocity, care and respect, cultural traditions, sensational connections, leisure as connection, web of life, spiritual connections, prerequisite for life, parenthood, landscape heritage.

The third sub-question and aim was to analyse how stakeholders' values can be translated to the NFF categories. For this sake, these values that emerged from the data were grouped under intrinsic, instrumental and relational values. This process highlighted several challenges: (1) Uneven distribution across categories, with a predominance of frequency and variety within relational values, (2) Negative perception of instrumental values, particularly in the context of farming, (3) Overlap between categories, indicating that instrumental and intrinsic values can be intertwined with, embedded in and enlarged by relational values, (4) A challenge to the traditional concept of intrinsic values, with stakeholders viewing humans as an integral part of nature rather than separate from it.

Answering the main research question

The findings indicate that the NFF's current tripartite framework does not adequately capture the diverse ways in which stakeholders value nature. The prevalence of relational values, the negative perception of instrumental values, and the significant overlap between categories suggest that a more nuanced and integrated approach is needed. Specifically, the study reveals that: (1) Relational values are prevalent and complex. Stakeholders express relational values in many ways, encompassing a wide range of connections to nature. These values are rooted in cultural, emotional, and spiritual contexts, and they can integrate elements of intrinsic and instrumental values. This complexity suggests that the NFF's distinct categories oversimply the reality and fail to fully capture the complex and nuanced ways in which humans value and interact with nature. (2) Negative perception of instrumental values.

Stakeholders often view instrumental values negatively, associating them with exploitative practices and worldviews and the marketization of nature. This notion emphasizes the need to reconsider the use of instrumental values in the context of visioning desirable futures through the NFF, to avoid reinforcing market logics that contribute to problematic interactions with nature. Caution should be taken, however, to simply exclude instrumental values from the framework, as this would downplay the perspective of individuals and institutions that do instrumentally value and appropriate nature. Yet still, the current position of instrumental values in the framework needs to be reconsidered, in order to move beyond problematic exploitation of nature. (3) Overlap between value categories. The data has shown significant overlaps between intrinsic, instrumental, and relational values, which challenge the usefulness of these three distinct categories. (4) Challenge to the traditional concept of intrinsic values: Stakeholders' views on intrinsic values challenge the traditional concept because of its human-nature dichotomy. Stakeholders hold the perspective that humans are integral part of nature. This calls for a re-evaluation of intrinsic values to better reflect the interconnectedness of humans with nature. Comparing these results to the literature, the data suggests that the meanings of value in the three concepts are so divergent, that one questions whether they represent merely different categories or entirely different subjects. The findings indicate that merging these three concepts under one framework is neither adequate nor useful.

Final reflections on what is gained and what is lost by the conceptual overlap in the NFF

The overlaps between value categories of the NFF have been addressed in the literature, as we have also discussed in the literature review of this thesis. Notably, the NFF uses a colour gradient to represent the overlap between value categories, as explained by Pereira *et al*. (2020) and Chan, Gould and Pascal (2018). These papers suggest that what is gained by the spectrum character of the framework is its usefulness for capturing diverse, often overlapping values of people. For instance, Chan, Gould and Pascal (2018, p.3) state: "These values are deeply intertwined (e.g. caring for the land may be stronger when reinforced by the benefits yielded, tangible or otherwise)." As such, the authors suggest that the NFF is specifically designed to foster an understanding of multiple and integrated values. However, our study contests this perspective.

Perhaps the most significant disadvantage of this overlap is that the framework essentially seems to capture different subjects under one framework. As Maier and Feest (2016) have argued, there is a 'conceptual mismatch' in this framework. Luque-Lora (2022) further critiques this the use of three categories by highlighting that relationality is present in all forms of value. The findings from this study support Luque-Lora's argument, showing that stakeholders' values are overlapping and embedded within each other. For instance, section 4.3. outlines that the intrinsic value of nature's beauty is appreciated through personal experiences with nature and is used in inspiration for art to foster a sense of guardianship, demonstrating that intrinsic values are experienced relationally. Similarly, instrumental values, such as the utility of nature for food production, are appreciated through relationships that include respect and reciprocity, reinforcing Luque-Lora's assertion that instrumental values also have relational dimensions.

