Exploring future relations to nature across scales of agency through design in a cross-cultural context.

SCALES OF AGENCY

human nature

RELATION TO NATURE

human ↔ nature

The meeting of people and the natural world,
the interaction of systems that make life possible.

Exploring future relations to nature across scales of agency through design in a cross-cultural context.

SCALES OF AGENCY

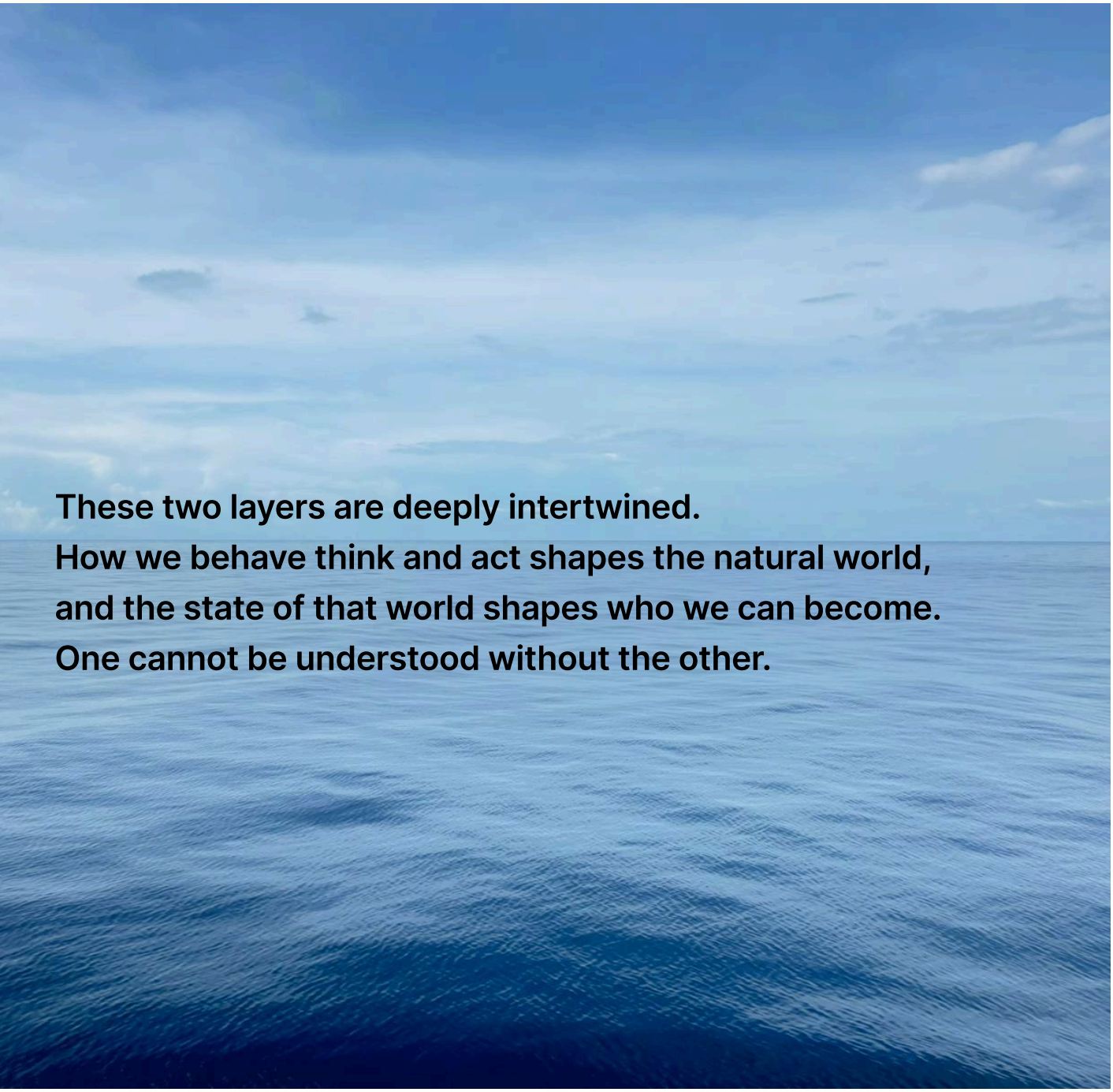
RELATION TO NATURE

human nature

The fundamental characteristics and ways of thinking, feeling, and acting that are intrinsic to being human.

Exploring future relations to nature across scales of agency through design in a cross-cultural context.

SCALES OF AGENCY



RELATION TO NATURE


TU Delft
Delft
University of
Technology


INDONESIA BIRU
FOUNDATION

Exploring future relations to nature across scales of agency through design in a cross-cultural context.

SCALES OF AGENCY

MSc Design for Interaction
Master thesis

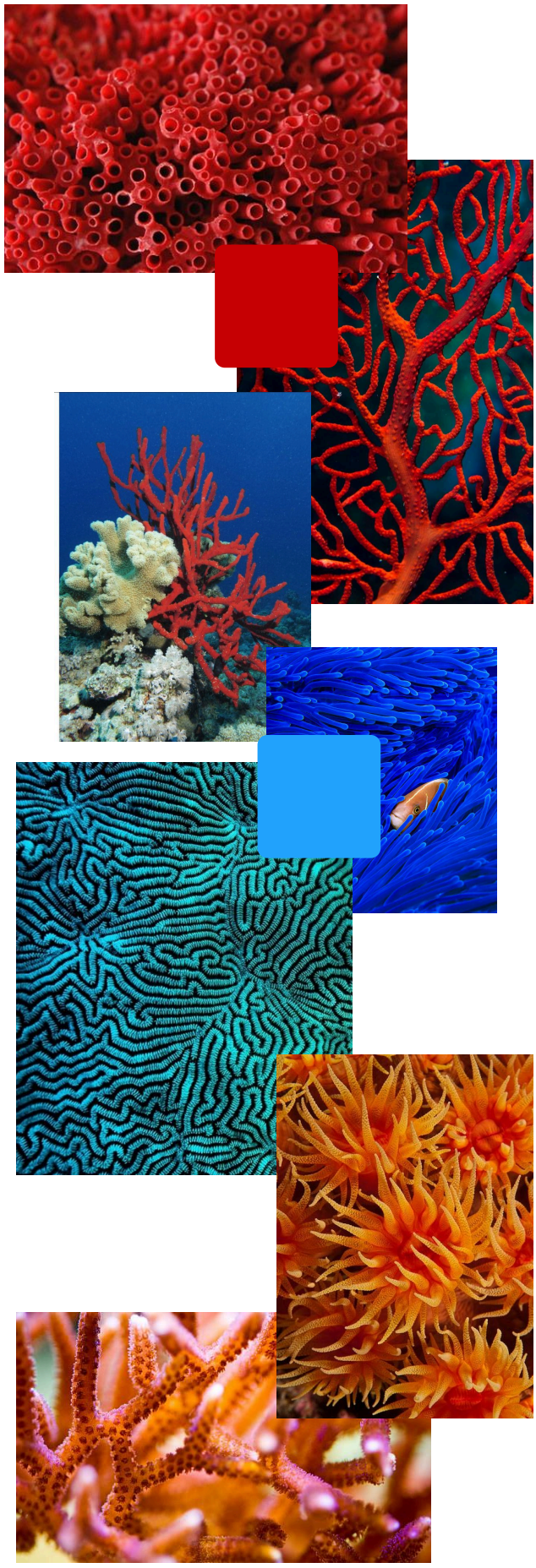
Iza van der Klauw

February 2026

RELATION TO NATURE

human nature

Exploring future relations to nature toward 2045 across scales of agency through design in a cross-cultural context.



Colophon

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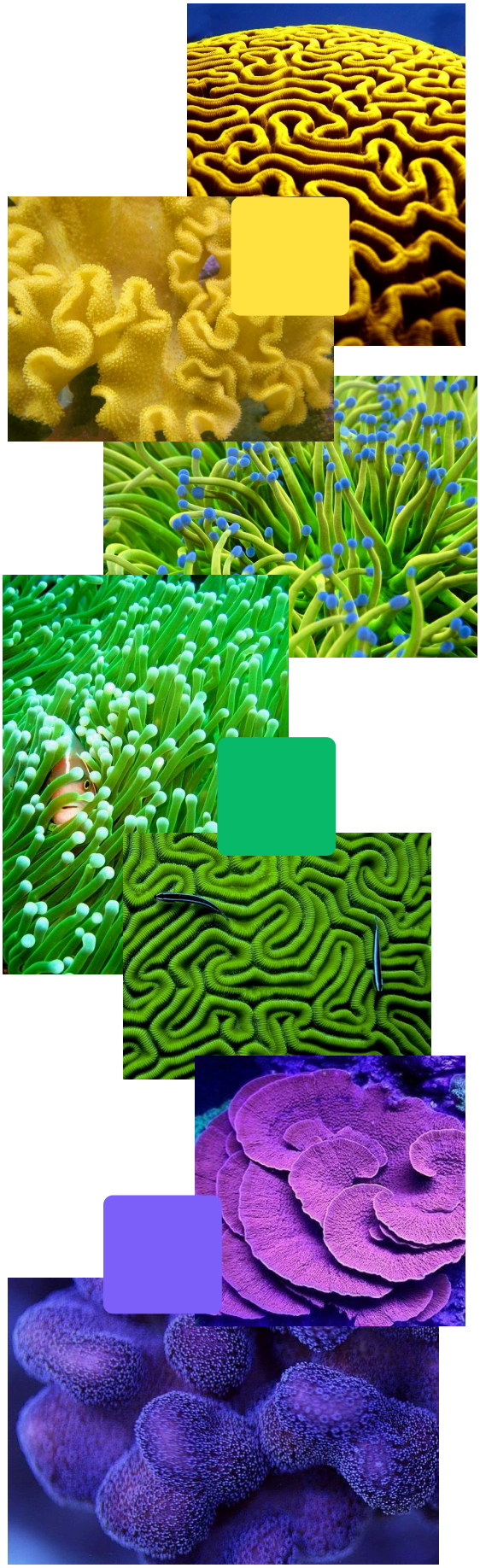

Preface

This graduation project marks the completion of my master's journey, but it was also something more personal. For four months, I made Lombok my home. I took the task of exploring the context quiet seriously and chose to live within it. Without many familiar people around me, my relationship with nature began to deepen.

The process of exploring how society in Lombok might relate to nature in 2045 has challenged me to think beyond immediate solutions and to approach design as a way of shaping futures.

I would like to sincerely thank Matthijs for offering me a new perspective on design and for his critical feedback throughout this process. His sharp questions and constructive critique significantly strengthened the quality of my work and pushed me to think more deeply and precisely.

I am equally grateful to Natassia for her empathy and continuous support. Throughout every phase of the project, I felt that she stood beside me always thoughtfully engaged. She has been an exceptional sparring partner, and her involvement made the process both smoother and more meaningful.

I would also like to thank both of them for the openness, laughter, and personal guidance they brought to this journey. Their support created a space in which I could be myself and feel comfortable being open and vulnerable throughout the process.

My gratitude also goes to the team of IBF for their openness, trust, and willingness to explore new directions together. Working closely with local partners, teachers, and community members in Lombok has shaped this project in essential ways. Thank you to everyone who participated in interviews, workshops, classroom testing, and conversations. Your insights and experiences form the foundation of this work.

I hope this project contributes, even in a small way, to future conversations about how humans and nature can relate more consciously and responsibly.

Executive summary

Research and context exploration
This graduation project explores how the relationship between society and nature in Lombok might evolve toward 2045, and how design can help shape this relationship in a culturally sensitive and future-oriented way. Guided by the Vision in Design (ViP) methodology, the project uses design to structure complexity and articulate long-term societal values.

Through literature research, interviews, surveys, and field observations, key contextual factors were identified and structured into the foundation for the futures framework.

Futures framework
The findings were translated into a 4 × 4 framework.
The X-axis represents four ways of relating to nature: Nature as Sacred, Nature as Interdependent System, Nature as Uncontrollable, and Nature as to Be Controlled.

The Y-axis represents four scales of agency: community, knowledge, institutional, and global.
Together, these dimensions generate sixteen plausible human–nature relations for 2045.

Sixteen societal goals
The framework was presented as an interactive workshop at Coral Connect, an event bringing together conservationists, local communities, NGOs, policymakers, and ecotourism practitioners in Lombok. The session explored how different stakeholders relate to the sixteen future societal goals and used the research outcomes as a dialogue and reflection tool.

In addition, a Human–Nature booklet was designed for the event, summarizing the framework and societal goals in an accessible format. The booklet was also presented during a meeting with provincial authorities to support discussion at the policy level.

Four intervention layers
The sixteen societal goals can be interpreted into four intervention layers:

Global: markets, tourism, and international influence

Institutional: governance, rules, and public systems

Knowledge: education, awareness, and skills

Community: daily life, culture, and behaviour

These layers indicate where change can occur across society.

Design focus: Knowledge intervention layer

Based on feasibility and strategic alignment, the project focused on the Knowledge layer. Education was identified as a realistic entry point for influencing long-term human–nature relations.

Designing, testing, and roadmap

A course concept was developed within the existing educational system. Four societal goals were translated into curriculum pillars and embodied in four lesson prototypes. These prototypes were tested in primary schools and iteratively refined.

Three development horizons connect present actions to 2045. They outline how the project can evolve over time in terms of vision, activities, and collaboration, building on existing structures while gradually introducing new relational perspectives.

Collaboration and Reflection

The project was developed in collaboration with IBF, local teachers, and initial alignment with Bappeda NTB. Further institutional embedding requires continued partnerships.

As a cross-cultural design project, the work was shaped by local engagement but remains influenced by the positionality of the designer. Language and cultural interpretation required continuous reflection throughout the process.

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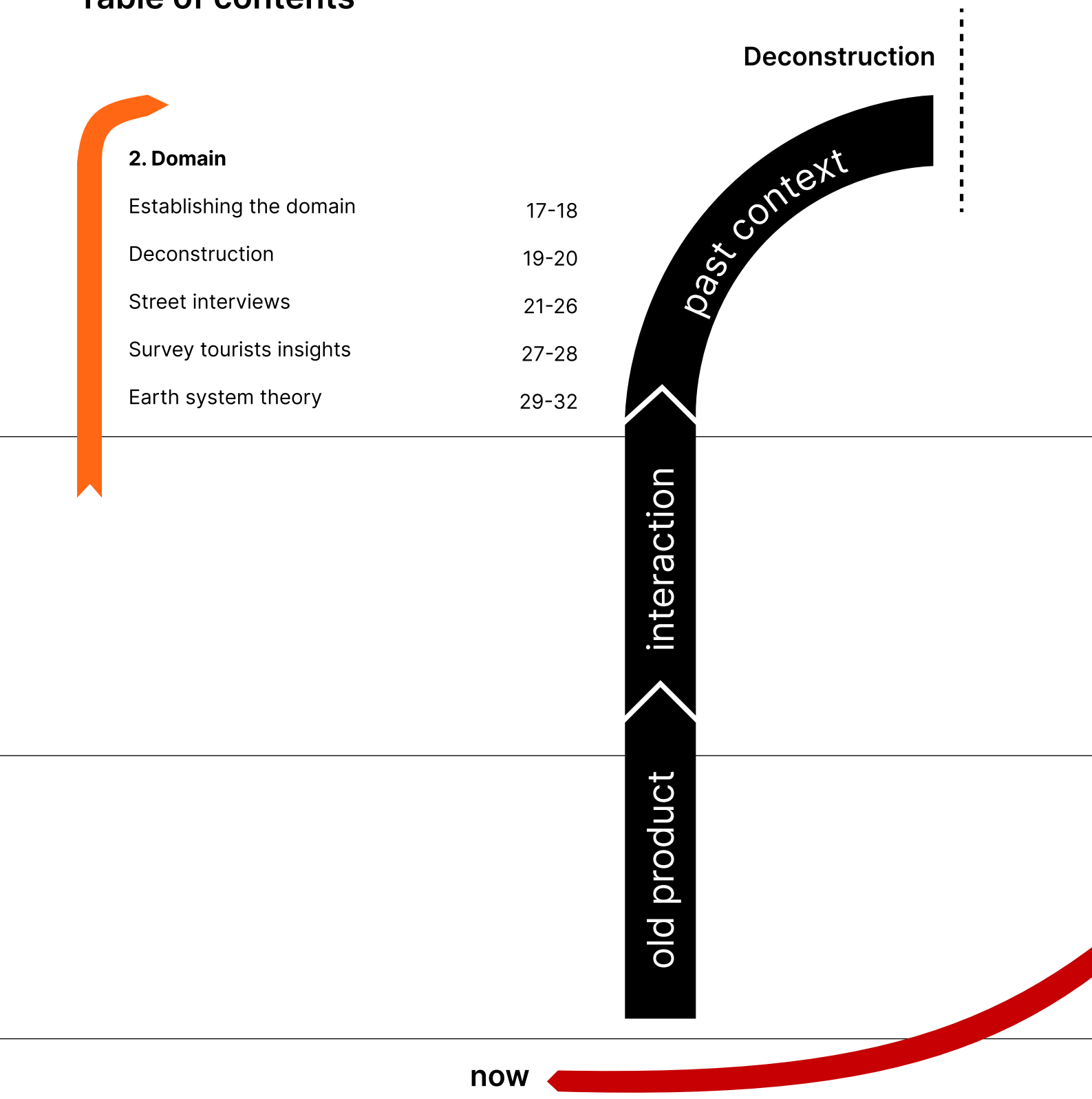

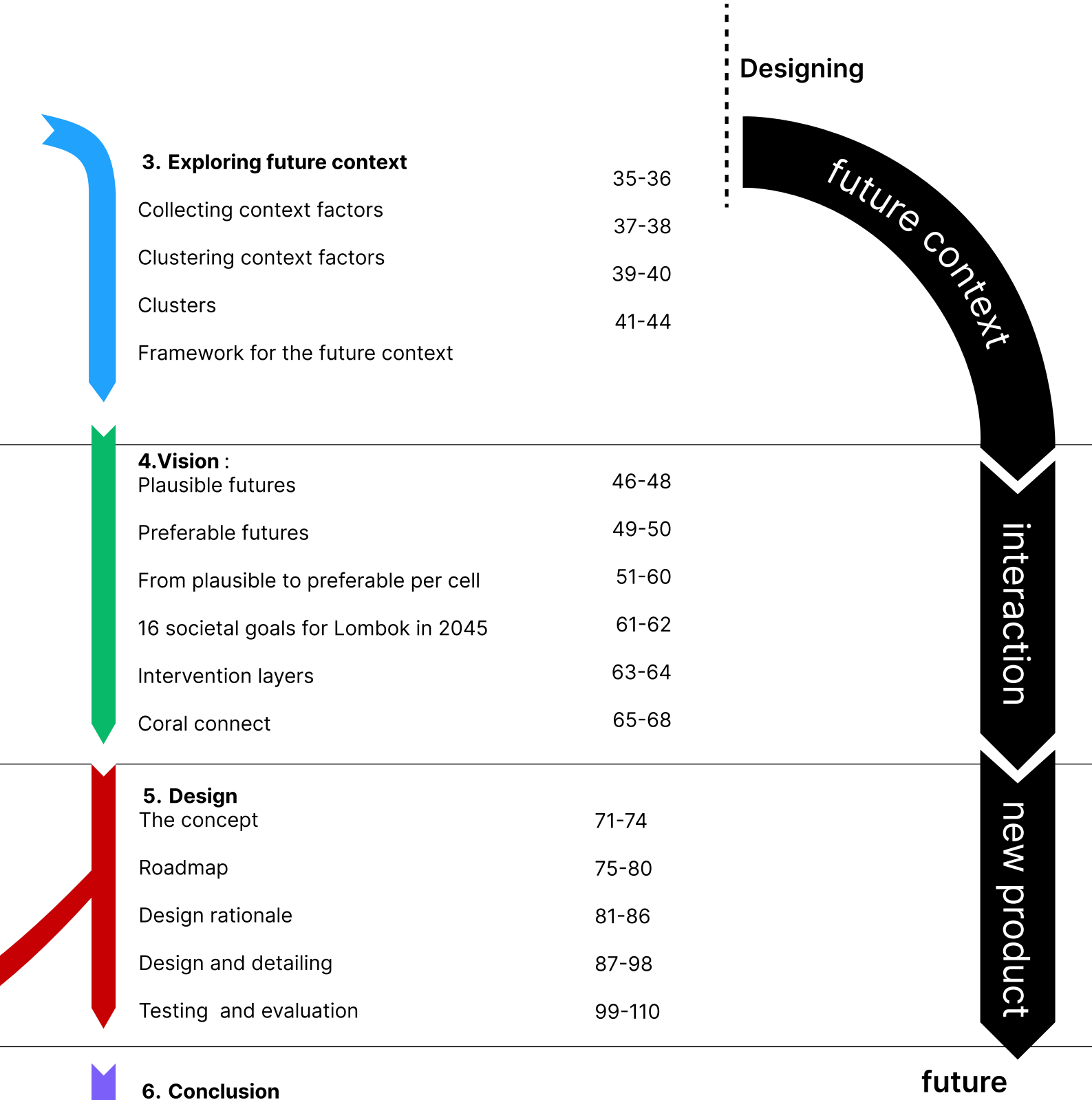

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Reflection report

PROJECT INTRODUCTION

1

1. Project introduction

This graduation project is guided by two interconnected research questions that operate on different levels and are explored through different formats.

RQ1 focuses on the future relationship between Lombok's society and the underwater world in 2045, and explores how design can contribute to shaping this relationship. This question forms the core of the project and is addressed throughout the entire report. The analysis, framework for future context, preferable futures, design statement, and final design outcome are all developed in direct response to this research question. Consequently, RQ1 is articulated and examined within the formal academic structure of this A4 report.

RQ2 takes a reflective perspective. It examines the role of the designer within a cross-cultural design context and questions to what extent it is possible to design in a culturally sensitive way for a society that differs significantly from one's own cultural background. Given the reflective and personal nature of this question, RQ2 is addressed in a separate A5 format. This format allows for a more informal, critical, and introspective mode of writing, complementing the academic rigor of the main report.

By separating these two research questions across different formats, the project intentionally distinguishes between designing for a future society and reflecting on the position and responsibility of the designer. Together, the A4 report and the A5 reflection form a coherent whole, combining analytical depth with critical self-reflection.

Research questions

RQ1 How might Lombok's society relate to nature in 2045, and how can design contribute to shaping these relationships?

Sub-questions:
RQ1.1. Which states, principles, developments, and trends across multidisciplinary domains influence the future relationship between between society in Lombok and nature toward 2045?

RQ1.2. How might these contextual factors interact and unfold over time, shaping plausible future human–nature relationships by 2045?

RQ1.3.Which preferable futures can be envisioned for these relationships, and what values and qualities define a desired human–nature relationship?

RQ1.4. How can the identified values and design qualities be translated into design interventions, and what transformation path can guide the transition from the present toward 2045?

RQ2 How can a designer responsibly operate within a cross-cultural context while acknowledging their positionality and limitations?

Sub-questions:
RQ2.1How does the designer's position and background influence decisions and interpretations in a cross-cultural context?

RQ2.2What attitudes and design approaches help a designer work in a culturally sensitive way when operating in an unfamiliar context

RQ2.3What limitations and ethical boundaries remain when designing for a society that is not one's own?

Methodology

This project adopts the Vision in Design (ViP) method as its guiding research and design methodology (Hekkert & Van Dijk, 2011). ViP provides a structured approach for engaging with complex and uncertain societal challenges by mapping contextual forces and translating them into future-oriented design intentions. Rather than starting from products or technological solutions, ViP begins with society itself, focusing on behaviours, tensions, and emerging values.

ViP can be seen as a Darwinistic way of looking at societal change, in which societal practices, meanings, and relationships evolve in response to changing environmental, social, and technological conditions. This perspective enables the identification of patterns that persist over time, as well as those that adapt or transform under pressure, forming the basis for exploring both plausible and preferable futures.

In this project, ViP functions as a framework for structuring a rich socio-cultural context. Insights from desk research, field research, interviews, observations and co-discovery sessions were clustered and analysed to construct a futures framework. This framework supported the exploration of plausible futures and the development of preferable futures that express desired societal values, providing direction for the design process and its outcomes.

Design is approached as a strategic and relational practice, focusing on shaping relationships between society and nature over time. In this sense, ViP supports design as a means of articulating future directions and guiding design decisions toward the year 2045.