What is further lost by using these three value categories in one framework, is that a great portion of the framework risks reinforcing and extending a discourse of exploitation and marketization of nature on the one hand, and on protecting nature from humans on the other hand. These two discourses represent intrinsic and instrumental values. This study found that stakeholders express their concern for conservation efforts that exclude humans from entering natural sites. And they express their wish for a future in which the perspective that humans are part of nature, as among others, caretaker of the

land has become part of the collective ethos. Continuing the use of intrinsic and instrumental values in theorizing desirable and sustainable futures, risks continuing a discourse that separates humans from nature – a notion that relational values seek to address but is not in its current representation in the NFF.

By confining relational values to a distinct third category in the NFF, the framework is likely to misrepresent how many stakeholders value and relate to the rest of the nature. Ironically, relational values are in this way continuing a discourse of non-relational logics it was aiming to address. It is a good idea to abandon the notion of relational values as a third category alongside intrinsic and instrumental values, and instead foster a genuinely relational understanding of this world.

References

Arias-Arévalo, Paola, Erik Gómez-Baggethun, Berta Martín-López, and Mario Pérez-Rincón. 2018. "Widening the Evaluative Space for Ecosystem Services: A Taxonomy of Plural Values and Valuation Methods." *Environmental Values* 27(1):29–53. doi: 10.3197/096327118X15144698637513.

Arias-Arévalo, Paola, Berta Martín-López, and Erik Gómez-Baggethun. 2017. "Exploring Intrinsic, Instrumental, and Relational Values for Sustainable Management of Social-Ecological Systems." *Ecology and Society* 22(4). doi: 10.5751/ES-09812-220443.

Baard, Patrick. 2024. "'Relational Values' Is Neither a Necessary nor Justified Ethical Concept.Pdf." *Ethics, Policy & Environment*.

Bai, Xuemei, Sander van der Leeuw, Karen O'Brien, Frans Berkhout, Frank Biermann, Eduardo S. Brondizio, Christophe Cudennec, John Dearing, Anantha Duraiappah, Marion Glaser, Andrew Revkin, Will Steffen, and James Syvitski. 2016. "Plausible and Desirable Futures in the Anthropocene: A New Research Agenda." *Global Environmental Change* 39:351–62. doi: 10.1016/j.gloenvcha.2015.09.017.

Bailey, Julia. 2008. "First Steps in Qualitative Data Analysis: Transcribing." *Family Practice* 25(2):127–31. doi: 10.1093/fampra/cmn003.

Campbell, Steve, Melanie Greenwood, Sarah Prior, Toniele Shearer, Kerrie Walkem, Sarah Young, Danielle Bywaters, and Kim Walker. 2020. "Purposive Sampling: Complex or Simple? Research Case Examples." *Journal of Research in Nursing* 25(8):652–61. doi: 10.1177/1744987120927206.

Chan, Kai M. A., Patricia Balvanera, Karina Benessaiah, Mollie Chapman, Sandra Díaz, Erik Gómez-Baggethun, Rachelle Gould, Neil Hannahs, Kurt Jax, Sarah Klain, Gary W. Luck, Berta Martín-López, Barbara Muraca, Bryan Norton, Konrad Ott, Unai Pascual, Terre Satterfield, Marc Tadaki, Jonathan Taggart, and Nancy Turner. 2016. "Why Protect Nature? Rethinking Values and the Environment." *Proceedings of the National Academy of Sciences of the United States of America* 113(6):1462–65. doi: 10.1073/pnas.1525002113.

Chan, Kai MA, Rachelle K. Gould, and Unai Pascual. 2018. "Editorial Overview: Relational Values: What Are They, and What's the Fuss About?" *Current Opinion in Environmental Sustainability* 35:A1–7. doi: 10.1016/j.cosust.2018.11.003.

Comino, Elena, Marta Bottero, Silvia Pomarico, and Maurizio Rosso. 2014. "Exploring the Environmental Value of Ecosystem Services for a River Basin through a Spatial Multicriteria Analysis." *Land Use Policy* 36:381–95. doi: 10.1016/j.landusepol.2013.09.006.

Cork, Steven, Carla Alexandra, Jorge G. Alvarez-Romero, Elena M. Bennett, Marta Berbés-Blázquez, Erin Bohensky, Barbara Bok, Robert Costanza, Shizuka Hashimoto, Rosemary Hill, Sohail Inayatullah, Kasper Kok, Jan J. Kuiper, Magnus Moglia, Laura Pereira, Garry Peterson, Rebecca Weeks, and Carina Wyborn. 2023. "Exploring Alternative Futures in the Anthropocene." *Annual Review of Environment and Resources* 48(1). doi: 10.1146/annurev-environ-112321-095011.

Denicolo, Pam, Trevor Long, and Kim Bradley-Cole. 2021. "Constructivist Approaches and Research Methods : A Practical Guide to Exploring Personal Meanings Linking Philosophy and Theory to Research Purpose." in *Sage research methods*. SAGE Publications Ltd.

Devers, K. J., and R. M. Frankel. 2000. "Study Design in Qualitative Research -2: Sampling and Data Collection Strategies." *Education for Health* 13(2):263–71.

Díaz, Sandra, Sebsebe Demissew, Julia Carabias, Carlos Joly, Mark Lonsdale, Neville Ash, Anne Larigauderie, Jay Ram Adhikari, Salvatore Arico, András Báldi, Ann Bartuska, Ivar Andreas Baste, Adem Bilgin, Eduardo Brondizio, Kai M. A. Chan, Viviana Elsa Figueroa, Anantha Duraiappah, Markus Fischer, Rosemary Hill, Thomas Koetz, Paul Leadley, Philip Lyver, Georgina M. Mace, Berta Martin-Lopez, Michiko Okumura, Diego Pacheco, Unai Pascual,

Edgar Selvin Pérez, Belinda Reyers, Eva Roth, Osamu Saito, Robert John Scholes, Nalini Sharma, Heather Tallis, Randolph Thaman, Robert Watson, Tetsukazu Yahara, Zakri Abdul Hamid, Callistus Akosim, Yousef Al-Hafedh, Rashad Allahverdiyev, Edward Amankwah, T. Stanley Asah, Zemede Asfaw, Gabor Bartus, Anathea L. Brooks, Jorge Caillaux, Gemedo Dalle, Dedy Darnaedi, Amanda Driver, Gunay Erpul, Pablo Escobar-Eyzaguirre, Pierre Failler, Ali Moustafa Mokhtar Fouda, Bojie Fu, Haripriya Gundimeda, Shizuka Hashimoto, Floyd Homer, Sandra Lavorel, Gabriela Lichtenstein, William Armand Mala, Wadzanayi Mandivenyi, Piotr Matczak, Carmel Mbizvo, Mehrasa Mehrdadi, Jean Paul Metzger, Jean Bruno Mikissa, Henrik Moller, Harold A. Mooney, Peter Mumby, Harini Nagendra, Carsten Nesshover, Alfred Apau Oteng-Yeboah, György Pataki, Marie Roué, Jennifer Rubis, Maria Schultz, Peggy Smith, Rashid Sumaila, Kazuhiko Takeuchi, Spencer Thomas, Madhu Verma, Youn Yeo-Chang, and Diana Zlatanova. 2015. "The IPBES Conceptual Framework - Connecting Nature and People." *Current Opinion in Environmental Sustainability* 14:1–16. doi: 10.1016/j.cosust.2014.11.002.

Díaz, Sandra, Unai Pascual, Marie Stenseke, Berta Martín-López, Robert T. Watson, Zsolt Molnár, Rosemary Hill, Kai M. A. Chan, Ivar A. Baste, Kate A. Brauman, Stephen Polasky, Andrew Church, Mark Lonsdale, Anne Larigauderie, Paul W. Leadley, Alexander P. E. van Oudenhoven, Felice van der Plaat, Matthias Schröter, Sandra Lavorel, Yildiz Aumeeruddy-Thomas, Elena Bukvareva, Kirsten Davies, Sebsebe Demissew, Gunay Erpul, Pierre Failler, Carlos A. Guerra, Chad L. Hewitt, Hans Keune, Sarah Lindley, and Yoshihisa Shirayama. 2018. "Assessing Nature's Contributions to People." *Science* 359(6373):270–72. doi: 10.1126/science.aap8826.