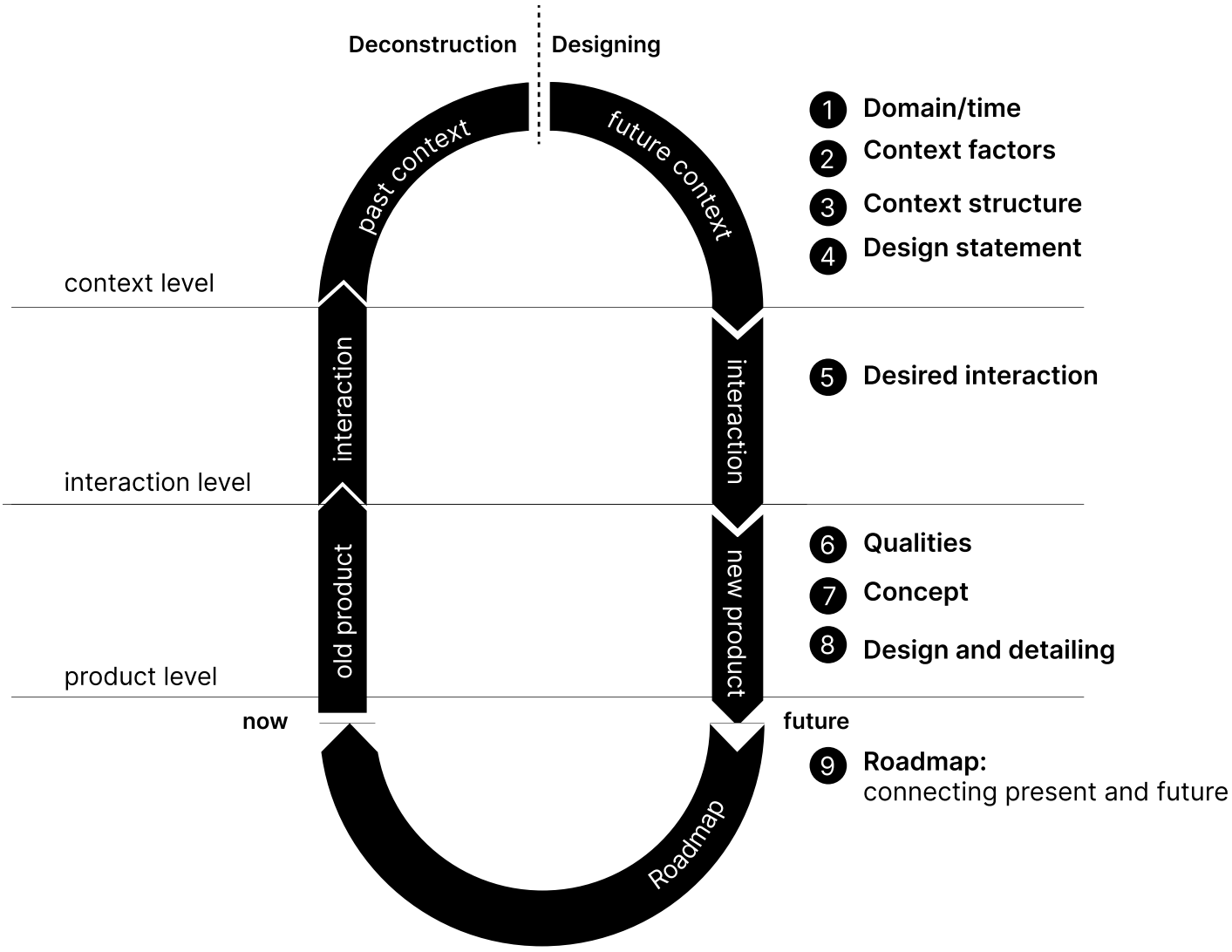


Figure 1: 9 steps of the process embedded in the ViP model. (Hekkert & Van Dijk, 2011)

Steps of ViP correlating to chapters

The structure of this report is directly aligned with the Vision in Design methodology, as reflected in the table of contents. ViP provided the underlying structure for this project and shaped its progression throughout the research and design process. As a result, this graduation project is explicitly process-driven, with each chapter corresponding to a specific step within the ViP framework.

The following overview describes how the steps of Vision in Design are applied in this project and how they relate to the chapters of the report:

Deconstruction
The deconstruction of an existing product through the three ViP levels of product, interaction, and context, in order to understand the current relationship between these layers.
→ Chapter 2.2

1. **Domain/time**
The definition of the project domain and the future time horizon guiding the research and design process.
→ *Chapter 2.1*

2. **Context factors**
The identification of relevant states, principles, developments, and trends across multiple disciplinary fields.
→ *Chapter 3.1*

3. **Context structure**
The clustering and structuring of context factors to identify relationships, tensions, and patterns within the system.
→ *Chapter 3.2 and 3.3*

4. **Design statement**
The articulation of a design vision that expresses a desired future relationship between society and nature.
→ Chapter 4.3

5. **Desired interaction**
The intended interaction between humans and the design intervention, described through the use of analogies.
→ Chapter 4.3

6. **Qualities**
The formulation of the qualities the design should embody, functioning as a program of requirements for the design direction.
→ Chapter 4.3

7. **Concept**
The definition of the central design concept based on the preceding steps.
→ Chapter 5.1
Concept development can be seen in 5.5 Design rationale.

8. **Design and detailing**
The materialisation of the concept through prototypes. Testing and evaluating
→ Chapter 5.3

9. **Roadmap: connecting present and future**
The development of a roadmap that connects current conditions to the future context of 2045.
→ Chapter 5.2

Collaborative role of the Indonesia Biru Foundation

The Indonesia Biru Foundation (IBF) is an independent non-governmental organization dedicated to the conservation and sustainable management of Indonesia's coastal and marine ecosystems. Established in 2020, IBF focuses on coral reef research and restoration, coastal community development, environmental education, and ecosystem monitoring along the coastal regions of Lombok, Indonesia (Indonesia Biru Foundation, n.d.).

In the context of this graduate project, IBF played an essential supportive and facilitating role. From the outset, IBF responded enthusiastically to the project proposal and supported the practical conditions required for long-term fieldwork, including guidance in obtaining a work visa.

The project was process-driven and did not work toward a predefined outcome for IBF. Through the application of the Vision in Design methodology, the project domain and future-oriented direction became clear at an early stage. Although the project domain was aligned with IBF's field of practice and therefore relevant to the foundation, IBF did not determine the project direction. Their involvement consisted of advisory input and practical support.

IBF's expertise and network were essential in connecting me to relevant people, places, and contexts. This network functioned in two directions: IBF supported my participation as a speaker at a congress and several local events, enabling me to discuss, conduct, and disseminate my research, while the foundation could share the project insights within its own networks.

In decision-making, IBF's perspective was an important but non-decisive factor. This ensured alignment with the foundation's values, which is particularly relevant as the project continues in collaboration with IBF after the completion of this graduation project.

Figure 2: Photographs of conversation activities organized by Indonesia Biru Foundation.
Note. From Indonesia Biru Foundation (n.d.)

WHAT DO I WANT TO GET OUT OF MY GRADUATION PROJECT?

WHAT DO I WANT TO GET OUT OF MY GRADUATION PROJECT?

At the start of my graduation project, I asked myself a fundamental question: what do I want to gain from my final learning experience as a student?

There were many possible considerations. Future career opportunities, professional development, MedDesign specialisation, or building a strong portfolio were all part of the decision-making process.
However, none of these became the main driver.

I realized that this project was my final opportunity to shape my learning experience in a highly personal way. I wanted to use this time to learn as much as possible, for myself. That meant deliberately placing myself in unfamiliar situations, working in contexts I knew little about, and stepping outside the comfort zone of the design field I had become accustomed to during my studies at the TU Delft.

For this reason, I consciously chose supervisors from whom I believed I could learn the most, each offering a different form of expertise and perspective.

In addition, I became aware that my entire academic journey had largely taken place within a bubble of Western privilege and prosperity. I had never designed within a completely unfamiliar cultural context. Engaging with such a context felt both challenging, and therefore like a valuable learning experience that I do not expect to encounter this in the same way once I enter the professional world.

WHY THIS PROJECT?

WHY THIS PROJECT

I knew that I would invest half a year of my time, energy, and care into this project, and that it had the potential to create real value. I did not want to spend this unpaid work on a company that could easily afford to hire a designer. Instead, I wanted to dedicate my time to something more socially vulnerable, something that felt “good.”

But that immediately raised the question: what does good actually mean?

I made a long list of possible directions and developed several proposals. Somewhere along the way, I came across IBF, an Indonesian foundation focused on the wellbeing of the ocean. It immediately resonated with me. I sent them an email, along with several other proposals to different organizations that same afternoon.

IBF responded almost immediately. We spoke the following day, and the conversation felt right. It aligned with exactly what I was looking for: a vulnerable and complex subject, a challenging and meaningful learning experience for me as a student.

Spending a few months surrounded by nature, and skipping the cold winter, was a welcome bonus.

WHO AM I TO DESIGN FOR A CULTURE THAT IS NOT MY OWN?

WHO AM I TO DESIGN FOR A CULTURE THAT IS NOT MY OWN?

At a certain point, an unavoidable question emerged: who am I to design for a culture that is not my own, especially when the work is oriented toward the future?

I had taken courses on designing in emerging markets and social design. Yet, what stayed with me most was not what I could do, but everything I could potentially do wrong. The risks, the blind spots, and the unintended consequences became increasingly present in my thinking.

After a conversation with Professor Annemiek van Boeijen, who has written a book on culture sensitive design, this uncertainty sharpened into a single, confronting question: who are you to shape someone else's future? And more importantly, is that even possible?

That question stayed with me. It challenged my assumptions and became difficult to ignore. In many ways, it marked the starting point of my second research question:
RQ2: *How can a designer operate in a cross-cultural design context in a culturally sensitive way, and what are the limitations of designing for a society that differs significantly from one's own cultural background?*

Throughout this report, this question serves as a guiding thread. Through short reflections, observations, and personal considerations, I explore the tensions and insights that emerged during the project. In the concluding chapter, I return to this question to reflect on what it means to design within a culture that is unfamiliar, and whether it is possible to do so responsibly at all.

DOMAIN

2

2. Domain

This chapter explores the domain in which the project is situated and addresses RQ1.1: Which contextual factors influence the evolving relationships between society in Lombok and nature toward 2045?

The research begins with establishing the domain. This is followed by a deconstruction of IBF's current product and activities in order to understand the organization's existing positioning within the ViP layers. Subsequently, the domain is explored through: literature review, expert interviews, street interviews, field observations, surveys, and local conversations to capture diverse perspectives on human–nature relationships in Lombok.

The findings from these research activities are identified as contextfactors. These factors form the foundation for further structuring and synthesis in the next chapter.

Establishing the domain

In the Vision in Design (ViP) approach, the domain serves as the conceptual lens through which a designer explores the world. It is not a predefined problem or solution, but rather a deliberately broad area of interest that guides the discovery of relevant contextual factors (Hekkert & Van Dijk, 2009). By defining a domain, designers open up possibilities to imagine future interactions, rather than focusing only on solving present-day issues.

The exploration of the domain initially started with coral reefs, reflecting IBF's primary focus on coral conservation. However, it quickly became clear that coral could not be understood in isolation. The reef is embedded within a broader underwater ecosystem, which in turn is inseparable from coastal communities, land-based activities, and cultural practices. Sea, land, and people form an interconnected system in which ecological and social dynamics continuously influence one another.

As a result, the domain expanded from coral conservation to the broader question of how society in Lombok relates to nature as an interconnected whole. This shift allowed the project to move beyond a single ecological entity and instead explore relational patterns between humans and their environment across scales.

Domain:

The evolving relationship between Lombok's society and nature in 2045.

The island of Lombok is deeply connected to its surrounding marine ecosystems, yet these ecosystems have become increasingly disrupted in recent decades. Coral reefs, which support both ecological balance and the livelihoods of coastal communities, are vulnerable to human impact, climate change, and shifting economic pressures. Within this context, the project explores how the relationship between people and the underwater world might transform towards 2045.

The coral reef can be understood as part of a wider living system where ecological, social, and cultural dimensions are intertwined. By approaching this system as an ecosystem of relationships, the design process aims to uncover how values, beliefs, and behaviours influence the way society engages with the sea. This exploration is not limited to environmental concerns but extends to the ways in which communities define identity, coexistence, and care within a changing marine landscape. Through this lens, the domain invites reflection on how future interactions between humans and the coral ecosystem might foster new forms of balance and resilience.

Why 2045

The chosen time horizon of 2045 is deliberate. Coral reefs grow and regenerate slowly; depending on species and environmental conditions, recovery from severe damage may take several decades (Hughes et al., 2017). Setting a long-term perspective is therefore essential to envision meaningful change for both ecological restoration and human adaptation.

Moreover, designing for behavioural or policy change requires extended time frames, as such transformations evolve gradually through shifts in norms, values, and systems of governance (Bhamra, Lilley, & Tang, 2011). The year 2045 also aligns with Indonesia's national vision of a "Golden Indonesia 2045," which aspires to prosperity and sustainability, including within the marine sector. Referring to this milestone year is a subtle nod to that ambition, situating the project within a hopeful, forward-looking narrative for Lombok's marine future.

Deconstruction

This deconstruction focuses on the coral spider structures, see Figure 3, the primary restoration product widely applied by IBF. As a central intervention within IBF's reef restoration approach, this product serves as a representative case for analysing how design choices express underlying values, assumptions, and human–nature relationships through the lens of the Vision-in-Product methodology.

The deconstruction was also done with the IBF team, you can find a picture of this session, in Appendix A.1.

Product level
At the product level, the coral spider structures consist of small, modular hexagonal steel frames. Their open geometry allows for water flow and coral settlement, while the lightweight construction enables manual transport and installation. Coral fragments are attached using simple fastening materials such as cable ties or rope. The structures are placed on unstable rubble fields, where natural reef recovery would otherwise be inhibited. The system is intentionally designed to be low-cost and scalable.

Beyond their material characteristics, the coral spider structures express a big contrast between engineered order and natural growth.

The absence of technological embellishment, moving parts, or embedded intelligence positions the structure as a passive scaffold rather than an active controller. Its role is limited to providing stability and spatial conditions, while the form, rhythm, and direction of growth remain governed by natural processes.

Context level

The coral spider structures emerged from a combination of ecological urgency, socio-economic realities, and practical constraints. Together, these factors shaped both the need for intervention and the form it ultimately took.

Ecologically, the project responds to widespread coral reef degradation, particularly in areas affected by destructive fishing practices that leave behind unstable rubble fields. In these conditions, natural reef recovery is severely limited, making active intervention necessary to re-establish basic conditions for regeneration.

Socio-economically, the restoration approach is grounded in the recognition that local communities must be directly involved and benefit from restoration efforts. Healthy reefs are closely linked to fisheries, coastal protection, and tourism, while restoration activities create opportunities for employment, skill development, and long-term engagement in regions with limited alternatives.

The project is further shaped by a preference for technological simplicity. Solutions were designed to be locally fabricated using basic tools, reducing dependence on external expertise and enabling scalability, replication, and local ownership over time.

Interaction level

The interaction with the coral spider structures is characterised by careful cultivation through collective effort. Local conservation initiatives are involved in fabrication, installation, monitoring, and maintenance, making human engagement an integral part of the restoration approach.

Installation is sometimes organised as public events, positioning the structures as educational artefacts that facilitate knowledge transfer to visitors and tourists and support adaptive learning through practice. While effective for awareness-building, such events also reveal a tension between social engagement and ecological care, as moving coral to shore is not optimal for coral health.

Long-term commitment is essential, as coral growth unfolds over years rather than months. The structures require intensive and continuous maintenance, including weekly dives to clean frames, replace deceased fragments, and remove natural predators. These activities demand certified diving skills and precise buoyancy control to avoid damaging surrounding coral.

This sustained engagement requires patience, physical effort, and care, while simultaneously fostering a strong sense of ownership and pride among participants. In some initiatives, coral planting is used symbolically, for example as a personalised gift.

Overall, the interaction quality can be described as humble dedication: a combination of labour, specialised care, shared responsibility, and restrained optimism toward long-term recovery.

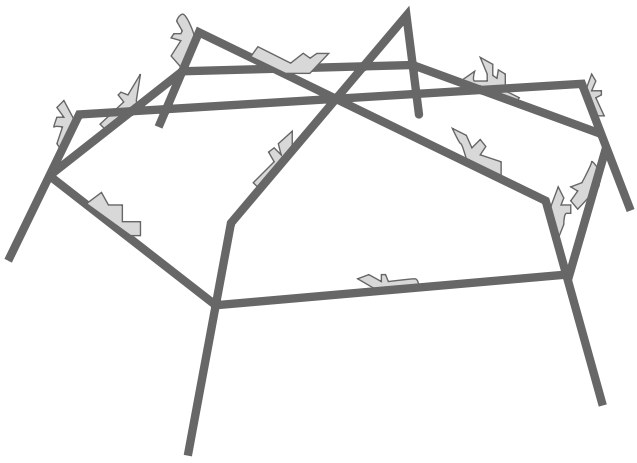


Figure 3: Sketch of coral spider structures used by IBF.

Street interviews

To move beyond reports and assumptions, we, together with Dara from IBF, spoke directly with the people who interact with the ocean every day. Fishermen are often portrayed as part of the problem, but how do they themselves experience the current state of the sea? And what do those who observe the underwater world more closely see happening?

Across five locations, local fish market, four coastal fishing spots, and several diving schools, we interviewed 16 people whose livelihood, food, or daily work depends on the underwater world. Sixteen voices cannot offer statistical certainty, but they do reveal patterns, tensions, and valuable human insights.

Declining marine ecosystems, witnessed first-hand
The decline of the underwater environment was the first thing almost everyone mentioned. Fishermen pointed to places where they once caught fish easily but can no longer rely on. To secure a decent catch, they now travel farther from shore and fish at greater depths. Dive instructors shared similar observations: coral structures thinning out, biodiversity fading, and species that used to be common becoming rare sightings. Together, these stories form a clear, experiential record of ecological degradation.

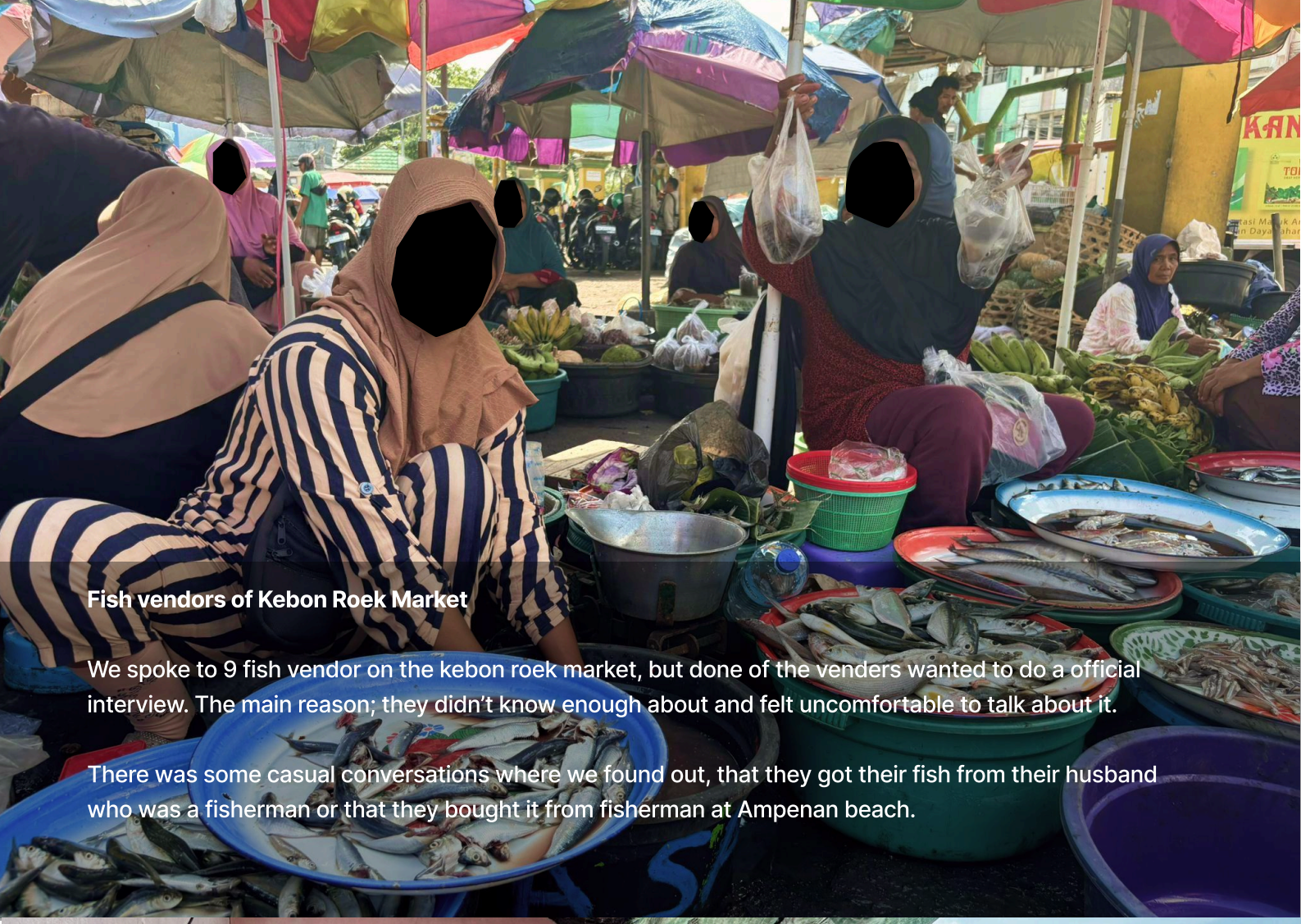
Condition of coral reef health
Awareness of human impact is strikingly present among the people we spoke with. Dynamite fishing, large mechanized nets, plastic waste, destructive tourism, and global warming were named as drivers of reef decline. This level of awareness suggests not ignorance, but a gap between understanding and the ability to act. People know what is happening; they simply lack the means to change it.

Responsibility and actions
Responsibility, according to the community, is shared. Both local residents and the government play a role in protecting the sea, yet respondents expressed that current efforts fall short. There is a desire for clearer guidance, better waste facilities, and structured recovery programs. The will exists, the infrastructure does not.

Perspectives on the future of the ocean
Despite the challenges, many remain hopeful. They believe the ocean can recover if awareness continues to rise, governmental support becomes stronger, and coastal infrastructure improves. Still, concerns about inorganic waste and coastal erosion remain urgent, casting uncertainty over the future.

The relationship between the community and the sea
The depth of people's connection to the ocean runs through every story we heard. For fishermen, the sea is not only a source of income but a defining part of who they are, something learned from previous generations and woven into daily family life. In many households, fishing is a shared rhythm: men venture out to sea, while women bring the catch to the market.
For dive instructors, the ocean is both passion and profession, encountered closely every day and read like a shifting landscape.

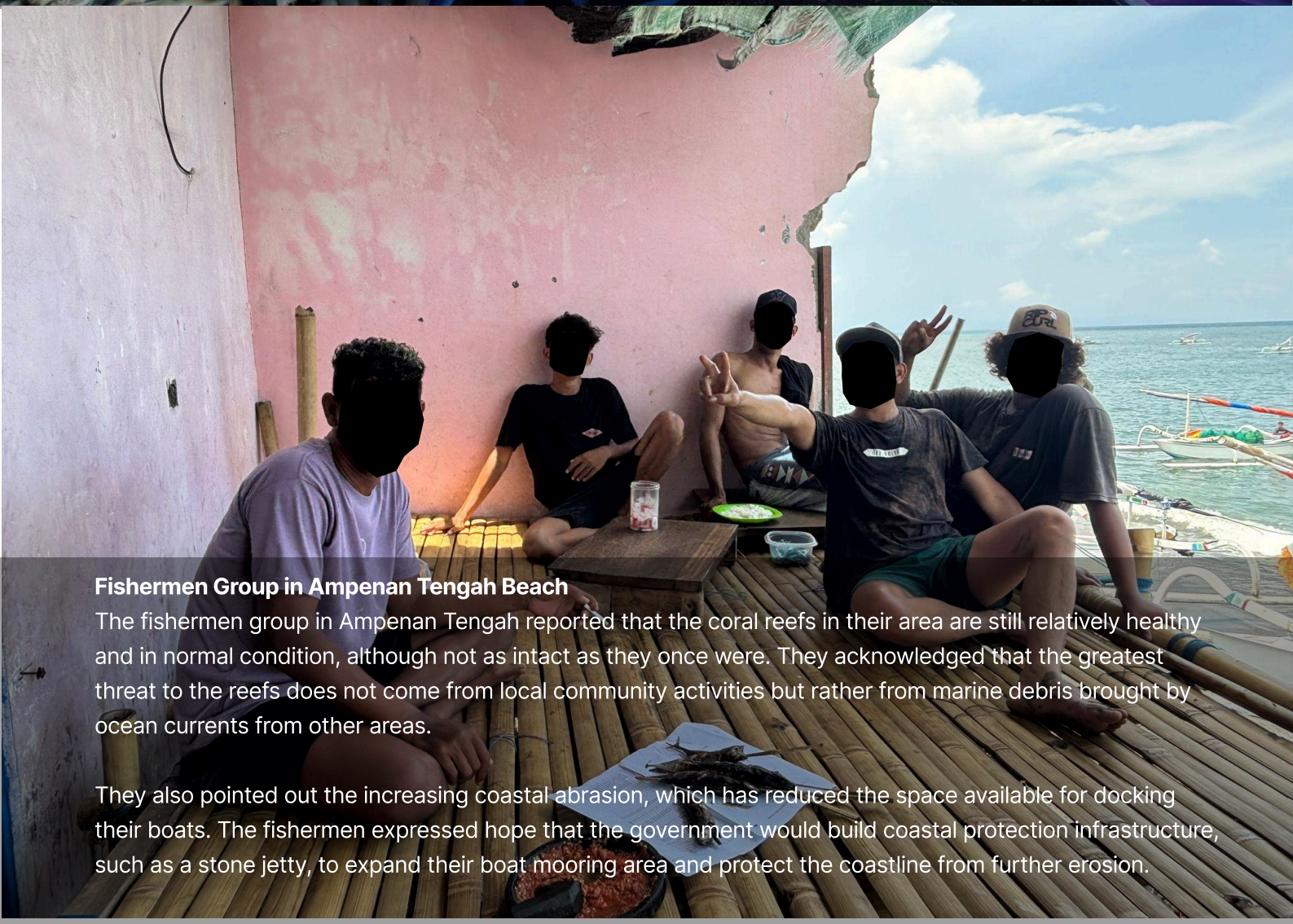
Across all groups, the message was clear: when the ocean changes, the lives of those who depend on it change with it. These conversations reveal more than environmental decline, they show how ecological stress echoes through cultural traditions, family structures, and economic stability. What emerges is a community that is aware, concerned, and hopeful, yet still needs support to turn that awareness into meaningful action.