Durán, América Paz, Jan J. Kuiper, Ana Paula Dutra Aguiar, William W. L. Cheung, Mariteuw Chimère Diaw, Ghassen Halouani, Shizuka Hashimoto, Maria A. Gasalla, Garry D. Peterson, Machteld A. Schoolenberg, Rovshan Abbasov, Lilibeth A. Acosta, Dolors Armenteras, Federico Davila, Mekuria Argaw Denboba, Paula A. Harrison, Khaled Allam Harhash, Sylvia Karlsson-Vinkhuyzen, Hye Jin Kim, Carolyn J. Lundquist, Brian W. Miller, Sana Okayasu, Ramon Pichs-Madruga, Jyothis Sathyapalan, Ali Kerem Saysel, Dandan Yu, and Laura M. Pereira. 2023. "Bringing the Nature Futures Framework to Life: Creating a Set of Illustrative Narratives of Nature Futures." *Sustainability Science* (0123456789). doi: 10.1007/s11625-023-01316-1.

Elston, Dirk M. 2021. "Participation Bias, Self-Selection Bias, and Response Bias." *Journal of the American Academy of Dermatology* 6–7. doi: 10.1016/j.jaad.2021.06.025.

Evans, James, and Phil Jones. 2011. "The Walking Interview: Methodology, Mobility and Place." *Applied Geography* 31(2):849–58. doi: 10.1016/j.apgeog.2010.09.005.

Feucht, Viktoria, Paul Wilhelm Dierkes, and Matthias Winfried Kleespies. 2023. "The Different Values of Nature: A Comparison between University Students' Perceptions of Nature's Instrumental, Intrinsic and Relational Values." *Sustainability Science* 18(5):2391–2403. doi: 10.1007/s11625-023-01371-8.

Gaffney, Owen, and Will Steffen. 2017. "The Anthropocene Equation." *Anthropocene Review* 4(1):53–61. doi: 10.1177/2053019616688022.

Geertz, Clifford. 1973. "Thick Description: Toward an Interpretive Theory of Culture." *The Interpretation of Cultures: Selected Essays* 3–30. Retrieved (http://ezproxy.deakin.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=cat00097a&AN=deakin.b3442992&site=eds-live&scope=site%5Cnhttp://ezproxy.deakin.edu.au/login?url=http://www.aspresolver.com/aspresolver.asp?ANTH%5Cnhttp://0.25.114).

Gilliand, Christophe. 2021. "Experiencing Values in the Flow of Events: A Phenomenological Approach to Relational Values." *Environmental Values* 30(6):715–36. doi: 10.3197/096327121X16141642287692.

Gorddard, Russell, Matthew J. Colloff, Russell M. Wise, Dan Ware, and Michael Dunlop. 2016. "Values, Rules and Knowledge: Adaptation as Change in the Decision Context." *Environmental Science and Policy* 57:60–69. doi: 10.1016/j.envsci.2015.12.004.

Guba, E. G., and Y. S. Lincoln. 1994. “Competing Paradigms in Qualitative Research.” Pp. 163–94 in *Handbook of qualitative research* .

Hafiz, King, Pamela Baxter, and Susan Jack. 2008. *Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers*. Vol. 13.

Hensler, Loni, Juliana Merc, and Ulli Vilsmaier. 2021. “Diverse Values and a Common Utopia: Insights From a Participatory Art-Based Plural Valuation Experience in Xalapa, Mexico.” *Ecology and Biodiversity Conservation*.

Himes, Austin, and Barbara Muraca. 2018. “Relational Values: The Key to Pluralistic Valuation of Ecosystem Services.” *Current Opinion in Environmental Sustainability* 35:1–7. doi: 10.1016/j.cosust.2018.09.005.

Hyett, Nerida, Amanda Kenny, and Virginia Dickson-Swift. 2014. “Methodology or Method a Critical Review of Qualitative Case Study Reports.” *International Journal of Qualitative Studies on Health and Well-Being* 9(1). doi: 10.3402/qhw.v9.23606.

Jax, Kurt, David N. Barton, Kai M. A. Chan, Rudolf de Groot, Ulrike Doyle, Uta Eser, Christoph Görg, Erik Gómez-Baggethun, Yuliana Griewald, Wolfgang Haber, Roy Haines-Young, Ulrich Heink, Thomas Jahn, Hans Joosten, Lilin Kerschbaumer, Horst Korn, Gary W. Luck, Bettina Matzdorf, Barbara Muraca, Carsten Neßhöver, Bryan Norton, Konrad Ott, Marion Potschin, Felix Rauschmayer, Christina von Haaren, and Sabine Wichmann. 2013. “Ecosystem Services and Ethics.” *Ecological Economics* 93(May 2011):260–68. doi: 10.1016/j.ecolecon.2013.06.008.

Jones, Kristal, and Daniel Tobin. 2018. “Reciprocity, Redistribution and Relational Values: Organizing and Motivating Sustainable Agriculture.” *Current Opinion in Environmental Sustainability* 35:69–74. doi: 10.1016/j.cosust.2018.11.001.

Khamung, R., L. N. Miller, and P. S. Hsu. 2007. “Discovery of Motivational Themes through Reflection Writing and In Vivo Coding - An Interactive Motivation Model.” *International Journal of Information and Communication Technology Education* 3(2):1–14. doi: 10.4018/jicte.2007040101.

Kirchherr, Julian, and Katrina Charles. 2018. “Enhancing the Sample Diversity of Snowball Samples: Recommendations from a Research Project on Anti-Dam Movements in Southeast Asia.” *PLoS ONE* 13(8):1–17. doi: 10.1371/journal.pone.0201710.

Knippenberg, Luuk, Wouter T. de Groot, Riyan JG van den Born, Paul Knights, and Barbara Muraca. 2018. “Relational Value, Partnership, Eudaimonia: A Review.” *Current Opinion in Environmental Sustainability* 35:39–45. doi: 10.1016/j.cosust.2018.10.022.

Lehner, Paul Edward, Leonard Adelman, Brant A. Cheikes, and Mark J. Brown. 2008. “Confirmation Bias in Complex Analyses.” *IEEE Transactions on Systems, Man, and Cybernetics Part A:Systems and Humans* 38(3):584–92. doi: 10.1109/TSMCA.2008.918634.

Li, Xin, Guodong Cheng, Hui Lin, Ximing Cai, Miao Fang, Yingchun Ge, Xiaoli Hu, Min Chen, and Weiyue Li. 2018. “Watershed System Model: The Essentials to Model Complex Human-Nature System at the River Basin Scale.” *Journal of Geophysical Research: Atmospheres* 123(6):3019–34. doi: 10.1002/2017JD028154.

Liburd, Janne, Bodil Blichfeldt, and Eva Duedahl. 2021. “Transcending the Nature/Culture Dichotomy: Cultivated and Cultured World Heritage Nature.” *Maritime Studies* 20(3):279–91. doi: 10.1007/s40152-021-00229-y.

Luque-Lora, Rogelio. 2022. “The Trouble with Relational Values.” *Environmental Values* (January). doi: 10.3197/096327122X16611552268681.

Maier, Donald S., and Alan Feest. 2016. “Maier , D ., & Feest , A . (2016). The IPBES Conceptual Framework : An Unhelpful Start . Journal of Agricultural and Environmental Ethics , 29 (2), 327- University of Bristol - Explore Bristol Research The IPBES Conceptual Framework : An Unhelpful Sta.” 29:327–47.

Martin, Adrian, Erik Gomez-Baggethun, Martin Quaas, Ricardo Rozzi, Alejandra Tauro, Daniel P. Faith, Ritesh Kumar, Patrick O'Farrell, and Unai Pascual. 2024. "Plural Values of Nature Help to Understand Contested Pathways to Sustainability." *One Earth* 7(5):806–19. doi: 10.1016/j.oneear.2024.04.003.