Fish vendors of Kebon Roek Market

We spoke to 9 fish vendor on the kebon roek market, but done of the venders wanted to do a official interview. The main reason; they didn't know enough about and felt uncomfortable to talk about it.

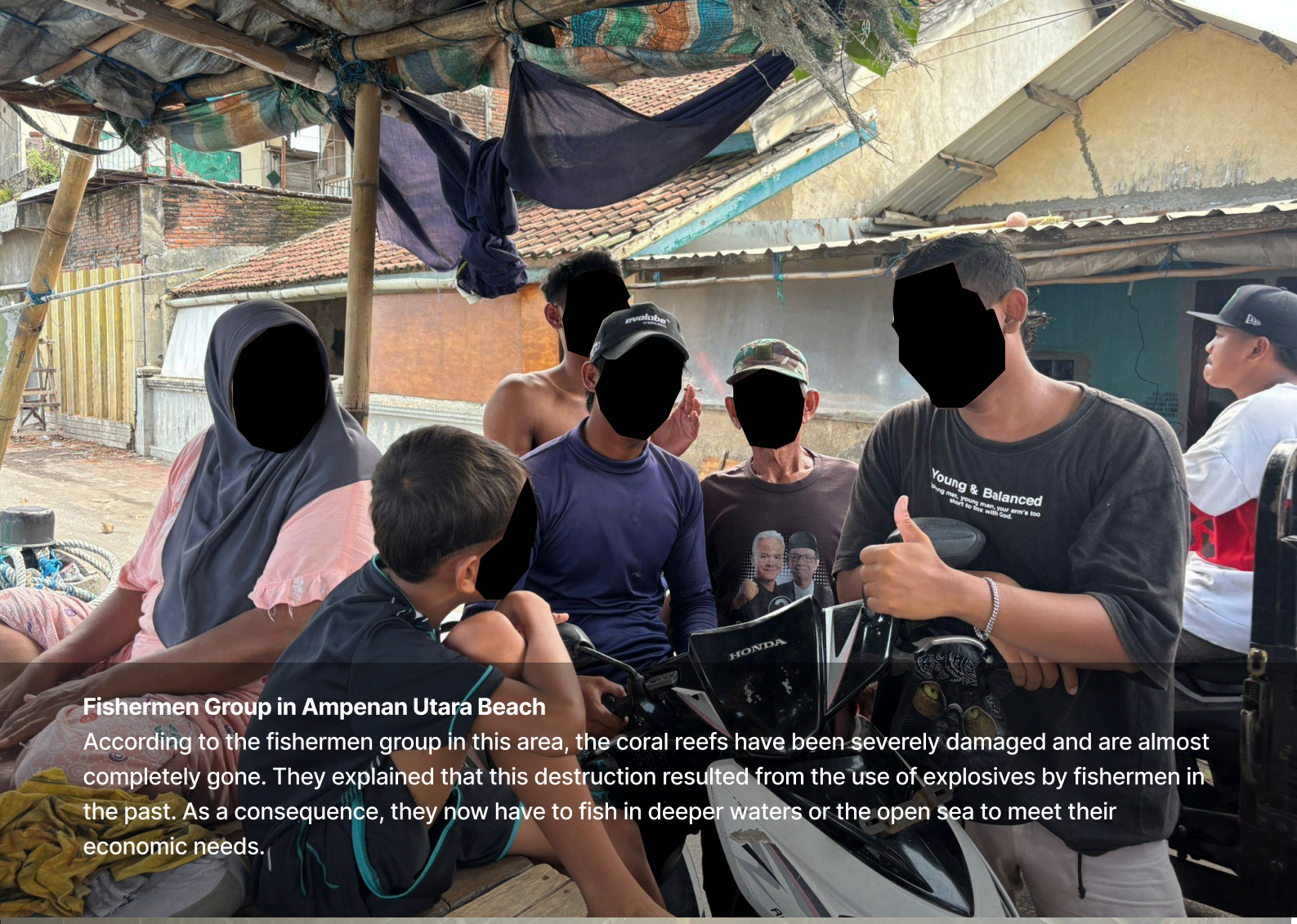
There was some casual conversations where we found out, that they got their fish from their husband who was a fisherman or that they bought it from fisherman at Ampenan beach.



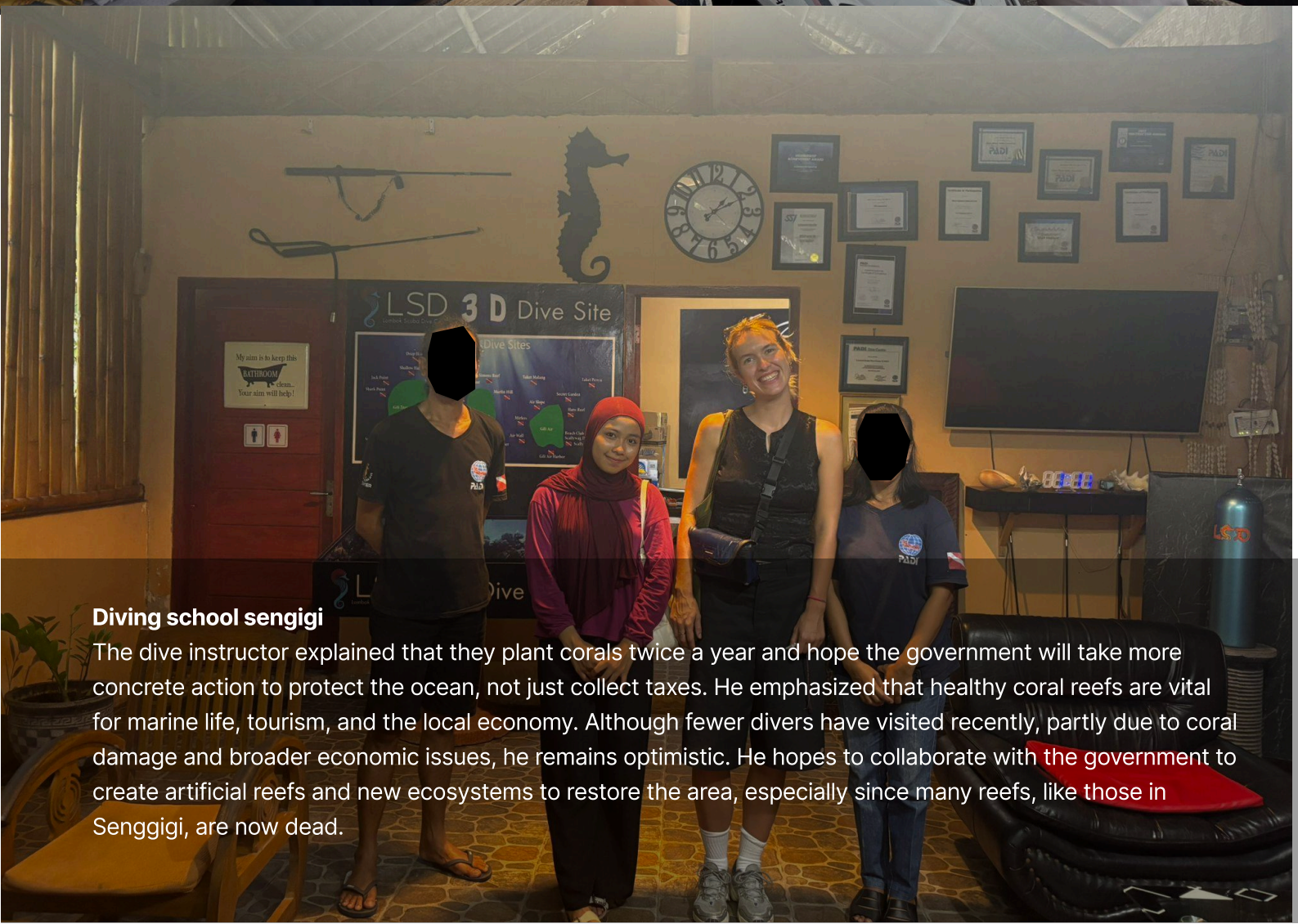
Fishermen Group in Ampenan Tengah Beach

The fishermen group in Ampenan Tengah reported that the coral reefs in their area are still relatively healthy and in normal condition, although not as intact as they once were. They acknowledged that the greatest threat to the reefs does not come from local community activities but rather from marine debris brought by ocean currents from other areas.

They also pointed out the increasing coastal abrasion, which has reduced the space available for docking their boats. The fishermen expressed hope that the government would build coastal protection infrastructure, such as a stone jetty, to expand their boat mooring area and protect the coastline from further erosion.



Fishermen Group in Ampenan Utara Beach
According to the fishermen group in this area, the coral reefs have been severely damaged and are almost completely gone. They explained that this destruction resulted from the use of explosives by fishermen in the past. As a consequence, they now have to fish in deeper waters or the open sea to meet their economic needs.

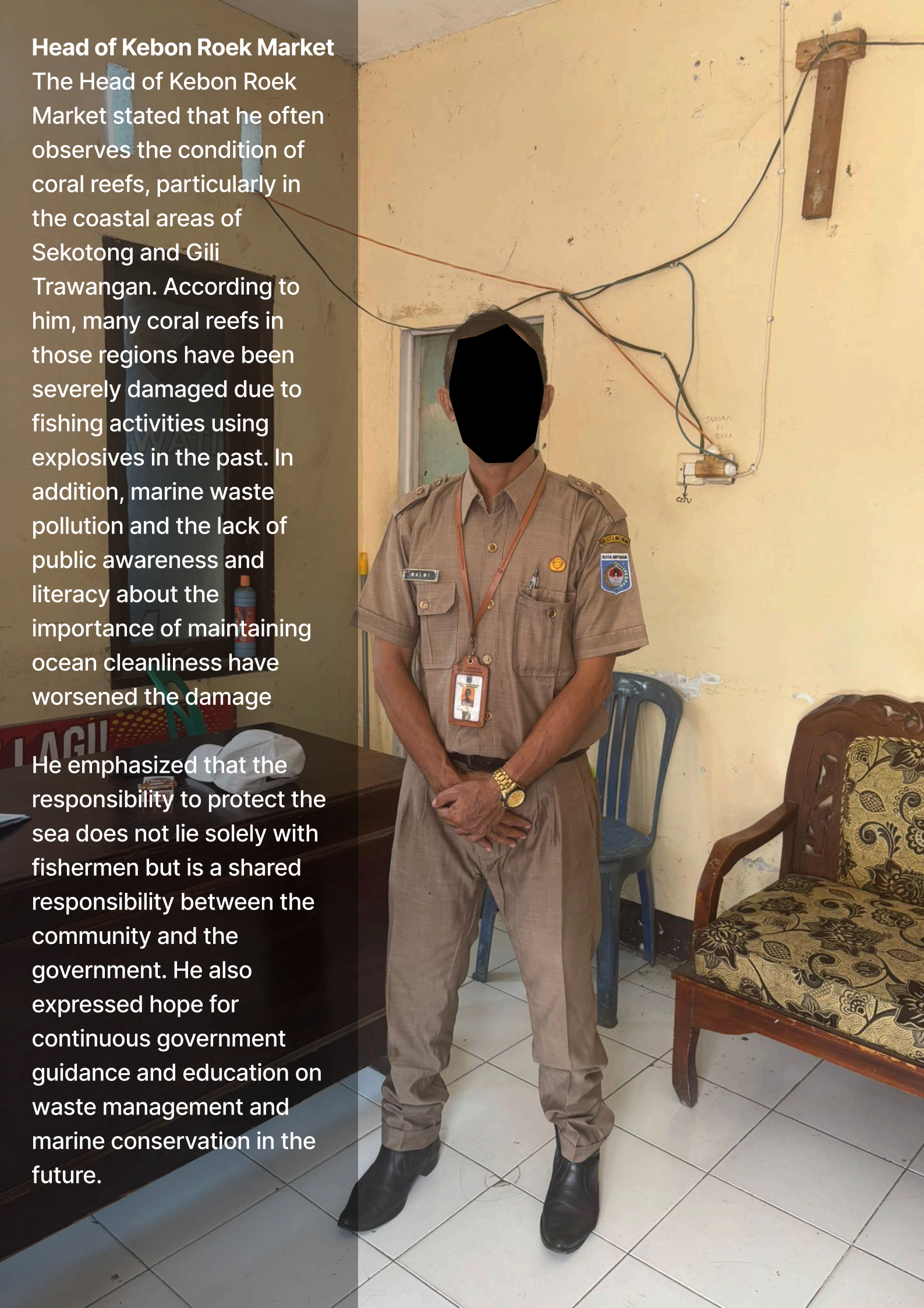


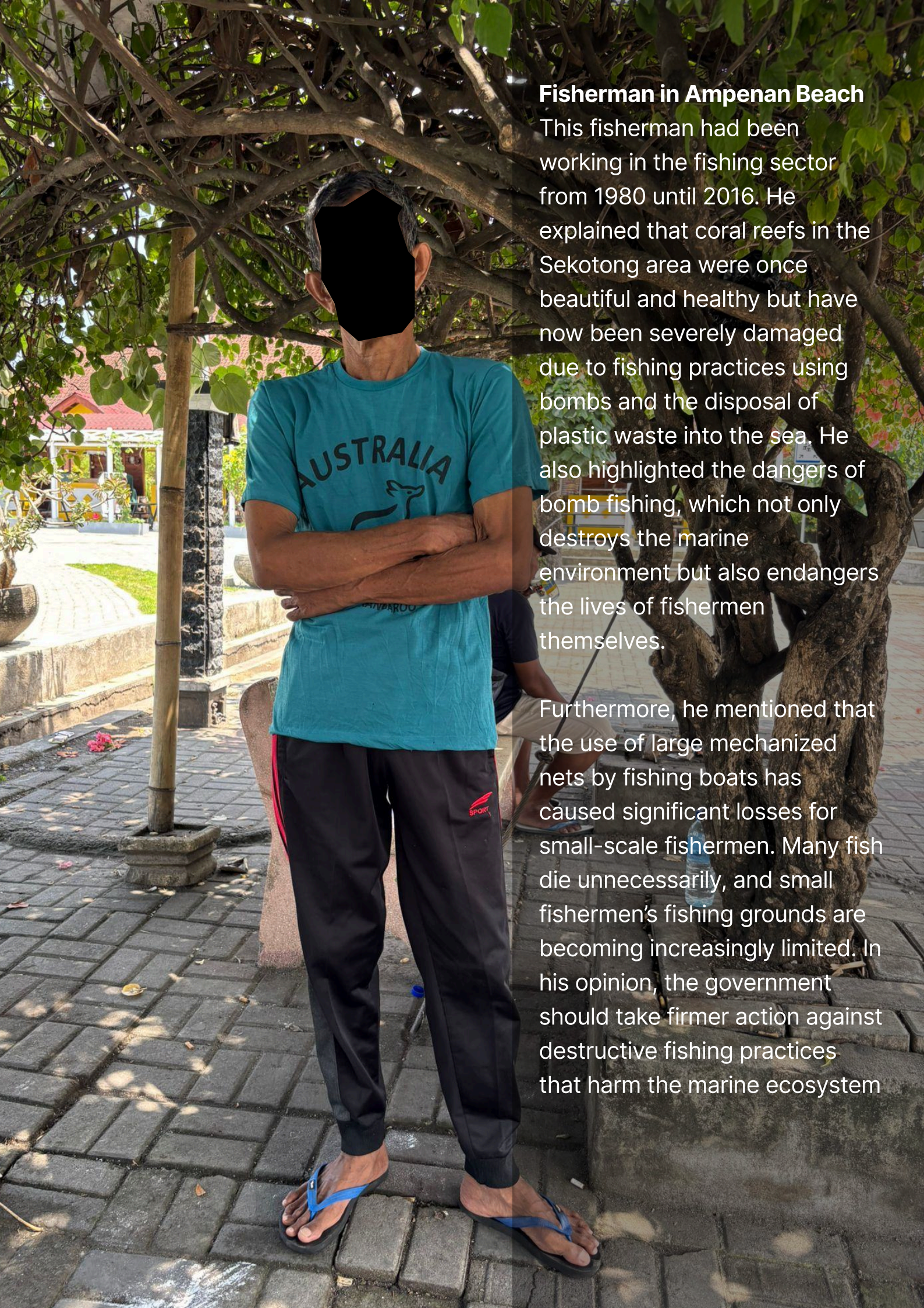
Diving school sengigi
The dive instructor explained that they plant corals twice a year and hope the government will take more concrete action to protect the ocean, not just collect taxes. He emphasized that healthy coral reefs are vital for marine life, tourism, and the local economy. Although fewer divers have visited recently, partly due to coral damage and broader economic issues, he remains optimistic. He hopes to collaborate with the government to create artificial reefs and new ecosystems to restore the area, especially since many reefs, like those in Senggigi, are now dead.

Head of Kebon Roek Market

The Head of Kebon Roek Market stated that he often observes the condition of coral reefs, particularly in the coastal areas of Sekotong and Gili Trawangan. According to him, many coral reefs in those regions have been severely damaged due to fishing activities using explosives in the past. In addition, marine waste pollution and the lack of public awareness and literacy about the importance of maintaining ocean cleanliness have worsened the damage

He emphasized that the responsibility to protect the sea does not lie solely with fishermen but is a shared responsibility between the community and the government. He also expressed hope for continuous government guidance and education on waste management and marine conservation in the future.





Fisherman in Ampenan Beach

This fisherman had been working in the fishing sector from 1980 until 2016. He explained that coral reefs in the Sekotong area were once beautiful and healthy but have now been severely damaged due to fishing practices using bombs and the disposal of plastic waste into the sea. He also highlighted the dangers of bomb fishing, which not only destroys the marine environment but also endangers the lives of fishermen themselves.

Furthermore, he mentioned that the use of large mechanized nets by fishing boats has caused significant losses for small-scale fishermen. Many fish die unnecessarily, and small fishermen's fishing grounds are becoming increasingly limited. In his opinion, the government should take firmer action against destructive fishing practices that harm the marine ecosystem

Survey tourists insights

Starting this research many people also pointed to tourism as a major contributor to a declining ecosystem. When large numbers of visitors gather in the same places and temporarily “consume” nature, the pressure becomes visible.

Dive instructors described how, during the COVID year, when tourism came to a complete stop, the underwater world began to recover almost immediately. Coral showed signs of regrowth, fish returned, and even dolphins, which had not been seen for years, reappeared. This stark contrast raises important questions about visitor awareness, behavior, and responsibility.

Understanding visitor awareness and motivation

To explore this further, a short survey was conducted among travelers (n = 138). The aim was to understand why people come to Lombok, how they perceive the underwater world, and what motivates or prevents them from acting sustainably. The survey focused on motivation, awareness, and behavioral gaps.

Why visitors come to Lombok

The most frequently mentioned reasons for visiting Lombok were its calmer atmosphere compared to Bali and the appeal of its beaches and ocean activities. Surfing, relaxation, an escape from busy environments, and interest in local culture also ranked high. Although many visitors are drawn to the ocean, this does not automatically translate into an understanding that if the underwater world continues to decline, tourism will inevitably decline with it.

Awareness of coral conditions

Only 49.3% of respondents were aware that Lombok’s coral reefs are damaged. The remaining travelers were unsure or even believed the reefs were healthy. This reveals a significant awareness gap, even among people who engage with the ocean directly. See figure 4.

Willingness to act sustainably

More than 90% of respondents expressed a willingness to behave more sustainably during their stay. The only group showing hesitation were low-budget travelers, who noted that they would participate “only if it doesn’t cost extra.” This highlights a key opportunity: the willingness is present, but clear, accessible, and affordable options for sustainable behavior often are not. See figure 5

Behavioral gaps

The results show no meaningful relationship between how sustainable respondents rated themselves (on a scale from 1 to 5) and the number of sustainable actions they reported taking ($r = 0.04$). This means that people who see themselves as more sustainable do not necessarily perform more sustainable actions. In other words, self-perception does not strongly match reported behavior. This suggests a gap between how sustainable people think they are and what they actually report doing.

Additionally knowing about the coral reefs before visiting Lombok does not appear to increase tourists’ willingness to take additional environmental actions. Awareness alone does not automatically lead to stronger pro-environmental intentions.

The source of information does matter. Tourists who actively seek information or are exposed to multiple sources tend to engage in more sustainable travel actions.

In Appendix A.2, all results of the survey are shared.

Based on what you've seen or heard, do you think the coral reefs here are:

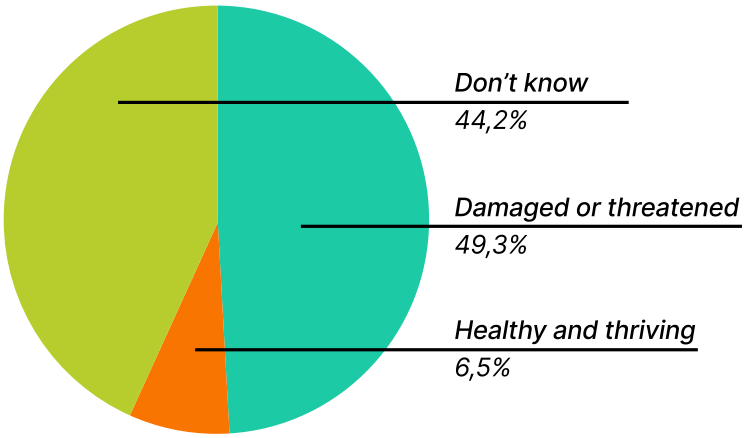


Figure 4: Awareness of coral conditions among visitors (n = 138), showing that nearly half of respondents were unaware that coral reefs around Lombok are damaged

If sustainable options were easy and accessible, would you choose them while traveling?

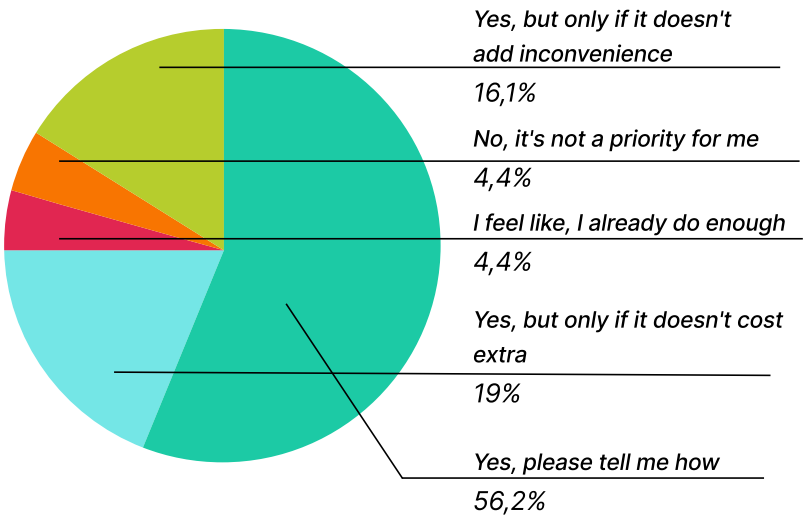


Figure 5: Willingness of tourists to behave more sustainably if it were made easier (n = 138). The majority indicate clear readiness to act sustainably when practical barriers are reduced.

Earth system theory

During my domain exploration, I encountered Earth System Theory, a framework that conceptualizes the Earth as a set of interconnected and interdependent systems. This systemic perspective aligned with my design research approach, as it offers a way to analyze complex challenges that involve both human and non-human actors. I therefore adopted Earth System Theory as a lens for structuring my stakeholder analysis, allowing environmental processes and human activities to be examined simultaneously.

The essence of the theory

Earth System Theory views the Earth as one interconnected system in which physical, biological, chemical, and human processes interact (Steffen et al., 2004). Instead of studying environmental processes separately, the theory focuses on the relationships and feedback loops between different parts of the Earth (Lenton et al., 2008). This approach helps explain complex global challenges such as climate change and biodiversity loss.

As shown in Figure 6, the Earth system is commonly divided into five interconnected spheres:

Atmosphere
The atmosphere is the layer of gases around the Earth. It controls temperature, weather, and climate. Increases in greenhouse gases affect global temperatures and influence both land and ocean systems.

Hydrosphere
The hydrosphere includes all water on Earth, especially oceans and rivers. Oceans help regulate climate by absorbing heat and carbon dioxide. Changes in water temperature and chemistry directly affect marine life, including coral reefs.

Biosphere
The biosphere includes all living organisms and ecosystems. Coral reefs are part of the biosphere and support high biodiversity.

Geosphere
The geosphere refers to the solid Earth, such as rocks and soil. Processes like erosion and sediment movement influence ecosystems, especially in coastal areas.

Anthroposphere
The anthroposphere represents human activities, such as industry and infrastructure. Humans interact with all other spheres and are a major driver of environmental change.

Together, these spheres form a dynamic and interdependent system, where changes in one sphere affect the others.

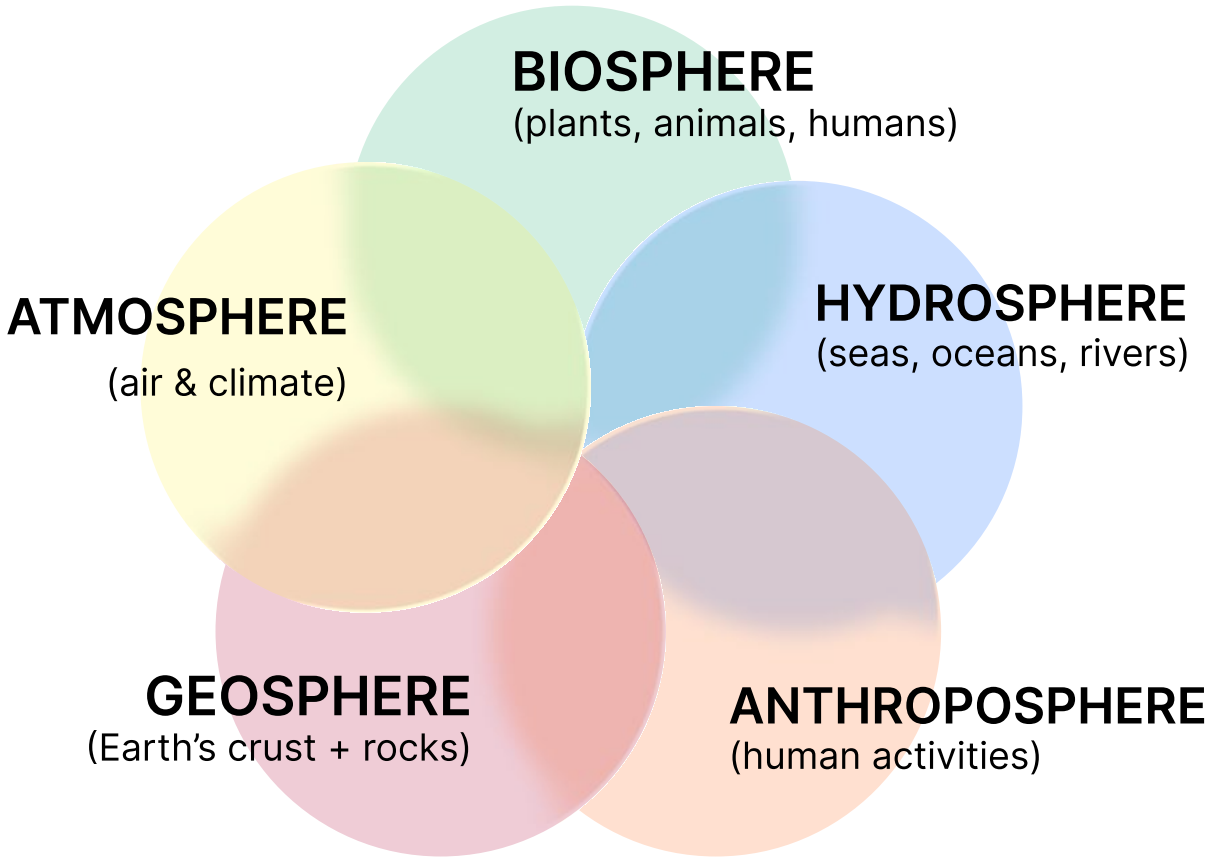


Figure 6: Conceptual representation of Earth System Theory.

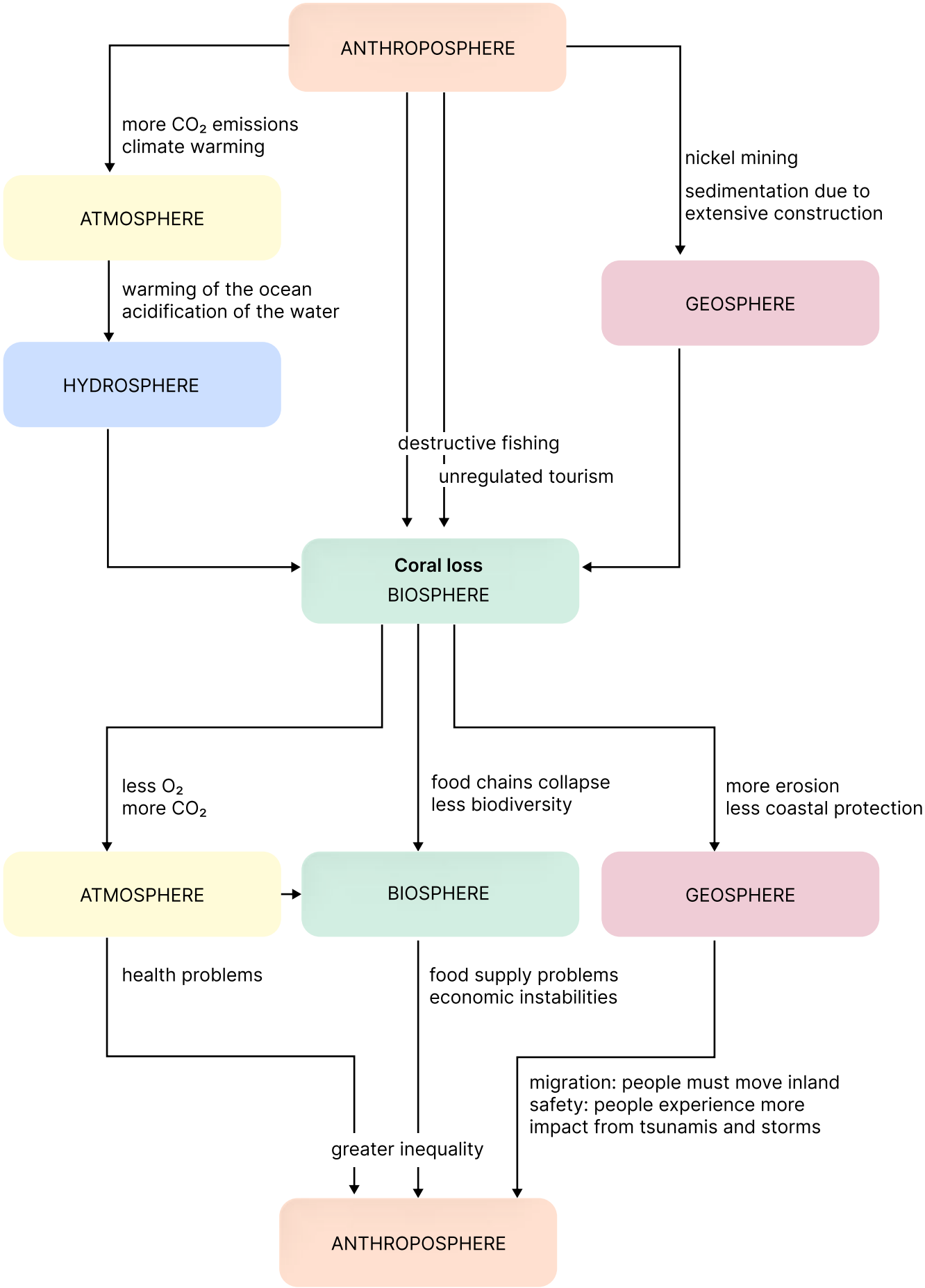


Figure 7: Earth system stakeholder mapping of coral reef decline.

Stakeholder analysis through an earth system lens

Earth System Theory was applied as a stakeholder mapping method by linking each Earth system sphere to the ongoing decline of coral reef ecosystems (see Figure X). Rather than identifying stakeholders solely as individual actors or organizations, they were positioned within the Earth system layers to illustrate systemic influence, dependency, and feedback.

In this mapping, the anthroposphere appears twice. At the top of the diagram, it represents stakeholders acting as primary impact drivers, such as industrial actors, tourism industries, fisheries, and policy-making bodies. Their activities influence the atmosphere, hydrosphere, and biosphere, thereby accelerating coral degradation.
At the bottom of the diagram, the anthroposphere re-emerges as the group most directly impacted by coral decline, including coastal communities, local economies, and societies dependent on marine ecosystems.

Although Figure 7 presents these relationships in a linear structure, the system operates as a vicious cycle. Human pressures drive coral loss, which in turn reduces biodiversity, food security, and coastal protection, increasing social and economic stress and further environmental exploitation. This illustrates that coral degradation is a systemic issue embedded within interconnected Earth and human systems (Lenton et al., 2008).

WHAT I DON'T WANT TO DO

There are a few things in this project that I absolutely do not want to do. One of them is falling into what is commonly referred to as white savior syndrome. This is especially relevant within the colonial history shared by the Netherlands and Indonesia.

It is therefore essential for me to consciously set aside my Western perspective, to observe without judgment, and to design with local people rather than solely for them. This means resisting the urge to impose solutions or position myself as the one with the answers, and instead acknowledging the knowledge, and lived experience that already exist within the local context.

NOT FLYING IN AND OUT

In addition to rejecting the image of the heroic figure with a cape, I also want to avoid adopting another familiar trope, the ability to simply fly in and out. I do not want to arrive briefly, experiment superficially, and then leave again, only for the resulting report to end up unused and forgotten.

I am committing half a year of my time, energy, and care to this project. During that period, I want to do everything within my capacity to ensure that the work is meaningful for IBF and for Lombok, and that its value extends beyond the duration of my graduation project. What I aim for is not a temporary intervention, but something that can remain relevant and valuable even after I am gone.

Additionally, I plan to stay connected in the years following this project. This is the first project in which my work truly engages with the real world, and for that reason I believe that checking back and maintaining long-term connections will support both the continuation of the project and my own development as a professional designer.


LIND SPOTS
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T IS NOT THEIR

BLIND SPOTS

Working in a context that is not my own inevitably comes with blind spots. No matter how aware or well-intentioned I try to be, there are perspectives and dynamics that I may not immediately recognize.

One of my main blind spots lies in assuming that my way of thinking or problem-solving is neutral. Coming from a Western design education, I am trained to analyze and move toward solutions, an approach that can unintentionally overshadow local ways of knowing and deciding what matters.

Recognizing these blind spots means creating space for correction rather than control. By working closely with local partners, asking questions instead of offering answers, and remaining open to feedback, I aim to let the project be shaped by its context.

Awareness of what I do not see is therefore not a limitation, but a responsibility within this project.

ASKING FOR HELP

I am someone who works well independently. Being able to rely on myself gives me confidence and pride, knowing that I am capable of figuring things out on my own.

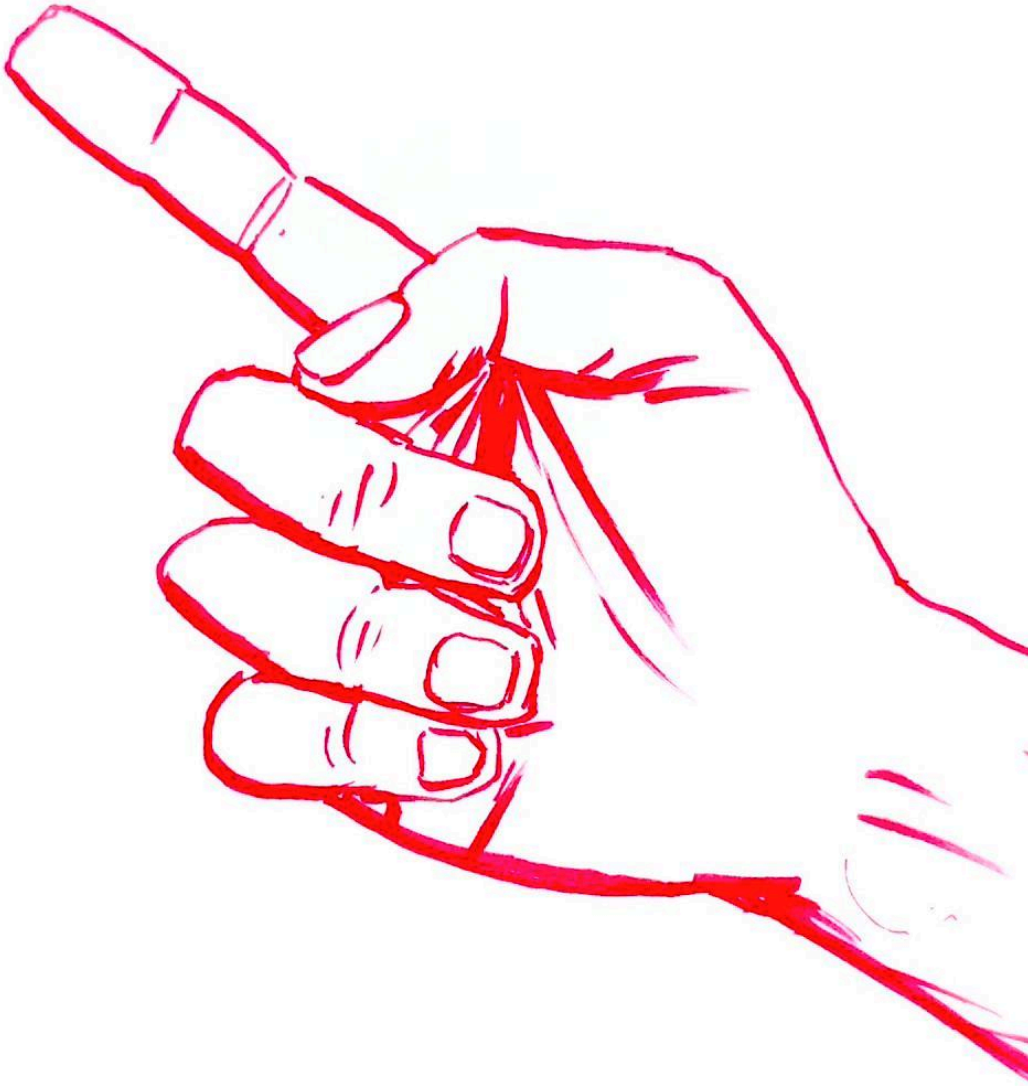
Independent learning has become increasingly common within my generation. Teaching yourself new skills and solving problems alone is often encouraged and celebrated.

At the same time, I am realizing how important, and how courageous, it can be to ask for help.

During the street surveys and interviews, I was determined to do everything myself. I assumed that Google Translate would be enough and planned to approach people on my own. When others told me this would not work, I initially felt frustrated, as if my independence was being taken away.

Eventually, I asked Dara, an intern at IBF, to help me to do all 4 days of research on the street (survey and interviews). She immediately said yes, explaining that it would also help her practice her English. Dara conducted the interviews in Bahasa, and it quickly became clear that my solution would not have worked. By asking for help, the process became easier, the results more valuable, and the work more meaningful.
What started as collaboration also became the beginning of a friendship.

This experience reminded me that independence does not mean doing everything alone.



THE POINTING FINGER

When dealing with complex issues, the pointing finger appears quickly. It identifies where the problem lies, who is responsible, and what needs to change. What often goes unnoticed are the other fingers, pointing back toward ourselves.

Pointing out problems in a different context requires more than identifying visible symptoms. Before naming something as wrong, it is essential to reflect on one's own position within the same system. Responsibility is rarely singular, and simple judgments often overlook deeper structures and power dynamics.

As a designer, this means staying away from the urge to immediately define a problem statement.
Understanding begins where assumptions are questioned.

When looking at all the directions of the fingers, there may be no such thing as a problem, but rather a set of intertwined issues.

EXPLORING FUTURE CONTEXT

3. Exploring the future context

This chapter structures the research findings by translating them into contextual factors, clusters, and ultimately a coherent framework, further addressing RQ1.1 and preparing the ground for RQ1.2.

The identified contextual factors are analysed and grouped into clusters based on shared meanings, tensions, and underlying values. Through this structuring process, a futuring framework.

This framework provides the foundation for exploring plausible and preferable human–nature relationships toward 2045 in the following chapter.

Collecting context factors

What are context factors?

To build a world for design, one must first collect the “building blocks” that describe how this world functions. These building blocks are called context factors. They are observations, beliefs, theories, or phenomena that describe how people, systems, and environments interact within the defined domain (Hekkert & Van Dijk, 2009). Context factors are not design solutions or requirements; rather, they represent how the world is, not how it should be.

The goal of generating context factors is to construct a meaningful understanding of the domain. By identifying factors that are true, debatable, or emerging, designers can begin to see underlying dynamics that might shape future behaviours, relationships, and values. In this way, collecting context factors serves as the foundation for imagining plausible futures within the ViP process.

Types of context factors

In ViP, context factors can take various forms. They are often grouped according to their type and field, allowing designers to create a balanced and diverse understanding of the domain.

Types of factors:

- **States** describe existing and relatively stable situations in the world. They reflect how things currently are.
- **Principles** express fundamental truths or recurring patterns in human or natural behaviour.
- **Developments** describe ongoing changes or evolutions over time.
- **Trends** indicate observable directions in social, cultural, or technological behaviour that might shape the future.

By combining these types, a diverse collection of context factors can represent both stable conditions and dynamic transitions within the chosen domain.

See Figure 8 for examples of the different types of context factors.

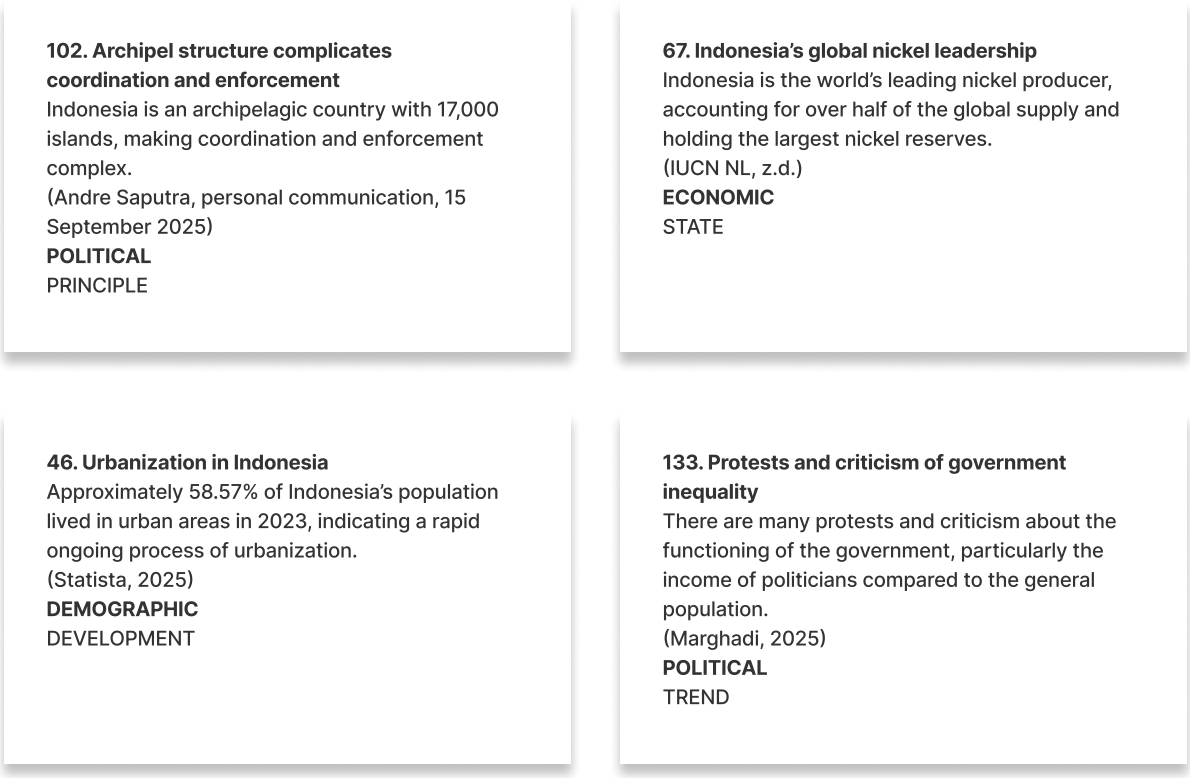


Figure 8. Examples of context factors within the ViP method, categorized into states, principles, developments, and trends across different domains.

How context factors were collected

The process of collecting context factors for this project began in the Netherlands through extensive literature research and semi-structured interviews with professionals connected to the Indonesian Biodiversity Foundation (IBF). In parallel, interviews were conducted with professors and researchers in culture-sensitive design and biodesign, contributing theoretical and methodological perspectives on how design can engage with complex socio-ecological systems. This initial phase focused on a broad range of perspectives within the socio-ecological domain, including marine governance, community engagement, education, coral biology, and human–nature relationships.

In the second phase, additional context factors were collected on-site in Lombok. This included street interviews across five locations with fishers, street vendors, market owners, and community members, as well as interviews with local dive schools, governmental representatives, and IBF team members. In-situ observations and informal conversations, including everyday interactions in private and social settings, further helped to contextualize findings within lived experiences. While not treated as formal data points, these encounters informed the researcher's understanding of local values, concerns, and practices.

To build a rich and holistic understanding of the domain, this study combined multiple forms of inquiry. Alongside literature review and expert interviews, survey-based research was conducted among tourists on Lombok (n = 138) to identify broader patterns in attitudes, behaviours, and perceptions related to the marine environment.

All collected context factors are listed in Appendix B.1. Each factor includes a title, a short descriptive text, and a source reference, and is categorised by type (state, principle, development, or trend) and field. Together, this multi-layered approach supports a grounded exploration of evolving human–ocean relationships and plausible futures on Lombok.

Fields of Context Factors

To ensure a comprehensive exploration, context factors were gathered from the following fields: psychological, political, cultural, demographic, economic, philosophical, social, biological, ecological, and technological. This multi-disciplinary approach allowed for a wide range of influences to emerge, from behavioural motivations to environmental dynamics and systemic governance structures.

After the complete set of factors was established, their distribution across types and fields was evaluated to check for balance and variety. Figure 9 presents this distribution, showing how the factors are spread over the different types and fields.

179 CONTEXT FACTORS THAT SHAPE HOW PEOPLE WILL RELATE TO THE NATUR IN 2045

	BIOLOGICAL	CULTURAL	DEMOGRAPHIC	ECOLOGICAL	ECONOMICAL	PHILOSOPHICAL	POLITICAL	PSYCHOLOGICAL	SOCIAL	TECHNOLOGICAL	
PRINCIPLE	7	8	0	0	5	9	2	8	5	0	
STATE	1	14	12	11	11	3	11	0	7	1	
TREND	2	5	1	1	0	1	2	3	5	3	
DEVELOPMENT	1	4	2	8	4	1	7	0	9	5	
TOTAL	11	31	15	20	20	14	22	11	26	9	179

Figure 9: Division on contextfactors on the following fields and types.

Clustering context factors

From the full collection of context factors, relationships and recurring themes were identified and grouped into clusters. This structuring process helped to structure the complexity while maintaining the diversity of the collected insights. Factors that pointed towards a shared underlying idea were combined, while others revealed new, emergent qualities when brought together.

In total, fourteen clusters were formed, each representing a distinct aspect of the domain and together creating a coherent structure that reflects how the context of Lombok's society and marine environment may evolve towards 2045.

I read through all the factors once again, and made a little scribble on every contextfactor.

Firstly clustered physically, and than started to do it online in brainstorming platform for more order.

Discussion and describing patterns to and with others, helped improving the meaning of the patterns for the future senario

Figure 10: Photographs taken during the clustering process.