Merriam, Sharan B., and Elizabeth J. Tisdell. 2015. "Qualitative Research: A Guide to Design and Implementation." *The JosseyBass Higher and Adult Education Series* 2nd:304. doi: 10.1097/NCI.0b013e3181edd9b1.

Muraca, Barbara. 2016. "Relational Values: A Whiteheadian Alternative for Environmental Philosophy and Global Environmental Justice." *Balkan Journal of Philosophy* 8(1). doi: 10.5840/bjp2016813.

Muradian, Roldan, and Unai Pascual. 2018. "A Typology of Elementary Forms of Human-Nature Relations: A Contribution to the Valuation Debate." *Current Opinion in Environmental Sustainability* 35:8–14. doi: 10.1016/j.cosust.2018.10.014.

Nalau, Johanna, and Gemma Cobb. 2022. "The Strengths and Weaknesses of Future Visioning Approaches for Climate Change Adaptation: A Review." *Global Environmental Change* 74(August 2021):102527. doi: 10.1016/j.gloenvcha.2022.102527.

Neuhoff, Rike, Luca Simeone, and Lea Holst Laursen. 2023. "Forms of Participatory Futuring for Urban Sustainability: A Systematic Review." *Futures* 154:103268. doi: 10.1016/j.futures.2023.103268.

Neuteleers, Stijn. 2020. "A Fresh Look at 'Relational' Values in Nature: Distinctions Derived from the Debate on Meaningfulness in Life." *Environmental Values* 29(4):461–79. doi: 10.3197/096327119X15579936382699.

Neuteleers, Stijn, and Glenn Deliège. 2020. "Het Nieuwe Denkkader van IPBES : Hoe de Zoektocht Naar de Waarde van Natuur de Wetenschappers Uit Hun Hokjes Jaagt."

Noy, Chaim. 2008. "Sampling Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research." *International Journal of Social Research Methodology* 11(4):327–44. doi: 10.1080/13645570701401305.

O'brien, F., and M. Meadows. 2007. "Developing a Visioning Methodology: Visioning Choices for the Future of Operational Research." *Journal of the Operational Research Society* 58(5):557–75. doi: 10.1057/palgrave.jors.2602259.

Van Oel, Pieter R., Maarten S. Krol, and Arjen Y. Hoekstra. 2009. "A River Basin as a Common-Pool Resource: A Case Study for the Jaguaribe Basin in the Semi-Arid Northeast of Brazil." *International Journal of River Basin Management* 7(4):345–53. doi: 10.1080/15715124.2009.9635393.

Palmer, Margaret A., Catherine A. Reidy Liermann, Christer Nilsson, Martina Flörke, Joseph Alcamo, P. Sam Lake, and Nick Bond. 2008. "Climate Change and the World's River Basins: Anticipating Management Options." *Frontiers in Ecology and the Environment* 6(2):81–89. doi: 10.1890/060148.

Parmesan, Camille, and Gary Yohe. 2003. "Aglobally Coherent Fingerprint of Climate Change Impacts across Natural Systems." *Nature* 421:37–42.

Pascual, Unai, Patricia Balvanera, Sandra Díaz, György Pataki, Eva Roth, Marie Stenseke, Robert T. Watson, Esra Başak Dessane, Mine Islar, Eszter Kelemen, Virginie Maris, Martin Quaas, Suneetha M. Subramanian, Heidi Wittmer, Asia Adlan, So Eun Ahn, Yousef S. Al-Hafedh, Edward Amankwah, Stanley T. Asah, Pam Berry, Adem Bilgin, Sara J. Breslow, Craig Bullock, Daniel Cáceres, Hamed Daly-Hassen, Eugenio Figueroa, Christopher D. Golden, Erik Gómez-Baggethun, David González-Jiménez, Joël Houdet, Hans Keune, Ritesh Kumar, Keping Ma, Peter H. May, Aroha Mead, Patrick O'Farrell, Ram Pandit, Walter Pengue, Ramón Pichis-Madruga, Florin Popa, Susan Preston, Diego Pacheco-Balanza, Heli Saarikoski, Bernardo B. Strassburg, Marjan van den Belt, Madhu Verma, Fern Wickson, and Noboyuki Yagi. 2017.

"Valuing Nature's Contributions to People: The IPBES Approach." *Current Opinion in Environmental Sustainability* 26–27:7–16. doi: 10.1016/j.cosust.2016.12.006.

Pascual, Unai, Roldan Muradian, Luke Brander, Michael Christie, Hans Cornelissen, Florian Eppink, Joshua Farley, John Loomis, Leonie Pearson, Charles Perrings, and Stephen Polasky. 2010. "Chapter 5 The Economics of Valuing Ecosystem Services and Biodiversity." *The Economics of Ecosystems and Biodiversity. Ecological and Economic Foundations* (January):183–255.

Patz, Jonathan A., Diarmid Campbell-Lendrum, Tracey Holloway, and Jonathan A. Foley. 2005. "Impact of Regional Climate Change on Human Health." *Nature* 438(7066):310–17. doi: 10.1038/nature04188.

Pereira, Laura M., Kathryn K. Davies, Eefje den Belder, Simon Ferrier, Sylvia Karlsson-Vinkhuyzen, Hye Jin Kim, Jan J. Kuiper, Sana Okayasu, Maria G. Palomo, Henrique M. Pereira, Garry Peterson, Jyothis Sathyapalan, Machteld Schoolenberg, Rob Alkemade, Sonia Carvalho Ribeiro, Alison Greenaway, Jennifer Hauck, Nicholas King, Tanya Lazarova, Federica Ravera, Nakul Chettri, William W. L. Cheung, Rob J. J. Hendriks, Grigoriy Kolomytsev, Paul Leadley, Jean Paul Metzger, Karachepone N. Ninan, Ramon Pichs, Alexander Popp, Carlo Rondinini, Isabel Rosa, Detlef van Vuuren, and Carolyn J. Lundquist. 2020. "Developing Multiscale and Integrative Nature–People Scenarios Using the Nature Futures Framework." *People and Nature* 2(4):1172–95. doi: 10.1002/pan3.10146.

Piccolo, John J. 2017. "Intrinsic Values in Nature: Objective Good or Simply Half of an Unhelpful Dichotomy?" *Journal for Nature Conservation* 37:8–11. doi: 10.1016/j.jnc.2017.02.007.

Prummel, Wietske. 2012. "The Significance of Animals to the Early Medieval Frisians in the Northern Coastal Area of the Netherlands: Archaeozoological, Iconographic, Historical and Literary Evidence." *Environmental Archaeology* 6(1):73–86. doi: 10.1179/146141001790523178.

Ragnarsdottir, K. V. 2022. "Everything Is Connected—Envisioning How a Regenerative World Looks Like." Pp. 133–44 in *Transformation Literacy*.

Reyers, Belinda, Stephen Polasky, Heather Tallis, Harold A. Mooney, and Anne Larigauderie. 2012. "Finding Common Ground for Biodiversity and Ecosystem Services." *BioScience* 62(5):503–7. doi: 10.1525/bio.2012.62.5.12.

Sheremata, Megan. 2018. "Listening to Relational Values in the Era of Rapid Environmental Change in the Inuit Nunangat." *Current Opinion in Environmental Sustainability* 35:75–81. doi: 10.1016/j.cosust.2018.10.017.

Siggelkow, Nicolaj. 2007. "Persuasion with Case Studies." *Academy of Management Journal* 50(1):20–24. doi: 10.5465/AMJ.2007.24160882.

Snyder, Hannah. 2019. "Literature Review as a Research Methodology: An Overview and Guidelines." *Journal of Business Research* 104(August):333–39. doi: 10.1016/j.jbusres.2019.07.039.

Soedirgo, Jessica, and Aarie Glas. 2020. "Toward Active Reflexivity: Positionality and Practice in the Production of Knowledge." *PS - Political Science and Politics* 53(3):527–31. doi: 10.1017/S1049096519002233.

Soini, Katriina, and Inger Birkeland. 2014. "Exploring the Scientific Discourse on Cultural Sustainability." *Geoforum* 51:213–23. doi: 10.1016/j.geoforum.2013.12.001.