Vision in Design
A Guidebook for Innovators
BIS
natural/ecological problems become more and more SOCIAL problems
Heilig natuur
31. Sacred natural sites (coasts and springs) and local veneration
Local Sasak traditions in Lombok maintain veneration of certain natural sites (e.g., springs and ritual places such as Kemaliq) that are treated as sacred and shared between religious communities.
(Budiwanti & Erdhamar, 2024)
CULTURAL
PRINCIPLE
75. Lack of investment leads to short-term income reliance
A lack of investment for communities leads to reliance on short-term income from fisheries or

Clusters

From the full collection of context factors, key relationships and recurring patterns were identified and grouped into clusters. This clustering process enabled the organisation of a complex set of insights while retaining their contextual richness. Factors that reflected a shared underlying meaning were combined, while others revealed new, emergent properties when considered together

A: MAN ABOVE NATURE, SUPPORTED BY TECHNOLOGY
By 2045, people in Lombok increasingly see themselves not as part of nature, but as its masters. Nature becomes a problem to be solved, or a victim to be rescued, through algorithms and sensors. Human perception gives way to data-driven certainty, reinforcing the belief that nature can, and should be managed, corrected, or optimized.

contextfactors: 71 - 83 - 84 - 140 - 141 - 144 - 145 - 147 - 150 - 151 - 152

B: DIVINE NATURE
Nature is seen as sacred and inherently wise. Drawing from traditional Sasak beliefs, it is seen as a spiritual power. Modern ecological philosophies, such as biomimicry, rewilding, and no-take zones, echo these ideas in a less spiritual but equally humble form. In this view, recovery does not come from human control, but from stepping back, trusting natural processes, and allowing ecosystems the space and time to regenerate.

contextfactors: 31 - 64 - 82 - 89 - 95 - 109 - 110

C: GOVERNANCE BETWEEN RULES AND REALITY
Policies and laws emerge rapidly, often driven by international agendas or national ambitions. They promise frameworks for sustainability, protection, and inclusion. Yet, the gap between paper and practice remains wide. Bureaucracy, corruption, and data-driven systems often fail to align with local knowledge, budgets and lived realities, a challenge amplified by the sheer geographic spread of an archipelago.

contextfactors: 68 - 74 - 80 - 92 - 93 - 94 - 96 - 97 - 101 - 102 - 103 - 104 - 107 - 120 - 122 - 137

D: OBSERVATION BECOMES UNDERSTANDING
Firsthand experience becomes a primary driver of environmental awareness. Communities shift behavior not because of rules but because the consequences of degradation become impossible to ignore.

contextfactors: 81 - 87 - 112 - 113 - 114 - 115 - 118 - 129

E: THE PARADOX OF EDUCATION AND EXPERTISE
By 2045, education has expanded but remains uneven. International experts continue to arrive, yet local environmental literacy grows only slowly, constrained by resource scarcity and structural inequality. Skilled youth's increasingly migrate, creating a knowledge landscape rich in theory but thin in local application.

contextfactors: 22 - 23 - 37 - 40 - 44 - 47 - 105 - 106 - 116 - 117 - 123 - 127 - 143 - 167

F: TRADITION IN TRANSITION
Cultural and religious traditions continue to offer wisdom, but by 2045 they exist in negotiation with a rapidly modernizing society. Communities selectively redefine what is preserved and what is adapted, creating hybrid practices shaped by tourism, technology, and shifting generational values.

contextfactors: 16 - 20 - 21 - 26 - 29 - 30 - 32 - 33 - 111 - 142 - 160 - 161 - 165

G: LOST REALM
By 2045, Lombok's physical landscape has transformed. Coastal erosion, coral loss, and extractive industries have reshaped shorelines and inland ecosystems.
Public coastal land has become increasingly privatized, turning shared natural spaces into exclusive economic zones.

contextfactors: 4 - 25 - 50 - 58 - 60 - 124

In total, fourteen clusters were formed, each representing a distinct aspect of the domain within the future context. Together, these clusters provide a structured foundation for exploring how Lombok's society and marine environment may evolve toward 2045.

H: A RAPIDLY CHANGING SOCIAL FABRIC
The social landscape of Lombok in 2045 has become fluid. Demographic decline, urban migration, digital dependency, and shifting family structures have redefined community life. Social comparison and external influences intensify identity shifts and behavioral norms.

contextfactors: 19 - 27 - 39 - 42 - 45 - 46 - 128 - 139 - 148 - 149 - 156 - 166

I: ECOLOGICAL CHANGE, SOCIAL CONSEQUENCE
As ecosystems transform, social and economic vulnerability intensifies. By 2045, many fishing-based livelihoods have disappeared or diversified. Environmental instability pushes communities inland or abroad, linking ecological fragility directly to social displacement.

contextfactors: 34 - 36 - 38 - 43 - 65 - 66 - 69 - 85 - 131 - 157 - 162 - 163 - 164

J: INEQUALITY SEEMS INEVITABLE
Inequality has solidified into a structural condition. Wealth, land ownership, and cultural capital, determine access to education, sustainability programs, environmental protection and political influence. Short-term survival pressures limit long-term environmental stewardship, reinforcing cycles of exclusion.

contextfactors: 12 - 13 - 17 - 18 - 72 - 73 - 75 - 79 - 86 - 98 - 119 - 126 - 132 - 136 - 138 - 159

K: POLITICAL INSTABILITY
Populism, corruption, and the erosion of democratic institutions fuel mistrust and weaken governance. Policy becomes reactive rather than visionary, driven by public frustration, power struggles, and short-term gains rather than shared futures.

contextfactors: 48 - 90 - 91 - 99 - 100 - 108 - 125 - 133

L: TOURISM'S DOUBLE EDGE
Tourism continues to grow rapidly. It funds infrastructure and sustains livelihoods, yet it increasingly transforms coastlines into controlled commercial zones. Digital nomads, luxury developments, and mass tourism compete with the needs of local communities and the resilience of Lombok's nature.

contextfactors: 14 - 15 - 24 - 35 - 59 - 76 - 77 - 78 - 134 - 135 - 146 - 153 - 154 - 168 - 169 - 170 - 171 - 172 - 173

M: CLIMATE SHOCKWAVES
Climate change is no longer a distant future, it's a daily reality. Ecosystems undergo accelerated shifts, with coral bleaching, natural disasters, and rising temperatures forming a new ecological baseline. Adaptation becomes a necessity, not a strategy.

contextfactors: 1 - 2 - 3 - 5 - 6 - 7 - 10 - 11 - 51 - 52 - 53 - 54 - 55 - 57 - 61 - 63 - 158

N: GLOBAL RIPPLES, LOCAL TIDES
Global markets shape local choices more directly than ever. International demand for seafood, tourism, and materials drive local practices that both support livelihoods and strain ecosystems. Local actions are deeply embedded in global systems, and their consequences ripple outward.

contextfactors: 8 - 49 - 56 - 62 - 67 - 70 - 88 - 121 - 155

Framework for the future context

Dimensions
The last step in developing the framework was to define its main dimensions. By studying how the fourteen patterns relate to each other, two important dimensions were identified: different levels of agency and different views on the relationship between humans and nature.

X-axis: Relationship with nature
The X-axis represents differing conceptualizations of the relationship between humans and the natural environment. This dimension captures the underlying values, assumptions, and belief systems that shape how nature is perceived and engaged with. These perspectives influence which forms of intervention are considered appropriate, necessary, or legitimate.

X-axis: Relation to nature

Nature as sacred
At one end of the axis, nature is understood as sacred, possessing intrinsic value and moral significance beyond human utility. Within this worldview, nature is regarded as superior to human systems and knowledge, and human intervention is approached with caution. Ecological recovery is expected to occur through respect, restraint, and the restoration of natural processes rather than through direct control.

Nature as sacred - *clusters: B*

Nature as uncontrollable
Further along the axis, nature is perceived as a threat, reflecting increasing experiences of environmental instability driven by climate change. In this perspective, nature is characterized by unpredictability and risk, necessitating defensive strategies focused on adaptation, protection, and resilience. The relationship becomes reactive, prioritizing human safety and continuity over long-term ecological balance.

Nature as uncontrollable - *clusters: G + M*

Nature as a interdepent system
Moving along the axis, nature is framed as an interdependent system, in which ecological, social, and economic processes are tightly interconnected. Humans are positioned as participants within, rather than separate from, this system. Environmental degradation is therefore understood to have direct social and economic consequences, emphasizing reciprocity, shared responsibility, and systemic thinking as guiding principles for action.

Nature as interdependent system - *clusters: I*

Nature as to be controlled
At the opposite end of the axis, nature is conceived as an entity to be controlled. Environmental challenges are framed as technical problems that can be managed through scientific knowledge, technological innovation, and data-driven systems. Human agency is positioned above natural processes, with optimization and efficiency guiding decision-making.

Nature to be controlled - *clusters: A*

Y-axis: Scales of agency
The Y-axis represents different scales at which agency, decision-making power, and influence are situated. This dimension captures who is able to act and shape outcomes, ranging from local to global levels. These scales define where decision-making authority is located, who has the capacity to intervene, and which groups are most directly affected by the resulting social and environmental change.

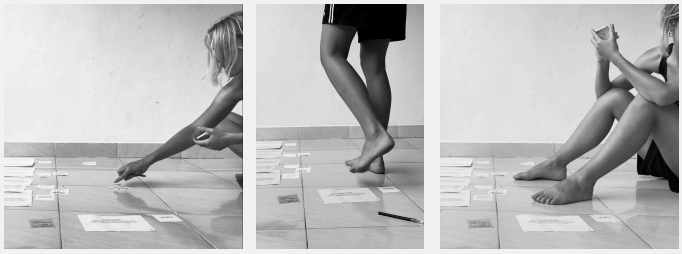
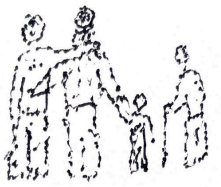


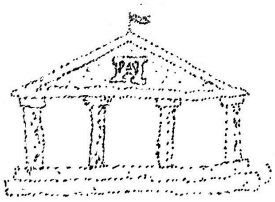
Figure 11: Exploring clusters and dimensional axes to develop the framework

Y-axis: Scales of agency



Community driven
At the local end of the axis, agency is situated within communities. Decision-making emerges from social structures, cultural practices, and collective action. Knowledge is predominantly experiential and context-specific, and change is driven by shared values and everyday practices rather than formal authority.

Community driven - *clusters: F + H*



Institutional
At a broader scale, agency is institutional and systemic, concentrated within governmental bodies, regulatory frameworks, and economic systems. These structures enable large-scale coordination and intervention but are often constrained by bureaucracy, political instability, and a disconnect between policy intentions and local realities. Decision-making is predominantly top-down.

Institutional - *clusters: C + J + K*

Knowledge driven
Moving upward, agency becomes knowledge-driven, emphasizing the role of education, expertise, and access to information. Scientific knowledge, learning processes, and visibility of environmental impacts enable awareness and behavior change. However, agency at this level is unevenly distributed, as disparities in education and access to expertise can limit its reach and effectiveness.

Knowledge driven - *clusters: E + D*

Global
At the most expansive scale, agency operates at a global or external level. Local conditions are shaped by transnational forces such as global markets, tourism, international organizations, and patterns of consumption. While this scale allows for large-scale influence, it often reduces local autonomy and introduces dependencies on external actors and systems.

Global - *clusters: L + N*

Framework for future context
Bringing these dimensions together results in a 4 × 4 matrix, producing sixteen distinct cells. Each cell represents a unique combination of societal organization and human–nature relations, projecting how these dynamics could unfold by 2045.

This framework serves as the foundation for:

- Articulating plausible futures (what is likely to happen if current trajectories continue)
- Defining preferable futures (what kind of future the design intervention aims to enable)

A FUTURE FRAMEWORK DESCRIBING SIXTEEN RELATIONS OF HOW PEOPLE RELATE TO NATURE IN 2045

Figure 12: A framework 4×4, with 16 cells to explore the futures.

(The Outer Towners, n.d.)

POSITIONING MYSELF

When I first arrived, I had immersed myself in literature about designing in cross-cultural contexts. This awareness, however, initially caused me to close off a bit. I became so focused on not appearing dominant that I ended up doing very little.

This was mainly true during the first week, a period in which observing, adjusting, and finding my place was necessary. Still, the experience made me realize that extreme caution is not the right attitude either.

Through this process, I began to understand that positioning myself within a different cultural context requires a balance of multiple elements.

First, alertness. Being aware of what I say, how I position myself, and how my actions are interpreted is essential. This also means staying alert to my surroundings, noticing when people do not respond, hesitate, or appear confused, and recognizing these moments as signals to slow down, clarify, or adjust my approach, both verbally and non-verbally.

Second, openness. Being open to change, to new insights, and to having my assumptions challenged allows the project to evolve beyond my initial expectations.

Finally, comfort. Working in an unfamiliar context requires a certain level of comfort within myself, but it is equally important to create an environment in which others feel comfortable to participate, speak, and collaborate.

Together, these elements shape how I want to position myself as a designer, both in this context and in others.

"IT'S WEIRD TO GET FOOD OR DRINKS FROM STRANGERS"

ONE PERSON IS NOT A CULTURE

Early in the project, I noticed that I tended to take cultural statements at face value. When my supervisor said things like “this is how it works here” or “this is normal in this culture,” I often accepted it without questioning it further.

A small example made this clear to me. I wanted to conduct street interviews and offer something small in return, such as a snack or a drink. My supervisor was convinced that this would feel strange within this cultural context. I accepted that and started thinking about alternatives. A few days later, however, when I discussed the same idea with others, they suggested offering a snack themselves.

It is a minor example, but for me it was an important realization. One person’s perspective does not represent an entire culture. Cultural experiences are not uniform, and assumptions, even when well-intended, can quickly become oversimplifications.

This reflection reminded me that designing in a different cultural context requires continuous verification. Listening to multiple voices, comparing perspectives, and staying open to contradiction is essential.

DIFFERENT THAN EXPECTED

Without fully realizing it, I arrived in Lombok with certain expectations. I imagined joining a team that worked closely together, a place where people came together to collaborate. On Google Maps, IBF appeared to have a workspace, so I assumed I would be able to work there. I also asked people who had been to Lombok before whether English was commonly spoken.

Those expectations turned out to differ significantly from reality.

The IBF team largely worked individually. Team meetings were mostly conducted in Bahasa, and what I had assumed to be a functional workspace turned out to have no Wi-Fi or electricity. In the area where I lived, many people spoke little to no English. In tourist areas this was different, but beyond those zones, communication became more challenging.

Adjusting to this reality took time. It required a period of settling in, finding a place to live, figuring out where and how I could work, and overcoming the discomfort of holding meetings in cafés, simply because they were the only places with a stable internet connection.

This process demanded flexibility, and creativity, especially on a mental level. Learning to let go of expectations and build my own rhythm within the reality of the situation became an essential part of the project.

LEARNING TO BE ALONE

There you are, on the other side of the world. You know no one, you don't speak the language, and you have no sense of how things work or where to go. At the same time, you realize that this is not temporary, but four months. In the beginning, that thought felt intimidating. It felt lonely.

Working alone. Eating alone. Exploring alone.

Over time, however, that loneliness slowly transformed from a burden into a source of strength. I met people, actively reached out to strangers, discovered new places, and learned to appreciate being alone.

With few social obligations and nature all around me, a sense of calm began to settle in. I found space for hobbies, for sports, for focused work, and for proper rest. Being alone, made me listen more closely to my body. When I was tired, I went to bed earlier. When I felt lonely, I sought out connection. When my head felt overloaded, I went swimming or surfing.

This balance allowed me to develop an exceptionally good workflow. I was productive, focused, and present. I am not sure if this would have been possible in a different context, but within this one, it allowed me to work in a way that felt both healthy and sustainable.

PROCESSING STORIES

Throughout the project, I encountered many intense stories. Some of them were heavy, confronting, and emotionally charged. Taking these in, while continuing to work, could at times feel overwhelming.

For me, it became important to actively process what I heard. I did this by calling people back home, by drawing, and by writing. These moments allowed me to reflect, release, and make sense of what I was carrying.

Processing the stories in this way helped me avoid dwelling in negativity. It allowed me to maintain a constructive energy and a grounded attitude toward the work, without distancing myself from the realities I was engaging with.

This experience reminded me that caring for the stories also means caring for myself as the one receiving them.

VISION

4

4.Vision

This chapter translates the research findings into a forward-looking vision and addresses RQ1.2 and RQ1.3. Using the previously established framework, the 4 × 4 matrix combines relationships with nature and scales of agency, resulting in sixteen cells with their societal contexts.

For each cell, two futures are articulated. The plausible future, visualized in orange, describes what is likely to occur if current trends continue. These futures are grounded in the earlier analysis and reveal dominant trajectories and tensions. In contrast, the preferable future, shown in green, expresses a desired direction and represents the first design step towards defining what the future should become.

Together, these futures define sixteen societal goals that guide long-term transformation. Figure 13 additionally presents a roadmap, visualized in red, indicating how a shift from now to preferable futures could take place. This roadmap serves as a strategic foundation for the design concept, developed in the next chapter, Chapter 5: Design.

Plausible futures

Once the futures framework was established, the next step was to fully immerse myself in the plausible future. Based on the identified contextual factors and clustered insights, I systematically described how I expected society on Lombok to evolve within each cell. This was done by elaborating on each cell of the framework individually, ensuring that every scenario represented a coherent and plausible future state.

To allow sufficient depth and reflection, I dedicated an entire week exclusively for the first draft to analysing these cells and writing the future narratives. This period was used to synthesize insights from literature, field research, and earlier analyses into rich, descriptive futures.

However, as a Western designer-researcher, I was aware of the risk of introducing cultural misinterpretations. Therefore, validating these futures from a local cultural perspective became a crucial next step in the research process.

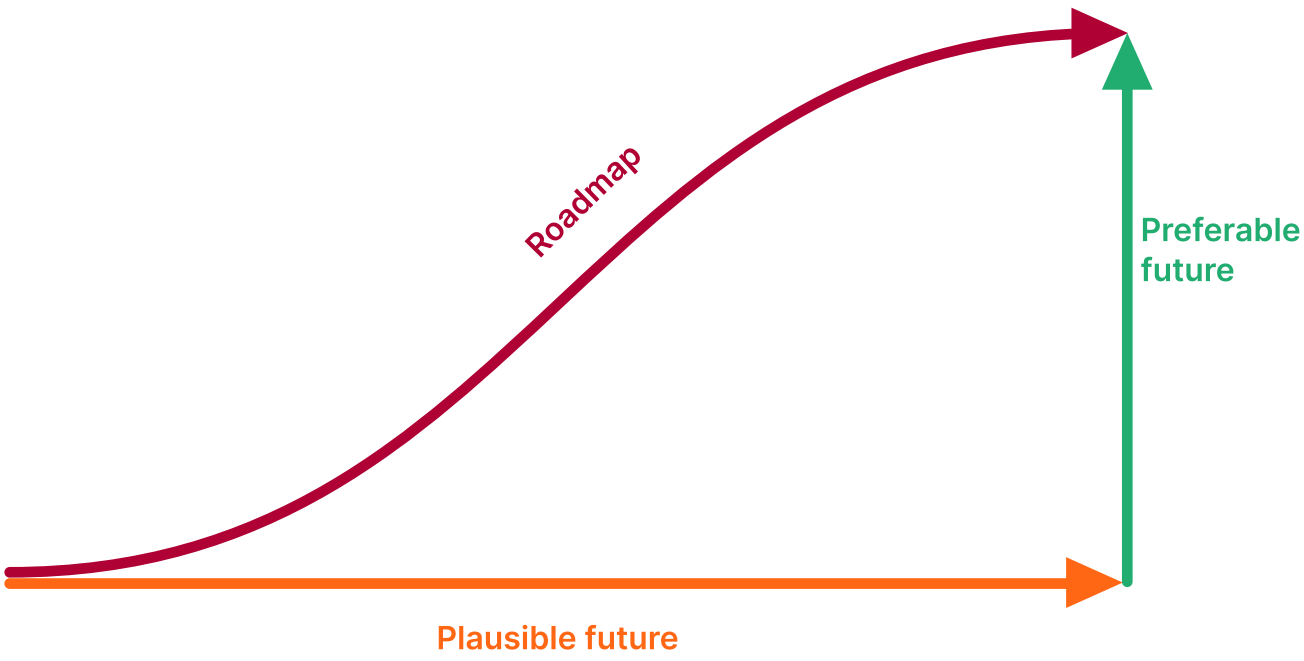


Figure 13: Visual representation of the relationship between the plausible *future, the preferable future, and the roadmap. The plausible future is depicted as a vector indicating the likely direction of societal development, while the preferable future represents a normative vector that defines the desired direction of change. The roadmap illustrates the pathway from the present towards the preferable future.*

Co - Discover the future
To culturally validate the plausible futures, I organised a co-discovery session with eight local participants from Lombok. Together, we reviewed all future cells within the framework. An impression of this session is shown in Figure 14.

For each cell, I prepared:
- a title,
- a short descriptive text,
- and a visual collage,

all presented in both English and Bahasa Indonesia to ensure accessibility and inclusivity.

For every cell, the group discussed the following questions:
- Does it make sense?
- What should we keep from this future?
- What should we remove from this future?
- What opportunities exist in this future?

These discussions provided valuable insights into local interpretations, values, and assumptions. Based on the outcomes of this session, all future cells were refined. Several cultural aspects that I had initially overlooked or misinterpreted were adjusted, resulting in futures that were more contextually grounded and culturally sensitive.

Main findings
The co-discovery session led to several key findings, both on a conceptual and cultural level.

A few cultural misunderstandings were identified and corrected. One notable example concerns my initial interpretation of a future in the cell Nature as a uncontrollable x knowledge driven, I envisioned this future as risk awareness without response capacity. While this framing seemed logical from a Western risk-management perspective, all participants strongly disagreed with it.

The concept of “risk” itself appeared to be culturally unfamiliar and rarely discussed. Despite the major earthquake that struck Lombok in 2018, participants explained that there has been no development in terms of risk literacy. Moreover, they did not expect this to change significantly in the future, as avoiding explicit discussions about risk appears to be culturally embedded rather than situational.

The full outcomes of this co-discovery session were analysed, as shown in Figure 15, with a readable version provided in Appendix C.1.

Figure 14: Participatory session on the plausible futures.

Feedback round with matthijs
Following the co-discovery session, a feedback meeting was held with Matthijs van Dijk, author of the ViP method and chair of this graduation project. During this session, several important recommendations were provided to further strengthen the future narratives.

Key feedback included:

- Avoid describing present-day objects or technologies directly in future scenarios, as this can limit speculative thinking and anchor the future too strongly in the present.
- The futures placed a strong emphasis on oceans and coral reefs. While relevant to the Lombok context, Matthijs advised expanding the perspective towards broader human–nature relationships, focusing more on how humans relate to, value, and interact with nature as a whole.
- Go deeper into the societal consequences of each future cell, moving beyond surface-level descriptions to explore how daily life, social structures, values, and behaviours are affected within each future society.

This feedback was subsequently used to refine the future descriptions and ensure greater conceptual openness and long-term relevance.

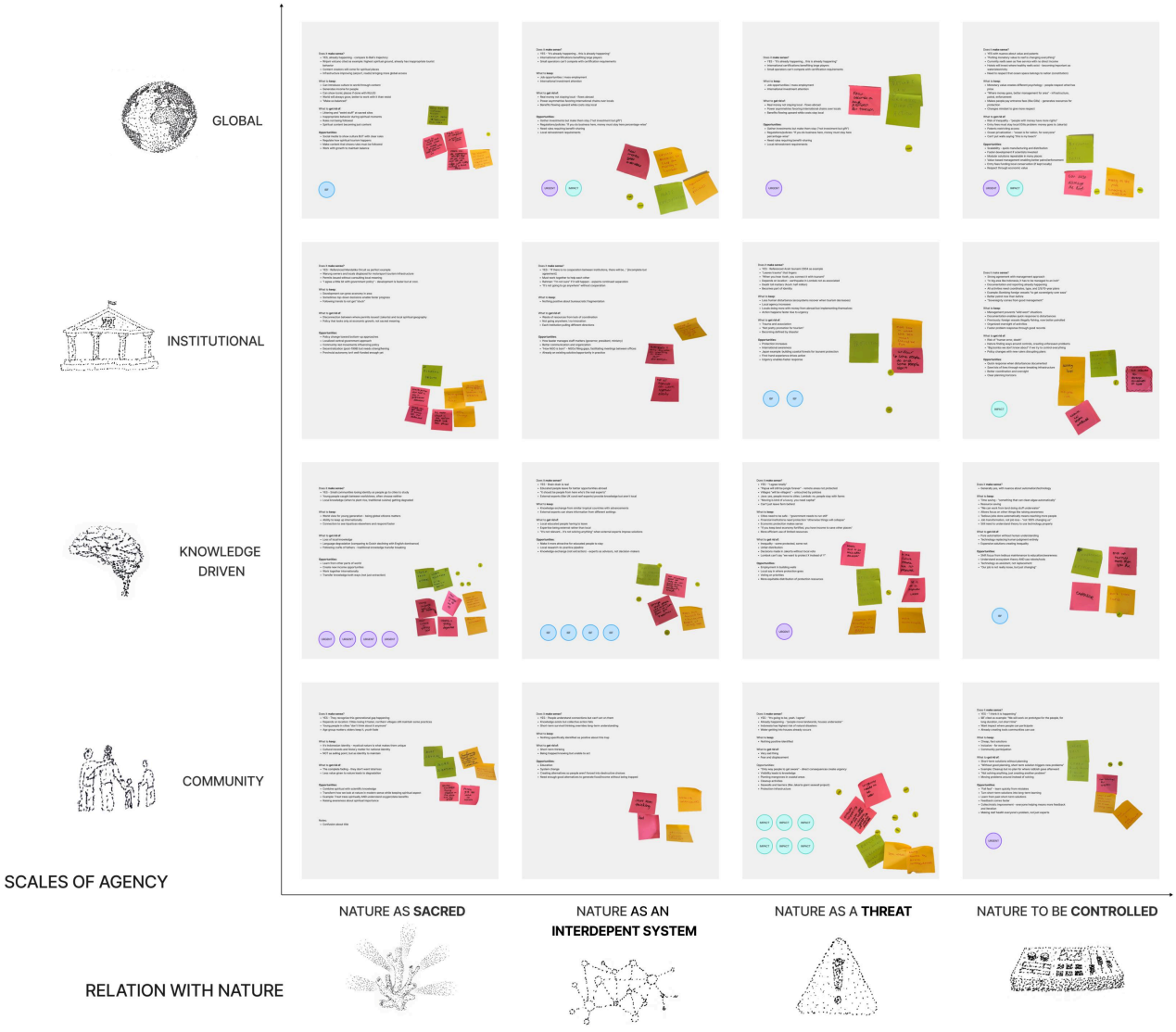


Figure 15: Analyses of co- discover session (read more in Appendix C.1.)

Preferable futures

After four rounds of iteration, a total of sixteen plausible futures were formulated. Many of these futures reflected developments that could be characterised as undesirable or problematic, revealing tensions and challenges within the evolving society of Lombok.

Within the ViP methodology, plausible futures are not an end point but a starting position. Therefore, the next step moved beyond what is likely to happen towards what is desirable. This marks the first explicit design intervention: defining the preferable future for the future society.

This preferable future is articulated through a design statement, which translates societal values and underlying mechanisms into a clear design intention.

Articulating the design statement
(Schwartz; Ford & Nichols)

To formulate the preferable future, the sixteen plausible futures were systematically analysed through the lens of societal values and underlying psychological and social mechanisms. Two theoretical frameworks were used as analytical instruments: Schwartz's Theory of Basic Values and the taxonomy of human goals developed by Ford and Nichols.

Schwartz's theory describes universal human values organised in a circular structure, illustrating both compatibilities and tensions between values such as security, benevolence, self-direction, and universalism (Schwartz, 2012). An overview of this value structure is presented in Figure 16. This framework was used to analyse which values were implicitly reinforced or marginalised within the plausible futures, and which value shifts would be necessary to move towards a more desirable societal direction.

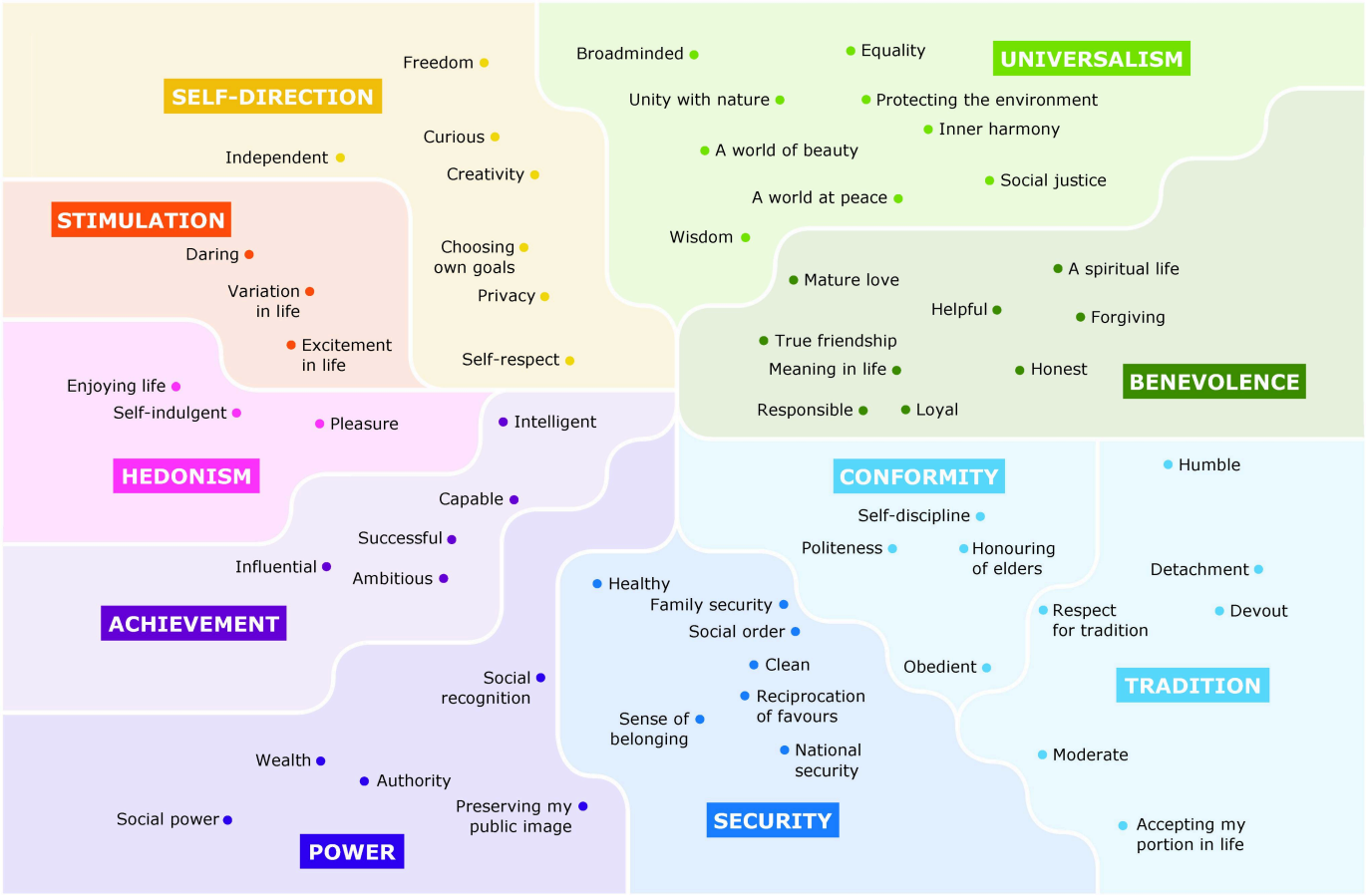


Figure 16: Schwartz's value circle (CC Foundation, 2023).

Complementary to this, the taxonomy of human goals proposed by Ford and Nichols (1987) focuses on the psychological and social mechanisms that drive human behaviour within complex systems, such as agency, competence, relatedness, responsibility, and trust. A schematic representation of this taxonomy is shown in Figure 17. This framework enabled a deeper understanding of how values manifest in behaviour and relationships within the plausible futures.

By analysing the plausible futures using these two frameworks, key patterns and tensions became visible. This analysis was not intended to improve the plausible futures themselves, but to use them as a tool for defining the design statement by identifying which values and mechanisms should be reinforced, adjusted, or balanced differently in the preferable future.

The outcomes of this analysis were documented per future cell, a complete overview of the applied Schwartz values and Ford and Nichols mechanisms can be found in Appendix C.2.

Figure 17. Taxonomy of human goals (Ford & Nichols, 1987).

From plausible to preferable per cell

Design statement — Context level
The preferable future is articulated through a design statement. Within the ViP methodology, a design statement does not describe a specific solution or product; rather, it defines a normative societal direction.

Each of the sixteen future cells is translated into its own design statement, reflecting the desired shift in values, behaviours, and relational structures. In doing so, the design statement establishes the intended direction of the future context at the context level of the ViP model.

See step 4 **Design statement** in Figure 1 on pages 11 and 12.

Analogy — Interaction level
Analogies were used to translate the design statement into a desired form of interaction. Within the ViP methodology, analogies enable designing at the level of effects and relationships rather than at the level of objects.

The analogy embodies the intended relational dynamics between people, society, and their environment. It defines how interaction should unfold and what kind of experience the design should facilitate, without prescribing a specific form or solution. In this way, the analogy provides direction at the interaction level of the ViP model.

See step 5 **Desired interaction** in Figure 1 on pages 11 and 12.

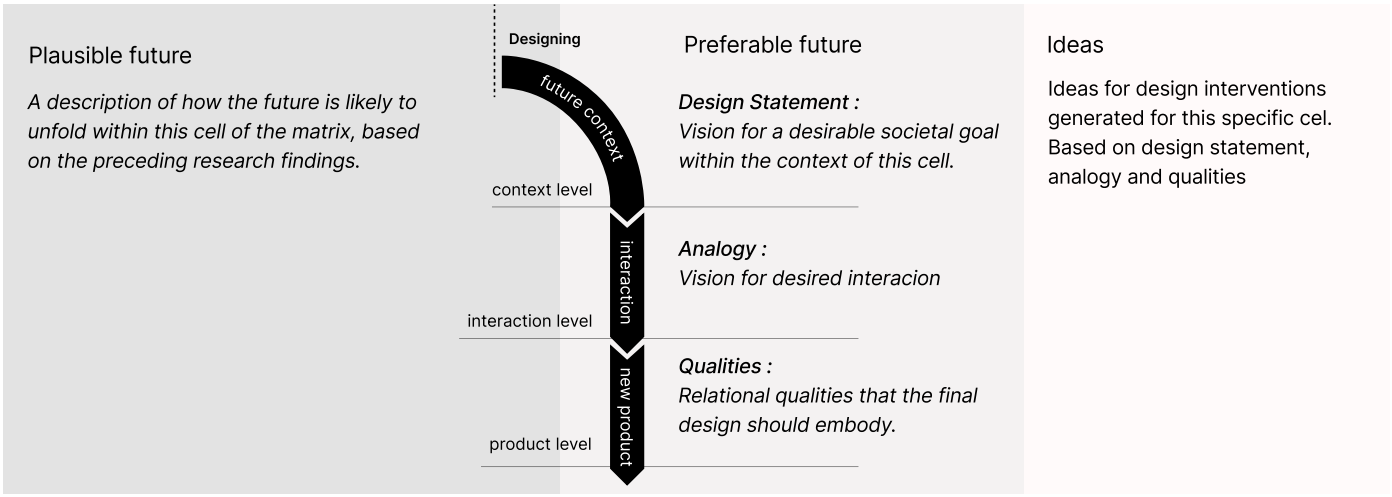
Qualities — Product level
From the interaction level, the process moves towards the product level through the formulation of qualities. These qualities translate the analogy into explicit design criteria and function as a program of requirements and ambitions for the subsequent design phase.

Rather than defining technical or material specifications, the qualities articulate relational, behavioural, and experiential conditions that the final design must fulfil. They clarify what the product should evoke, support, or facilitate in order to remain aligned with the intended societal direction.

Each cell resulted in its own set of qualities. Together, these qualities form the bridge between vision and tangible design development, ensuring coherence between societal intention and product embodiment.

See step 6 **Qualities** in Figure 1 on pages 11 and 12.

In the following pages, each cell of the framework is presented from left to right, progressing from the plausible future to the preferable future and subsequently to first design ideas. The plausible future is visualised in dark grey, followed by the preferable future in light grey, which includes the design statement, analogy, and derived qualities. On the right, first design ideas are presented, stemming from these articulated qualities and intentions.



Global x Nature as sacred

Sacred commodification

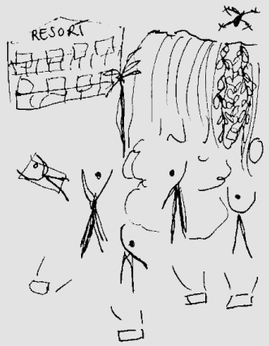
Sacred sites as backdrops in a hyperconnected world

By 2045, Lombok has become a global backdrop for aesthetic consumption. Visitors arrive seeking the image rather than the meaning. Drone footage of Rinjani floods immersive feeds, stripped from its sacred origins. Ceremonial beaches host viral re-enactments staged daily for the visitor economy.

Popular viewpoints overflow with traffic jams as visitors queue for identical shots. Waterfalls sit beside foreign-owned resorts that market “natural ambience,” unaware of the spirits they displace. Reverence becomes content and what matters is not presence, but performance.

Local rituals become props for visibility. Some creators stylize prayer rituals for aesthetic appeal, others filming inappropriate behaviour or provocative content to satisfy the algorithm.
For many residents, tradition becomes livelihood, spirituality shifting from practice to performance.

Lombok’s beauty is globally owned: endlessly captured and consumed, rarely understood.



Design statement:
I want to reframe pleasure as reverence, designing experiences where joy deepens connection rather than consumption.

Analogy:
Like a parent guiding a child through their first temple visit:
The parent doesn’t forbid, they guide, showing when to remove shoes, how to move, when to be silent. The child’s curiosity is met with gentle explanation, turning uncertainty into understanding.

Qualities:

- inviting
- guiding
- informative
- respectful

Exploration guide:
A guide for explorers move through sites with imbedded storytelling about spirtuality, traditional and explaining how to behave respectfully.
Each location offers small narrative, stories told by elders, recorded chants, or acknowledgments.

The guide could exist in two forms or combined:

- Digital version: location-based stories unlocked on-site, encouraging presence over photography. (inspired by pokemongo)
- Analog version: a stamp-based “pilgrim passport” that collects meanings, not just locations.

Global x Nature as a interdepent system

Connected globally, detached locally

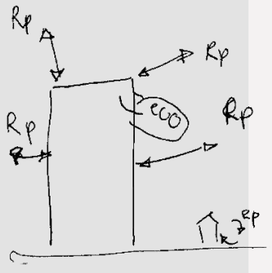
Interdependence measured in markets, not in care

By 2045, global sustainability has become a market condition. International consumers demand "eco-friendly" seafood and “responsible” travel, linking Lombok’s reefs to distant certification systems. Global awareness protects ecosystems, but through the logic of trade and a western perspective.

Large hotel chains and industrial fisheries secure sustainability labels with ease, gaining global market access. Meanwhile, local businesses struggle with compliance costs and shrinking opportunity.

Lombok’s ecosystems are monitored through satellites and metrics that measure carbon storage and biodiversity health. These systems bring investment but dilute local agency. Communities are valued for maintaining reef performance, not for sustaining their own wellbeing.

By 2045, interdependence is acknowledged between markets and ecosystems, not between people and place.

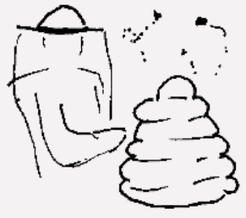


Design statement:
I want to build fair relationships between global markets and local communities,, ensuring ecosystems and communities thrive together.

Analogy:
Like a beekeeper and the hive:
The keeper tends to the hive’s needs, and the hive sustains the whole garden.

Qualities:

- Reciprocal
- Balanced
- Nurturing
- Respectful



Benefit-sharing regulation
A mandatory revenue-sharing rule ensuring a fixed percentage of profits from certified sustainable operations remains with local communities.

Local-to-global access program:
Enabling small-scale fishers and farmers to enter global sustainable markets through support networks instead of compliance barriers.

Redesigned certification connecting social to ecological:
A redesigned certification framework that measures ecological health and community wellbeing equally, turning sustainability labels into relational agreements rather than market tools.

Global x Nature as a uncontrollable

Global fear

Famous for drowning, funded for survival

After a major natural disaster, global fear spread fast. Images of Lombok's devastation dominated international media, triggering a short but intense wave of emergency aid that saved thousands of lives. When the immediate crisis was over, however, the global attention faded just as quickly as it had arrived.

Tourism collapsed almost overnight as travelers began to see Lombok as unstable and unsafe. Entire communities that had grown dependent on tourism income lost their livelihoods in a single season.
The tourism is slowly rebuilding, but recovery is uneven and painfully slow.

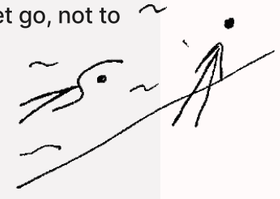
The brief influx of global aid unintentionally reshaped Lombok's identity on the world stage. Instead of being seen as a vibrant island with cultural and ecological richness, it became framed as a place in recovery.

The scars of disaster are not just physical, they live in how the world sees Lombok, and how Lombok learned to see itself.

Design statement:

I want to shift disaster aid from short-term rescue to long-term, community-led recovery.

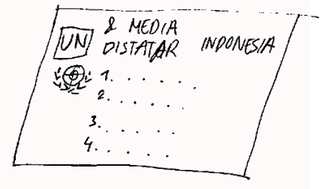
Analogy:
Like teaching someone to swim while standing beside them in the water:
You offer stability, not rescue. Support exists, but strength grows locally. The goal is to let go, not to hold.



Qualities:

- respectful
- temporary
- capacity-building
- guiding

Framework / guidebook for natural disaster:
A framework that channels international funding into local-led recovery ecosystems. Instead of importing solutions, the platform connects global resources to community knowledge networks. Digital open-source recovery blueprints co-created by communities across the Global South, exchanging adaptive practices peer-to-peer and how to implement global funding.



Global x Nature to be controlled

Ocean as capital asset

Capitalising on vulnerable natural assets

By 2045, Lombok has become a testing ground for global climate technologies. Ecosystems are treated as carbon assets within expanding climate markets. Corporations deploy synthetic corals, automated restoration drones, and soil-enhancement systems. Innovations celebrated as breakthroughs, yet locked behind patents.

Carbon credits tie ecosystem performance directly to global finance. Ownership of Lombok's ecological future shifts to climate funds and investors headquartered continents away. Public access shrinks as forests, coasts, and waters become managed, monitored, and monetized zones.

Innovation brings jobs but deepens dependency. Local communities become maintenance labor for technologies designed elsewhere.

By 2045, Lombok's coastline is an engineered frontier of global climate capitalism.

Design statement:

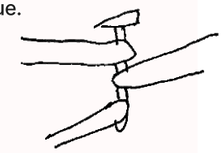
I want to turn climate technology into an tool of local agency, ensuring those who live with the ecosystems hold the power to shape its future.

Analogy:
Like a sailor working with the wind:
Like a sailor working with the wind, harnessing its power, never controlling it.

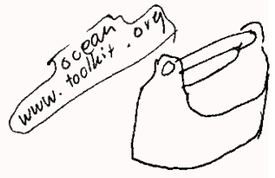
Qualities:

- responsive
- cooperative
- respectfull
- context-aware

Co-owned framework:
Each restoration tool, is registered as a shared asset within a local cooperative. Global investors can fund projects but not own them: participation requires sharing authorship and revenue.



Ocean commons platform:
An open-source toolkit for local reef restoration using adaptable, low-cost versions of high-end tech.
Shared globally, enhancing local collaberation.



Institutional x Nature as sacred

Sacred sites becoming strategic assets

Policy recognizing capital, not spirits

By 2045, development policy in Indonesia values measurable assets such as capital, carbon credits, and coastline, while spiritual and cultural geographies fade from official recognition.

Sacred sites persist in community memory, yet remain invisible within governance. Zoning maps prioritize economic categories, tourism zones, marine reserves, special economic corridors, but contain no space for places of spiritual significance.

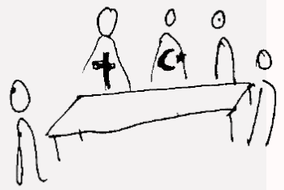
Community objections and protest are documented but rarely shape decisions. Provincial governments, underfunded and overshadowed by national priorities, cannot defend sites that matter locally but lack official economic value.
Modern governance systematically overwrites local cosmologies, reducing sacred landscapes to unrecognized terrain.

Design statement:
I want to re-establish the legitimacy of spiritual and traditional authority within governance, enabling stewardship rooted in belonging rather than bureaucracy.

Analogy:
Like a church representative at the planning table:
a moral voice for what has no voice. A guardian who speaks on behalf of sacred places, ensuring that what cannot be measured is still respected.

Qualities:

- representative
- rooted
- transparent
- protective



Sacred mapping :
A participatory tool that overlays official zoning maps with community-defined “sacred geographies.”

Seat of the Sacred:
recognize spiritual custodians as legitimate decision-makers; every major policy decision requires local spiritual approval.

Seat of the Sacred:
political advocacy channel giving sacred and ecological sites a voice in parliament.

Institutional x Nature as a interdepent system

Collective awareness, fragmented response

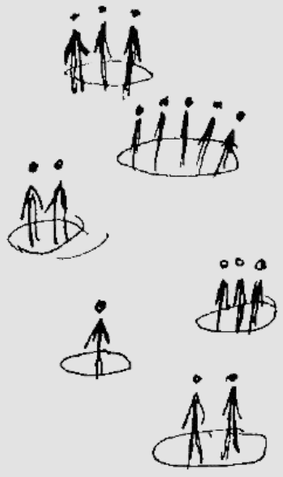
Living and functioning in silos

By 2045, Lombok fully understands the interdependence between people and nature, yet its institutions remain structurally incapable of acting that way.
Governance is divided into overlapping agencies (water, fisheries, tourism, waste, coastal security) each aware of ecological connections, yet bound to their own mandates, budgets, and political loyalties.

Policies acknowledge its interdepence, yet coordination is crippled by bureaucratic silos, corruption, and local allegiances.

Communities operate through parallel logics: local pride, political loyalty, economic ambition. Residents protest damaging development and inequality, while simultaneously seeking employment within the same institutions that enable it.

Each group sees the whole, but acts within its own story.



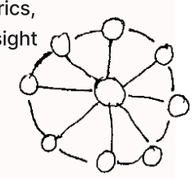
Design statement:
I want to facilitate holistic thinking, through enabling organizations to act as one system rather than isolated units.

Analogy:
Orchestra:
Everyone masters their instrument, but harmony requires attunement.

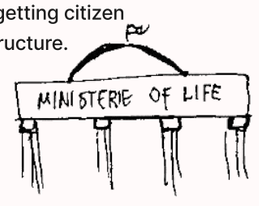
Qualities:

- responsive
- collaborative
- disciplined
- attuned

Attunement platform:
Workflows showing how each agency's decisions affect overall ecosystem metrics, creating peer pressure and public oversight



Ministery of life:
Like a conductor of an orchestra, ensuring holistic thinking in large organisations. Strengthening coordination and cooperation within institutions, as well as getting citizen input to higher levels in the structure.



Institutional x Nature as a uncontrollable

Fortification and abandonment

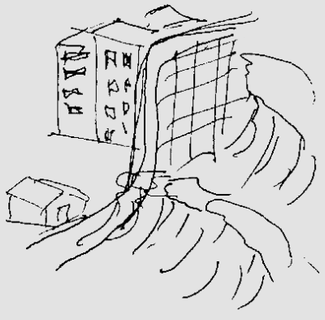
Protection for property, not people

By 2045, the government answers climate threats with massive infrastructure and retreat plans. Strong seawalls protect tourist areas and city centers, while fishing villages are labeled “high-risk” and excluded from protection.
Policies acknowledge climate risks but respond by dividing protection along economic lines.

Coastal laws prevent rebuilding in vulnerable areas, forcing poor communities out without offering alternatives. Families in vulnerable zones cannot simply relocate, moving requires capital most lack, and abandoning farms or fishing grounds means losing livelihood without replacement.

Nature is treated as an enemy to fight with concrete and control, creating safe zones for tourism and danger zones for everyone else.

What the wall protects, reveals what society values.

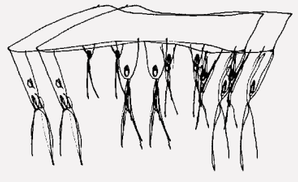


Design statement:
I want to cultivate shared equitable safety, ensuring protection is a collective right, not a privilege of wealth.

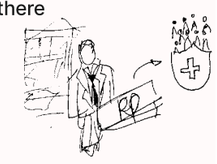
Analogy:
Shared sail:
Providing shelter only when everyone holds it together; safety works best when collective.

Qualities:

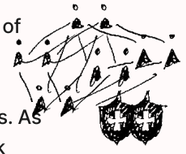
- inclusive
- protective
- fair
- transparent



Universal climate insurance:
Socialized insurance covering all coastal residents equally, funded by progressive taxation on valuable coastal property and tourism revenue. Those profiting from coast (resorts, large property owners) subsidize protection for those living there out of necessity.



Collective shield:
Soceity places a roll in the distribution of protection. There are referendum, contribution with decisions about the distribution of the protection resources. As well as disaster-preparedness network ensuring shelters, emergency supplies, evacuation routes, is collectively managed rather than centralized.



Institutional x Nature to be controlled

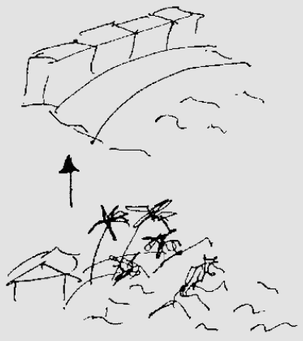
Engineered seas, managed nature

When wildness becomes maintenance schedule

By 2045, society relies on engineered solutions to manage all natural systems. Dikes, wave breakers, sensor-monitored zones, autonomous drones, and AI dashboards control floods, erosion, and reef health. Nature is treated as something to be built, repaired, and upgraded.

What was once green has turned grey. Concrete dominates the coastline, and when floods come, there is no green infrastructure that absorbs and filters floodwater. Investments flow to high-value areas, leaving others behind. Wave breakers alter currents, creating new, unseen problems that no algorithm can fully predict. Nature keeps finding ways around control.

Lombok has invested in the art of control through technology, having transformed nature into infrastructure project.