Spinuzzi, Clay. 2004. "The Methodology of Participatory Design." *Technical Communication* 52(2):163–74. doi: 10.1353/csd.2015.0028.

Steffen, Will, Jacques Grinevald, Paul Crutzen, and John Mcneill. 2011. "The Anthropocene: Conceptual and Historical Perspectives." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 369(1938):842–67. doi: 10.1098/rsta.2010.0327.

Tallis, Heather, and Jane Lubchenco. 2014. "A Call for Inclusive Conservation." *Nature* 7–8.

Tengö, Maria, Rosemary Hill, Pernilla Malmer, Christopher M. Raymond, Marja Spierenburg, Finn Danielsen, Thomas Elmqvist, and Carl Folke. 2017. "Weaving Knowledge Systems in IPBES, CBD and beyond—Lessons Learned for Sustainability." *Current Opinion in Environmental Sustainability* 26–27:17–25. doi: 10.1016/j.cosust.2016.12.005.

Thomas, David R. 2006. "A General Inductive Approach for Analyzing Qualitative Evaluation Data." *American Journal of Evaluation* 27(2):237–46. doi: 10.1177/1098214005283748.

Urzedo, Danilo, and Catherine J. Robinson. 2023. "Decolonizing Ecosystem Valuation to Sustain Indigenous Worldviews." *Environmental Science and Policy* 150:103580. doi: 10.1016/j.envsci.2023.103580.

Vaismoradi, Mojtaba, Hannele Turunen, and Terese Bondas. 2013. "Content Analysis and Thematic Analysis: Implications for Conducting a Qualitative Descriptive Study." *Nursing and Health Sciences* 15(3):398–405. doi: 10.1111/nhs.12048.

De Vos, Alta, Carlos Bezerra Joana, and Roux Dirk. 2018. "Relational Values about Nature in Protected Area Research." *Current Opinion in Environmental Sustainability* 35:89–99. doi: 10.1016/j.cosust.2018.10.018.

Wesche, Sonia D., and Derek R. Armitage. 2014. "Using Qualitative Scenarios to Understand Regional Environmental Change in the Canadian North." *Regional Environmental Change* 14(3):1095–1108. doi: 10.1007/s10113-013-0537-0.

Wheeler, Tim, and Joachim Von Braun. 2013. "Climate Change Impacts on Global Food Security." *Science* 341(6145):508–13. doi: 10.1126/science.1239402.

Williams, Michael, and Tami Moser. 2019. "The Art of Coding and Thematic Exploration in Qualitative Research." *International Management Review* 15(1):45–55.

Wohlin, Claes. 2014. "Guidelines for Snowballing in Systematic Literature Studies and a Replication in Software Engineering." *ACM International Conference Proceeding Series*. doi: 10.1145/2601248.2601268.

Yilmaz, Kaya. 2013. "Comparison of Quantitative and Qualitative Research Traditions: Epistemological, Theoretical, and Methodological Differences." *European Journal of Education* 48(2):311–25. doi: 10.1111/ejed.12014.

Yin, R. K. 2003. "Designing Case Studies." Pp. 359–86 in *Qualitative research methods*. Vol. 5.

Other sources

Centraal Planbureau voor Statistiek (CBS). (27/09/2016) *Waar wonen de armen in Nederland?* by Benedikt Goderis and Cok Vrooman. Retrieved on 30/11/2023 from https://digitaal.scp.nl/armoedeinkaart2016/waar_wonen_de_armen_in_nederland/

Kimmerer, R. W. (2015). Braiding sweetgrass. Milkweed Editions.

Nationaal Park Lauwersmeer (n.d.). (a) *Vogels kijken.* Retrieved on 05/06/2024 from https://www.np-lauwersmeer.nl/doen-zien/vogels-kijken/

Nationaal Park Lauwersmeer (n.d). (b) *Vissen*. Retrieved on 05/06/2024 from https://www.np-lauwersmeer.nl/doen-zien/vissen/#:~:text=Vooral%20brasem%20en%20blankvoorn%20komen,zomeravonden%20een%20waar%20paradijs%20vormt.