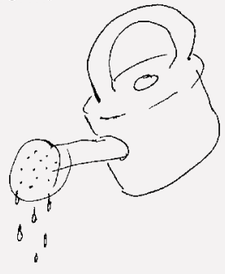


Design statement:
I want to embed ecological limits into engineering practice, ensuring nature sets the boundaries of intervention.

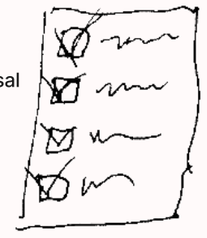
Analogy:
Garden maintenance:
caring about the garden and its grow, using tools for this, without controlling its form.

Qualities:

- responsive
- nurturing
- respectful
- listening



Mandatory nature based solutions check:
With every engineering proposal there needs to be a reporting with proof, why this will make more impact than ecosystem based alternatives.



Wildness preservation zones:
Designate 30% of ocean area as strictly no-intervention zones where natural processes proceed without management or engineering.
Protected from both destruction and improvement.
→ Using tech to patrol this system, in cheap way

Knowledge driven x Nature as sacred

Knowledge archived, meaning forgotten

When education fails to translate belief into belonging

By 2045, education about the animistic beliefs of the Sasak is included in history lessons. What was once a lived philosophy has become a historical subject. Elders still speak of reefs and waterfalls as living ancestors, yet their words meet puzzled and skeptical faces. The new generation is caught between multiple worldviews, and the language of spirits has no translation in science class.

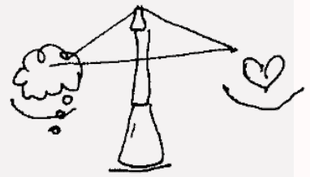
Young Sasak pursue economics or engineering, where results feel tangible, salaries are higher, and social prestige is greater. Local ecological knowledge, about when to plant rice and when to rest the soil, fades as success is measured in degrees and income.

Spiritual reverence is preserved in archives rather than practiced.

Design statement:

I want to create bridges between worldviews, where belief and reason collaborate to understand the living world.

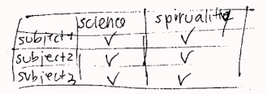
Analogy:
When you make a big life decision:
You analyse the decision from a rational level but also from an emotional level to make sense of your decision.



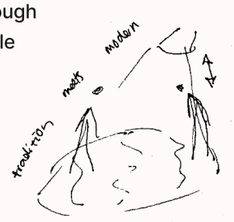
Qualities:

- reflective
- dialogical
- integrative
- balanced

Dual curriculum:
Schools teach scientific marine literacy alongside Sasak ecological practices in a complementary way.



Storytelling toolkit:
Interactive installations convey traditional spiritual stories through experience, making the invisible visible.



Knowledge driven x Nature as a interdepent system

Expertise exported, problems imported

Understanding perfectly, from afar

By 2045, Lombok produces excellent environmental scientists who understand socio-ecological interdependence with clarity. Universities offer strong programs in biology, oceanography, and systems thinking, yet graduates disperse: Australia offers better research, Singapore career growth, Jakarta influence.

International experts continue to arrive with global knowledge but limited local context. Their recommendations, while technically sound, often overlook the social, economic, and cultural realities that decide whether solutions work.

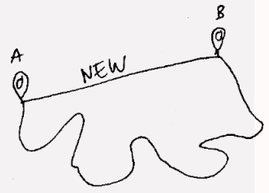
Research stations and NGOs produce precise reports on reef loss, deforestation, and waste, standing in landscapes, where local lived practice could explain what data cannot. Education raises awareness of interdependence, but offers few pathways to apply that knowledge meaningfully. The most capable young people leave because staying means watching their expertise go unused, while those who remain lack institutional support to act on it.

By 2045, Lombok understands its ecosystem better than ever. That understanding simply lives elsewhere, in universities, cities, and journals, not in local governance and livelihoods.

Design statement:

I want to build staying power for educated youth, creating pathways where knowledge can thrive locally, so ambition no longer means departure.

Analogy:
Like a new path that makes the journey way shorter and more joyful:
When the route is open and easy, you stop dreaming of leaving.

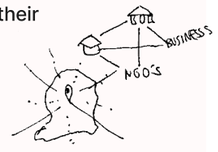


Qualities:

- enabling
- smooth
- accessible
- inviting

Roots scholarship:
Scholarships and career paths focused on the Sasak youth: study support + mandatory return projects (3–5 years) where knowledge is used for local programs.

Local innovation labs:
A network for all sorts of NGO's, companies etc. in Lombok to work together closely with local universities. Prepping students that their are a lot of impactful carreer possibilities within Lombok. .



Connected to global research, working locally:
A hybrid employment ecosystem connecting graduates to remote global research work while living locally.

Knowledge driven x Nature as a uncontrollable

Resilience without change

Bravery without risk literacy

By 2045, Lombok has endured another natural disaster, yet life carries on much as before. When the ground stops shaking, people sweep the dust from their doorsteps and reopen their shops. Preparation remains rare, and the word “risk still carries little weight.

Risk management was never woven into everyday life. It is not taught in schools, not even in villages on volcanic slopes or trembling coastlines. Children learn about the sea and the soil, but not what to do when they turn against them. Homes and resorts are build on fragile hillsides, built for their views rather than safety.
Stories like that of Mbah Marijan, the guardian who refused to evacuate Mount Merapi decades ago and died at his post. Are still told, often as tales of loyalty or pride, not caution. Unless one works for a large company with a health and safety department, the idea of planning for risk feels distant, unnecessary, almost foreign.

In 2045, Lombok’s behavior toward danger remains deeply cultural: resilience mixed with resignation. People adapt, rebuild, and move on.

Design statement:

I want to strengthen community resilience by fostering collective responsibility and shared risk literacy, enabling people to prepare for natural hazards.

Analogy:
Like a rider who trains the horse before battle:
Strength comes not from facing danger unready, but from knowing how to meet it.

Qualities:

- instructive
- wise
- strategic
- skilled

Risk curriculum:
Schools and community centers teach risk literacy through cultural heritage stories.

Safety campagnes:
Public campaigns raise awareness of disaster preparedness.

Preparedness game:
Role-playing simulations of real Lombok hazards (earthquakes, floods, eruptions) in a fun, educational format.

Knowledge driven x Nature to be controlled

Algorithmic ecology

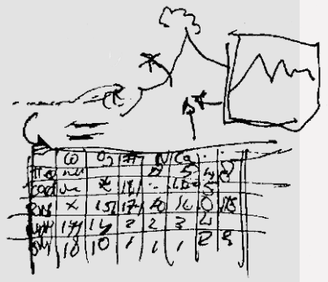
When living ecosystems become managed databases

By 2045, Lombok’s ecosystems are managed through advanced environmental algorithms. Systems predict bleaching, landslides, droughts, and crop failures using vast sensor networks. Nature has become an object of optimization.

Marine and agricultural education trains students to design solutions: 3D-printed corals, gene-edited crops, AI-driven irrigation. Forests are monitored and managed via aviation technologies, rivers are cleaned by autonomous filters reporting to cloud servers. Students learn to engineer ecosystems as if they were lines of code.

As always, every breakthrough brings new dependencies and unforeseen risks. When data servers fail, automated farms collapse; coral restorations demand constant recalibration; river filters inadvertently strip away life; and forests grow uniform.

Knowledge shifts from understanding to control. Lombok’s brightest minds hold the tools to intervene, yet rarely pause to ask whether they should.



Design statement:

I want to pair technological capability with ethical judgment, ensuring interventions in ecosystems are guided by wisdom, responsibility, and care for both people and nature.

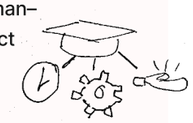
Analogy:
Like a doctor who knows when not to operate:
Knowing where you can help and where you can’t. Not doing a operation because of the possibility to not be able to walk after.The highest expertise is knowing when to step back.

Qualities:

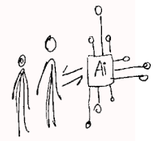
- deliberate
- wise
- ethical
- skilled

Ethical reporting:
Before starting any project that is helping nature is some kind of way. You firstly have to hand in a ethical report, thinking through all posibilities and how to act apont that.

Ethical curriculum:
Mandatory courses exploring ethics, human–nature relationships, and long-term impact analysis.



Community monitoring network:
Locals collect data (via app/photos); AI analyzes patterns but learns from humans, not replaces them.



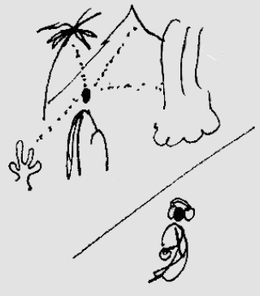
Community x Nature as sacred

Lived reverence becoming memory

When spiritual knowledge turns nostalgic instead of embodied

By 2045, older generations still hold intimate knowledge of natural spirits and healing waters, but this knowledge lives mostly in stories rather than in practice.
Young Sasak can name sacred places, yet few have experienced them firsthand. They explore reefs digitally rather than immersively, learning faster from screens than from the patient skill of reading the ocean. As youth move to cities, spiritual relationships with nature fade, becoming almost folkloric.

This widens the generational gap: elders carry lived memory, while the youth inherit only descriptions. In rural areas, fragments of practice remain, but in urban centers, the spiritual bond with nature has nearly disappeared. Sacred knowledge survives more in archives than in everyday life.
Society and nature increasingly feel like separate entities, and people gradually lose their connection to the natural world



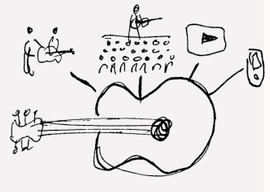
Design statement:

I want to revive spiritual connection to nature, by supporting intergenerational learning that blends traditional wisdom with modern sensemaking.

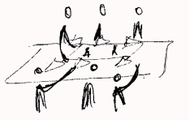
Analogy:
Learning an Instrument
Elders learned by imitation and repetition. Youth learn through apps, tutorials, and sensors, but both paths lead to the same embodied skill.

Qualities:

- connecting
- shared
- familiar yet renewed
- motivating



Family game:
A game connecting generations to share stories and experiences of sacred places.



Music song:
A lot of people in Lombok sing songs, where driving/ walking/ surfing. Creating a song about nature a sacred from an famous singer here can help connect people as well as raise the knowledge about this topic.

Curriculum for young kids (schooltrips):
In order to physically connect with nature and pass on the sacred knowledge.

Community x Nature as a interdepent system

Understanding the web, trapped within it

Knowing what harms the environment and soceity, but having no real alternative

By 2045, coastal communities understand the systems that sustain their environment more clearly than ever. They see fish decline after bleaching, seagrass beds muddied by upstream construction, forests disappearing to mining, and coastal erosion unfolding before their eyes. They know today's destructive choices undermine tomorrow's livelihood, not from textbooks, but from living through the decline.

Families still fish the last remaining stocks. Immediate hunger outweighs future sustainability. Local organizations try to restore land and sea, but budgets and manpower fall far short of what's needed. Communities grasp the interdependence of land, reef, and livelihood, yet remain powerless against larger forces: tourism, climate impacts, rising costs, and shifting social expectations.

Awareness becomes a burden rather than empowerment. Seeing the whole web feels like being trapped within it.

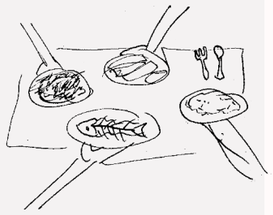
Design statement:

I want to transform immediate survival needs into collective resilience, by enabling communities to collaboratively act today while safeguarding the environment for tomorrow.

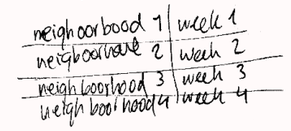
Analogy:
Like a shared meal where everyone brings one dish:
The shared contribution reduces the individual burden, while contributing to a better, more diverse meal.

Qualities:

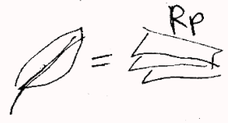
- participatory
- communal
- accessible
- enabling



Link the Siskamling (neighoorboud community-led safety system) to ecological savety.



Create ecology-friendly jobs:
Align short-term income with long-term ecosystem stability.



Community x Nature as a uncontrollable

Moving water, land and people

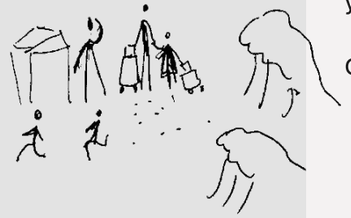
When living with the ocean, becomes living against it

By 2045, many coastal communities in Lombok experience the ocean less as a provider and more as a force to endure. Repeated flooding pushes families inland, leaving half-collapsed homes and abandoned fish racks behind. Coastal lines with broken coral offer no protection; storm surges move straight through villages, reshaping the coast faster than people can adapt.

Fishing, once a shared identity, becomes a high-risk gamble as weather patterns grow unpredictable. Children are warned away from shores that once held ceremonies and play. Young people avoid fishing altogether, choosing safer work elsewhere.

As risks rise, communities fracture. Those with savings relocate; those without remain exposed, rebuilding the same homes again and again.

By 2045, the youngest generation knows the coast only as damaged, and that fails to protect them. Fear replaces relationship, and the ocean that once defined cultural identity becomes something to defend against.



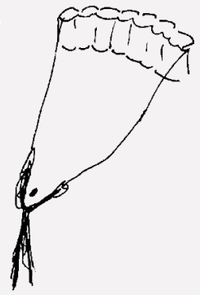
Design statement:

I want to empower communities to adapt to coastal instability by co-creating systems that enhance resilience while preserving local livelihoods and cultural ties.

Analogy:

Like flying a kite in strong wind:

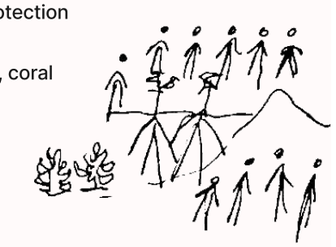
You can't change the wind, but you can adjust your grip and angle to stay aloft.



Qualities:

- skillful
- stabilizing
- adaptive
- resilient

Rebuilding ecological protection as community identity:
Like planting mangroves, coral reefs, dunes.



Shared safety measures and adaptive living:
Collectively retieving to safety houses inland, so everybody has the same opportunities and everybody can help eachother. A protocol, in which everyone knows what to do in case of an emergency. People are used to more adaptive living.

Community x Nature to be controlled

Ingenuity without infrastructure

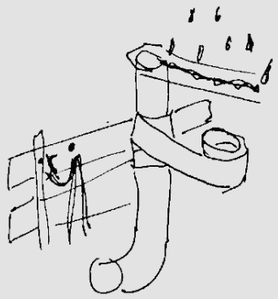
Short-term fixes in a long-term vacuum

By 2045, communities across Lombok have become experts in improvisation. They build homemade barriers, improvised drainage channels, patched landslide nets, and repurposed tools that keep daily life functioning. Digital platforms offer guidance, but materials are scavenged or shared, and most solutions work only temporarily.

Most actions occur only after damage has appeared. People rebuild cracked walls, reinforce riverbanks when water rises, or move livestock after experiencing the need to act. Creativity becomes reactive, driven by urgency rather than long-term planning.

A culture of constant repair takes hold. Communities remain inventive and resilient, yet always one step behind the next challenge.

By 2045, Lombok accepts that nature must be controlled to live with it, but lacks institutions and continuity to make protection durable.



Design statement:

I want to transform reactive ingenuity into sustainable resilience, by linking community creativity to lasting systems of care and protection.

Analogy:

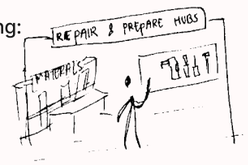
Like a student and their mentor:

Like a student who brings brilliant ideas, and a mentor who helps turn them into lasting work.

Qualities:

- inspiring
- guiding
- future-focused
- disciplined

Repair & prepare hubs:
Small neighborhood hubs offering:
shared tools
skilled mentors
training on prevention
storage of durable materials
guidance



Neighbourhood grants:
Each neighbourhood gets a fund, there will a pitching event and the winner gets te funding. If it goes well the neighbourhood will become involved in the development and it will help the whole neighboordhood.

Design buddies:
Platform where locals gets matched with engineers, to together develop ideas that could help the communit

16 societal goals for Lombok in 2045

Although the underlying 4×4 futures framework provides a rich and nuanced understanding of possible developments, it is complex and less accessible in conversations with external stakeholders such as policymakers, NGOs, governance institutions, and conservation organisations.

To make the futures more actionable and communicable, the sixteen design statements were consolidated and reformulated into a clear set of future-oriented societal goals. Inspired by the structure and communicative clarity of the Sustainable Development Goals (SDGs) (United Nations, 2015), these goals use the futures framework as their conceptual foundation.

The resulting set of sixteen goals functions as a strategic conversation tool. It enables diverse stakeholders to position themselves within the long-term future of Lombok, reflect on their current roles and responsibilities, and engage in shared dialogue about desirable societal directions and collective action.

The sixteen future-oriented societal goals are presented in Figure 18.

These 16 societal goals aim to shape a fair, resilient, and meaningful relationship with nature, in 2045.

In 2045, I want people to:

1. Relate to nature with connection, not consumption.
2. Experience fair relationships between global markets and local communities.
3. Feel self-reliant rather than dependent on external aid.
4. Have genuine access and ownership of the technologies shaping their climate future.
5. See cultural and sacred knowledge respected in public decision-making.
6. Witness institutions working together instead of apart.
7. Receive equal protection and collective safety.
8. Live with infrastructure and engineering that follow ecological limits.
9. Feel harmony between spiritual beliefs and scientific understanding.
10. See educated youths able to stay, contribute, and thrive locally.
11. Feel prepared and supported when natural hazards arise.
12. Use technologies guided by ethics, responsibility, and care for the living world.
13. Experience an intregrated connection with nature.
14. Escape short-term pressures and act towards collective long-term interest.
15. Adapt to environmental change while preserving dignity and identity.
16. Experience durable progress rather than short-term solutions.

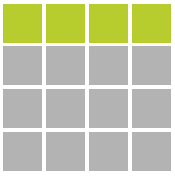
In 2045, I want people to....

Figure 18: Overview of the sixteen future-oriented societal goals for Lombok in 2045, derived from the design statements in the preferable futures framework and reformulated to support strategic dialogue with external stakeholders.

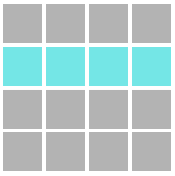
Intervention layers

To structure the sixteen future-oriented societal goals, four main intervention layers were defined. These layers represent broad domains in which systemic change is required to restore and sustain a balanced relationship between Lombok's society and the natural environment. Each layer encompasses four of the sixteen goals.

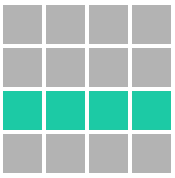
Although presented as distinct categories, these layers should not be understood as rigid or isolated domains. In practice, they are highly interdependent and overlapping. Rather than fixed boxes, they function more accurately as conceptual clouds: fluid spaces in which influences, responsibilities, and actions intersect across scales.



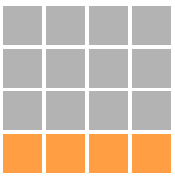
Global: markets, tourism, international influence



Institutional: governance, rules, public systems



Knowledge: education, awareness, skills



Community: daily life, culture, behaviour

The four intervention layers are described as follows:

1. Global
This layer addresses how value is created, distributed, and exchanged within local and global systems. It considers the influence of markets, tourism, and international dynamics on livelihoods and ecosystems, aiming to foster economic models in which both nature and communities can thrive..
Subgoals: 1, 2, 3, 4

2. Institutional
This layer focuses on institutional structures, governance mechanisms, and public systems. Concerns formal structures, policies, and decision-making frameworks that organise collective responsibility and long-term societal development.
Subgoals: 5, 6, 7, 8

3. Knowledge
Focuses on learning systems, knowledge production, and skill development. It explores how knowledge systems can strengthen people's capacity to understand, care for, and live in balance with their environment, both in the present and across generations.
Subgoals: 9, 10, 11, 12

4. Community
Relates to everyday practices, social norms, and cultural patterns at the community level. It builds the social capacities needed to navigate environmental and societal change.
Subgoals: 13, 14, 15, 16

Coral Connect

Coral Connect is an event where I was invited to present my work. The event brings together conservationists, local communities, NGOs, policymakers, ocean lovers, and ecotourism practitioners in Lombok to share knowledge, build connections, and celebrate the ocean.

For this project, Coral Connect provided an important platform. It allowed me to present the framework in a real-world context and to explore how it could be valuable for the people actively shaping the future of Lombok.

Figure 19: Human–Nature booklet developed for Coral Connect and presented during a meeting with the provincial authorities.

***Human Nature* booklet**

As my research was highly relevant to the audience attending Coral Connect, I wanted to make this knowledge accessible to them. However, the quantity and complexity of the material exceeded what could reasonably be covered in a 30-minute session, especially while also facilitating an interactive exercise using the framework.

To address this, I created a booklet that NGOs, policymakers, and ocean conservation programs could take home (see Figure 19). The booklet included a concise summary of my research, an overview of the 16 future societal goals, and a small self-guided workshop that organizations could conduct independently using post-its and the included slides.

This format allowed participants to engage with the content at their own pace and enabled the knowledge to spread further into their organizations and professional networks.
At the back of the booklet, I included a companion booklet specifically designed to support the interactive workshop held during the Coral Connect event itself.

Figure 20: Photograph of an interactive exercise at Coral Connect, during which participants positioned themselves in relation to the sixteen societal goals for the future.

Shared soceital goals
The primary objective of this session was to encourage participants to position themselves within the 16 societal goals of the future, engage in dialogue with others, and form coalitions around shared values and ambitions.

Following an introductory presentation explaining my work, the booklet, and the development of the 16 societal goals, the session moved into an interactive exercise. On the beach, I created a large 4 × 4 framework drawn in the sand and displayed laminated versions of the 16 societal goals (see Figure 20). Participants were invited to position themselves in the goal that resonated most strongly with them and reflected where they felt they could contribute most meaningfully.

The booklet also included space for participants to exchange contact information, supporting the formation of coalitions with others aligned around the same goals.

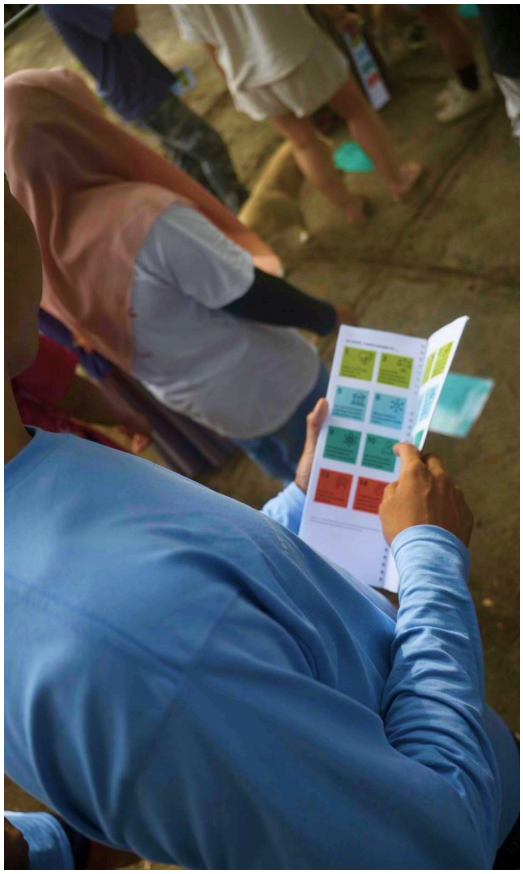
As a reflective exercise, participants were additionally asked to consider which societal goals might represent blind spots, areas that receive less attention but may be equally important for the future.

Findings
The talk was very well received and generated many positive responses and compliments.

One aspect that resonated particularly strongly with participants was the focus on shared goals rather than on specific solutions. By shifting the conversation away from comparing solutions, the framework opened up space to explore opportunities and common ground within those shared goals. This approach encouraged dialogue and reduced competition, allowing participants to engage more openly with one another.

Several attendees asked for additional copies of the booklet to share with their colleagues, indicating a strong interest in continuing and spreading the work beyond the event itself.

As an unexpected and valuable outcome, I was offered a role as a design facilitator for an upcoming event in Malaysia, organized by UNICEF in collaboration with other NGOs, focusing on ocean literacy.



Quotes

“At the end it’s one big goal, it is all connected.”

“I liked how you focus on creating an open discussion about shared goals, instead of comparing whose solution is better.”

“Can I have a few extra books for my colleagues?”

“I am very inspired by how interactive everything is.”

COMPLEXITY

EMBRACING COMPLEXITY

This project has been the most complex one I have worked on so far. The question itself is layered and deeply interconnected, and the project spans a long period of time while being carried out individually. Especially in the beginning, this felt overwhelming.

In addition to the insights described in the previous reflections, new contradictions kept emerging. Each step forward revealed new questions rather than clear answers. At times, it felt like swimming in an endless sea of complexity, constantly moving without ever fully reaching solid ground.

What proved to be most important, and where my coaches offered valuable support, was learning to embrace this complexity rather than resist it. Instead of rushing to simplify, I learned to stay with the uncertainty, to allow complexity to exist, and to find calm within it.

That being said, there were moments when it all became too much. Working alone for such a long time can be heavy. When my head felt full, I would close my laptop and quite literally step away from the complexity, choosing to swim in the sea instead.

flexible

FLEXIBILITY

Designing in cross-cultural contexts means that certain conditions often taken for granted can change rapidly. Shared language, familiarity with design terminology and methods, access to prototyping facilities, the ability to order or buy materials easily, a dedicated place to work, a stable Wi-Fi connection, and clear moments to meet and align.

When these conditions are not a given, a different kind of flexibility is required from the designer.

In this context, flexibility is not only about finding creative solutions to practical limitations, but also about letting go of rigid expectations. Meetings do not unfold the way you imagine them, schedules shift, and the same appointment can be postponed or rearranged multiple times.

Rather than seeing this as an obstacle, I learned to approach it as part of the design process itself. It required me to adjust not only my tools and methods, but also my mindset.

This experience taught me that designing in such a context is less about control and efficiency, and more about responsiveness. Progress emerges not from forcing structure, but from learning how to move with the reality of the situation.

*this image is generated with Ai

GET RID OF YOUR LAPTOP (SOMETIMES)

Many of my insights during this project emerged at unexpected moments, and rarely behind my laptop. They were written in notebooks, sketchbooks, phone notes, and sometimes even on napkins or receipts.

In the Netherlands, my working routine usually revolves around finding a place to sit and spending most of the day behind a laptop. Don't get me wrong, this allows me to read and write extensively. Western productivity, in many ways, is built around the laptop.

However, I realized that deeper insights often require a different kind of attention, one that reaches beyond a screen. They tend to emerge unexpectedly, often during moments of rest or free time, through a subconscious processing of everything I have absorbed, both digitally and in real life. This happens when thoughts are allowed to unfold without immediately searching for answers.

By *dry thinking*, I mean thinking without looking things up. Letting questions remain unanswered for a while, trusting memory, intuition, and reflection instead of constant verification. In those moments, ideas feel less polished, but more honest.

This experience reminded me that while laptops are powerful tools, stepping away from them can create space for a different quality of thinking, one that is slower, more embodied, and often more meaningful.

A BARRIER OF LANGUAGE, CULTURE, AND CONTENT

In this project, I identified three main barriers. A barrier of: language, culture and content.

At first, I assumed that misunderstandings were caused by language. When people looked confused while I explained my framework, I thought they simply did not understand my English. The following week, I returned with everything translated into Bahasa. Yet the confusion remained.

Then I assumed it might be cultural. Perhaps the Indonesian context, which can be more hierarchical and less verbally direct than the Dutch context I am used to, made interactive and participatory sessions unfamiliar. Many participants in co-creative workshops had never worked with Post-its before. Interactive design methods were new territory.

However, over time I realized that something else was also at play. The barrier was not only linguistic or cultural, but conceptual. The design methodology and way of thinking behind the framework were unfamiliar. When presenting the framework, I noticed glazed expressions. When asking IBF which design statements they wanted to focus on, attention shifted toward the concrete ideas attached to them rather than the broader societal framing. A tangible idea was understandable; a systemic design philosophy was not yet part of their reference frame.

This realization led me to adjust my approach. I deliberately reformulated the framework into a more recognizable structure, similar to the format of the Sustainable Development Goals. By presenting only the societal goal, instead of the full theoretical structure behind it, I lowered the threshold for engagement.

This experience taught me that in meetings, interviews, and participatory sessions, it is essential to consider not only language and culture, but also content. Design methods and philosophies are not universal. When they are unfamiliar, they can create distance rather than clarity. Making complexity accessible sometimes means temporarily hiding parts of it.

DESIGN

5

5.Design

This chapter, Design, represents the final phase of the ViP methodology and addresses RQ1.4: How can identified values and design qualities be translated into design interventions and a transformation pathway toward 2045?

The design trajectory unfolded as a research-through-design process, characterized by a continuous movement between reflective abstraction and situated making. Rather than following a linear divergent–convergent model, the project developed through iterative shifts in which conceptual propositions were articulated, materialized, tested, and refined. In this way, design functioned not only as a means of implementation, but as a mode of inquiry through which knowledge was actively produced.

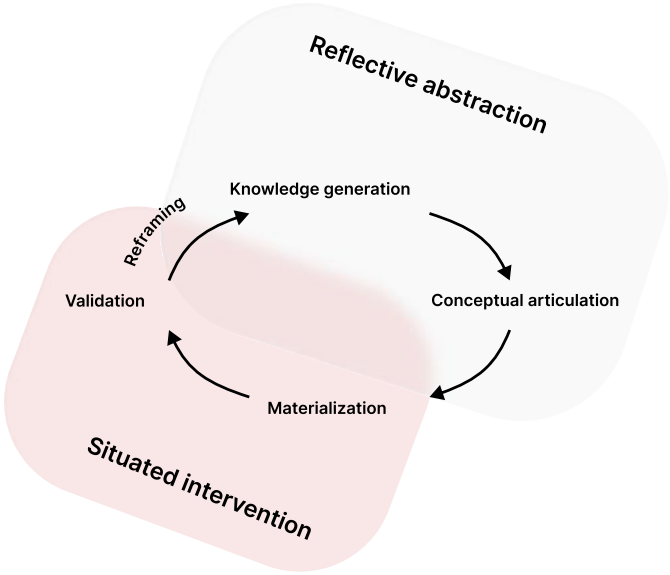


Figure 22: The diagram visualizes the iterative progression between the four stages within the broader movement between reflective abstraction and situated intervention. A detailed representation of this design process is provided in Appendix D.1.

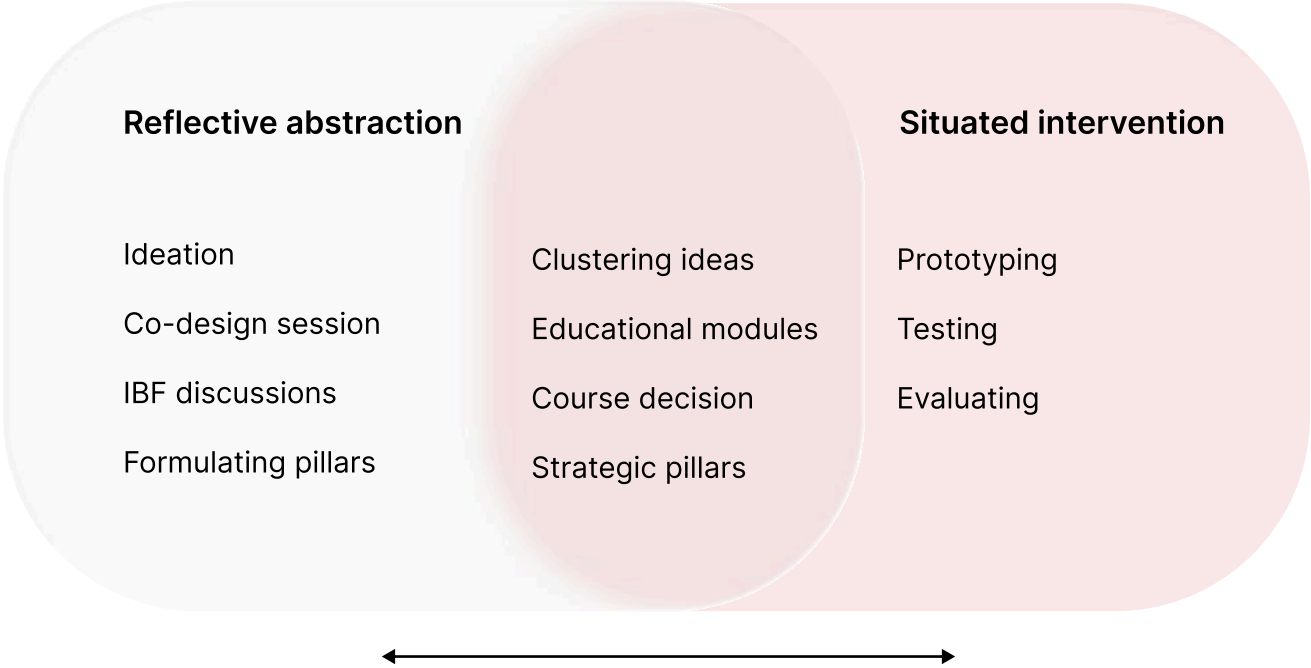


Figure 21: Conceptual model illustrating the dynamic interplay between reflective abstraction and situated intervention.

The design process moved between reflective abstraction and situated intervention, see Figure 21. Reflective abstraction refers to the process of interpreting observations, experiences, and co-design input in order to develop conceptual insights and guiding principles.
Situated intervention refers to translating these concepts into concrete actions and materials within a specific context, where they are implemented and experienced in practice. Through the ongoing movement between reflection and implementation, knowledge was developed through design.

The concept

Nature relation, a future-oriented curriculum layer

This curriculum adaptation is positioned within the knowledge intervention layer of the framework and responds to the overarching goal that education, understanding, and knowledge systems strengthen people's capacity to live wisely with nature, today and in the future.

Rather than replacing existing educational structures, the course *Nature Relation* functions as a modular and adaptive layer that can be integrated into current teaching practices. It builds upon national curriculum frameworks while creating space to address long-term societal challenges that are not yet structurally embedded in formal education.

The course is explicitly future-oriented, working towards the horizon of 2045, and translates four previously defined societal goals into educational building blocks. These building blocks form the foundation of four curriculum pillars, each addressing a distinct yet interconnected way of relating to nature.

Lesson modules were developed by translating the design statements and their associated qualities into concrete educational experiences. Instead of starting from existing lesson formats or curriculum structures, ideation was guided by these qualities, shaping decisions around interaction, pacing, learning environments, and the role of the teacher.

Each lesson functions as a materialization of the framework, making abstract values and future-oriented goals tangible in practice (see Figure 23). In this way, the course operates as an extension of the ViP framework, connecting long-term vision to concrete educational interventions while remaining open to adaptation, iteration, and growth.

Over time, the concept moves beyond the classroom and gradually becomes embedded in society. As more students engage with the curriculum, the societal goals shift from being taught ideas to becoming shared practices and values. In this way, the classroom acts as a starting point for broader societal change.

To guide this development, the roadmap describes three horizons that outline a step-by-step strategy. This approach is further elaborated in the following subchapter.

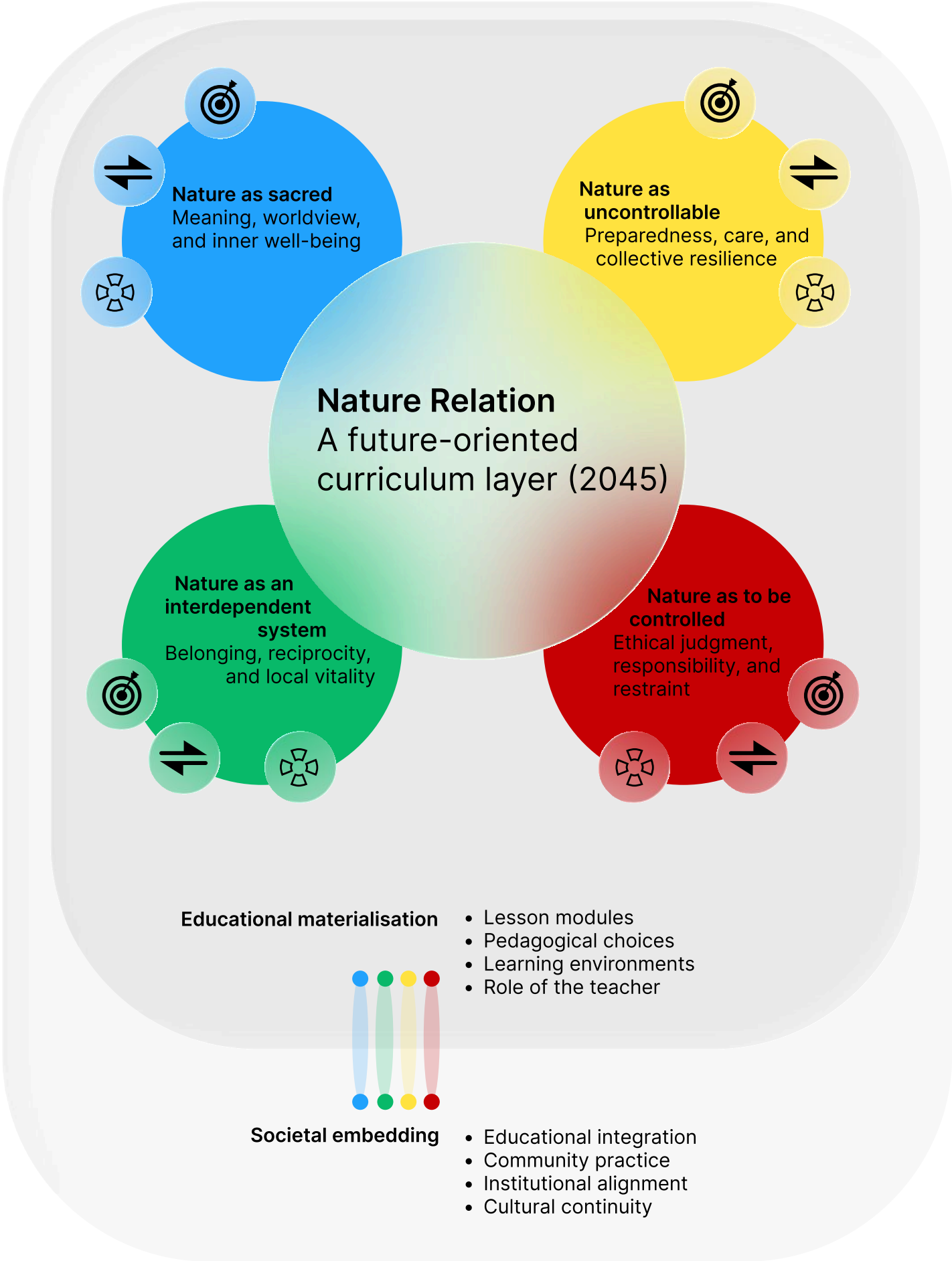


Figure 23: Nature Relation as a future-oriented curriculum ecosystem. The figure illustrates how four relational perspectives on nature form interconnected curriculum pillars within a knowledge intervention layer, translating societal values into educational practices and long-term societal embedding.

VISION 2045

By 2045, knowledge systems support people in Lombok in developing meaningful worldviews, a sense of belonging, collective preparedness, and ethical responsibility in relation to the living world.

PILLARS

HORIZON 1 → **HORIZON 2**

HORIZON 1: 2026 – 2028

Seeding the future

Develop & validation

HORIZON 2: 202

Taking r

Embedding & ex

	HORIZON 1: 2026 – 2028	HORIZON 2: 202
Focus	Translating the four pillars into tangible lesson modules co-developed with pre-service teachers and introduced in classrooms. Building early adoption within teacher education while establishing collaborative networks within and beyond government.	Embedding the pilla schools and comm within local culture while maintaining p government.
Stakeholders	Curriculum Designers; Early-stage Funding; Provincial Government: Bappeda NTB; Teachers & their classrooms; School leadership	Provincial Government: Bappeda NTB
Value proposition	Children begin to develop foundational capacities to relate to nature through meaning, belonging, preparedness, and ethical responsibility	Ways of relating to practices across s
Strategy	The strategy is to start with pre-service teachers so that future-oriented practices naturally enter classrooms, while building collaborations within and beyond government to remain stable amid policy changes.	The strategy is to education system communities to de while maintaining beyond governme
Key activities	• Course development adjusted to ages • Pre-service teachers co-develop • Classroom pilots & validation • Developing digital platform (initial) • Building and nurturing networks within and beyond government. • Establishing funding for development	• Implementing i • Open learning • Local adaptatio • Family and com • NGO collaborat • Teacher netwo
Transition logic	**Continued** Teacher education structures · Local cultural knowledge · Intergenerational knowledge transfer	Transformed Curriculum tow perspectives ·

Nature as sacred
Meaning, worldview, and inner well-being

Nature as uncontrollable
Preparedness, care, and collective resilience

Nature as an interdependent system
Belonging, reciprocity, and local vitality

Nature as to be controlled
Ethical judgment, responsibility, and restraint

HORIZON 3

28 – 2035

oot

xpansion

ars in everyday practice across
unities until they become self-evident
, enabling expansion across society
artnerships within and beyond

Curriculum Authorities
National Education Actors

Community /
Families

o nature become shared everyday
schools, families, and communities.

expand learning beyond the formal
into society at large, enabling
evelop shared knowledge and skills,
parallel collaborations within and
nt for long-term stability.

n all schools of Lombok
platform
on
mmunity materials
tions
rks

HORIZON 3: 2035 – 2045

Dispersal

Transfer & inspiration

Positioning Lombok as a reference context where the pillars shape cultural identity and intergenerational knowledge transfer. Sharing and adapting this approach through media, institutions, and international exchange.

Academic dissemination

NGOs

Media platforms

International educational networks

Lombok becomes recognised for its knowledge systems that cultivate meaningful, ethical, and resilient relationships with the living world.

The strategy is to position Lombok as a reference for future-oriented relationships with nature, using storytelling, media, and public recognition to share how knowledge systems are passed on with a long-term perspective.

- PR
- Open-access resources
- International exchange
- Adaptation pilots

wards relational and future oriented
School–community boundaries

Phased out
Purely instrumental views of nature · Initiatives dependent on short-term political cycles

Strategic collaboration across horizons

The realization of this concept requires collaboration across multiple stakeholders, particularly when moving from prototype to implementation. As illustrated in Figure 25, these collaborations evolve across three development horizons.

In Horizon 1, the focus lies on local implementation and contextual alignment. Collaboration with school leadership and teachers ensures pedagogical feasibility and cultural relevance, while curriculum designers contribute expertise in translating the framework into structured learning trajectories. Early-stage funding is essential at this stage to support prototyping, testing, and refinement.

An important step toward institutional alignment has been the engagement with the provincial planning agency, Bappeda NTB. During preliminary discussions, representatives expressed enthusiasm for the concept and openness to further collaboration. Although decision-making processes within governmental institutions often progress gradually, such partnerships are crucial when aiming for structural integration within existing policy and educational frameworks (see Figure 26 for an impression of the meeting and initial alignment).

In Horizon 2, collaboration expands toward broader institutional embedding. This may involve deeper engagement with provincial authorities, curriculum boards, and national education actors to ensure long-term integration within formal structures.

Horizon 3 represents a longer-term perspective, in which the project may connect to wider educational and international networks. At this stage, collaboration could extend toward research communities, media platforms, and transnational educational initiatives. Rather than immediate implementation, Horizon 3 reflects the potential for broader cultural diffusion and knowledge exchange beyond the initial regional context.

Although the horizons describe a timeline, future collaborations cannot simply start in Horizon 3. If the ambition is to connect with research networks, media, or international initiatives later on, the first relationships and positioning need to begin much earlier. Thinking ahead about future collaborations helps ensure that the envisioned transition does not stagnate.

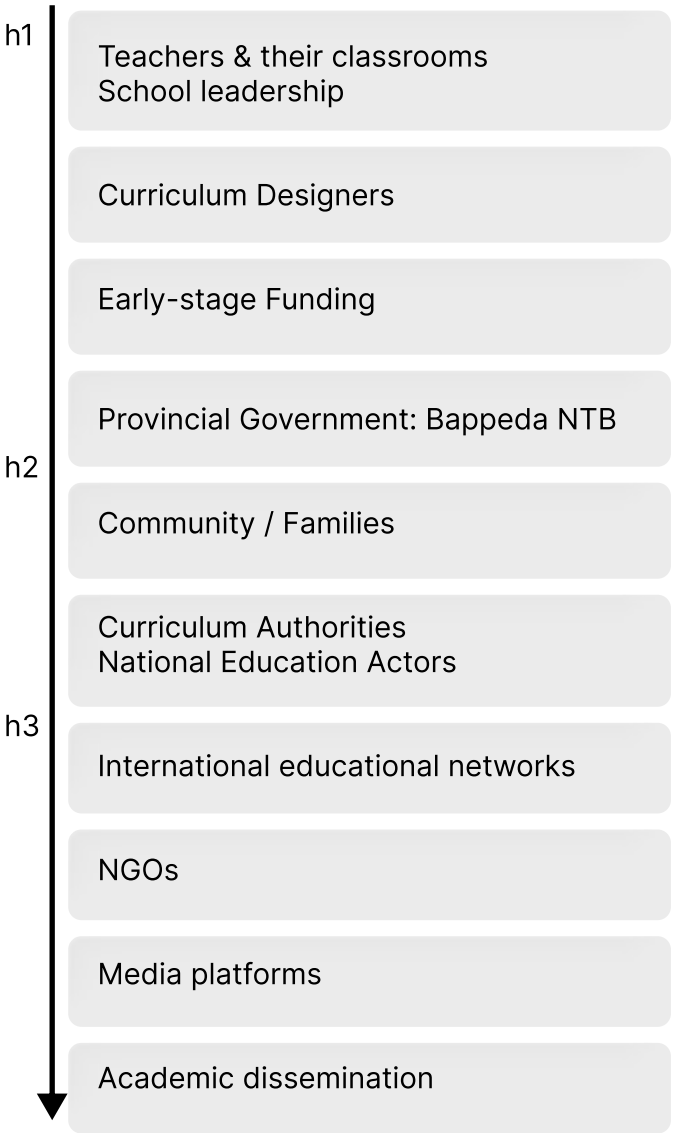


Figure 25: Stakeholder collaboration across three horizons

Figure 26: Initial alignment meeting with Bappeda NTB (Provincial Planning Agency of West Nusa Tenggara) to discuss potential collaboration and alignment of the project within regional educational and policy frameworks.

Design rationale

Cell-Based Ideation

On pages 53-60, the preferable futures and their corresponding design statements, analogies, and qualities were introduced. Based on these elements, an initial set of design ideas was generated for each cell, as visualized on the right-hand side of the framework diagram (white sections).

These early ideas emerged partly through individual design exploration and partly through insights gathered during the co-design session. The ideation process therefore combined autonomous interpretation of the framework with participatory input from stakeholders.

Co design session:

To ensure that the emerging ideas were culturally grounded, a co-design session was organised with local participants. The primary aim of this session was not to generate as many ideas as possible, but to uncover patterns in how participants framed solutions and evaluated ideas. Particular attention was given to understanding why certain ideas were perceived as appropriate, meaningful, or desirable, while others were rejected.

During the session, the researcher subtly introduced some of the previously generated ideas into the process without disclosing their authorship. This allowed for an unbiased assessment of how these ideas resonated culturally, independent of their origin.

The session applied a braindrawing method to collaboratively explore future relationships between people and nature on Lombok. After a short introduction to design thinking and creative techniques, participants responded to seven “How-to” questions addressing themes such as spiritual connections to nature, coastal instability, community-led data gathering, youth retention, and local innovation.

Participants produced a wide range of ideas during the braindrawing rounds. In the second half of the session, these ideas were collectively analysed, clustered, and prioritised through dot-voting, revealing the most promising directions.

Key insights from co-design

Several recurring insights emerged from the session:

- **Community capacity:** Local knowledge, shared spaces, and bottom-up initiatives were consistently identified as essential for long-term change.
- **Experience and emotion:** Storytelling, cinematic approaches, and symbolic or affective interventions were seen as culturally effective in influencing behaviour.
- **Economic realities:** Ideas related to environmental care and youth engagement were strongly shaped by income opportunities and future career prospects.
- **Technology as a bridge:** Both advanced (e.g. VR, holograms, AI-generated experiences) and simple digital tools were viewed as intuitive ways to make ecological processes visible and understandable.
- **Practical scalability:** Concepts such as gamified data collection, smart snorkelling tools, eco-tourism models, and local innovation hubs were regarded as actionable and relevant.

Although a large number of ideas were generated, many overlapped, remained exploratory, or were humorous in nature. Ultimately, five core ideas were distilled from the session and integrated across the future cells. The primary value of the co-design session therefore lay not in the quantity of ideas produced, but in the values, priorities, and cultural logics that surfaced through the process.

A more detailed account of the co-design session and its outcomes can be found in Appendix D.6.

Figure 27: Participatory session on ideation.

Clustering ideas
Following the cell-based ideation and the co-design session, all generated ideas were collected and grouped into thematic categories.

The ideas were clustered into the following domains:

- Education & awareness
- Curriculum
- Games & Participatory Tools
- Community innovation
- Programs
- Certificering & Standards
- Governance innovations
- Policy frameworks
- Economische Instrumenten
- Platforms & Networks
- Governance structure

As illustrated in Figure 28, the clustering process enabled the identification of broader thematic domains, revealing potential strategic directions beyond individual concepts.

In addition to thematic clustering, the ideas were informally assessed across three strategic routes to support decision-making. Route A identified low-hanging fruit: lightweight interventions with immediate impact. Route B focused on alignment with the institute's existing capacities and networks (IBF), ensuring feasibility without requiring additional infrastructure or resources. Route C highlighted ideas with political or strategic leverage, offering potential for long-term partnerships and systemic influence. Although several ideas intersected multiple routes, this structuring provided clarity in prioritizing directions for further development.

A detailed, enlarged version of the clustering diagram is provided in Appendix D.7.

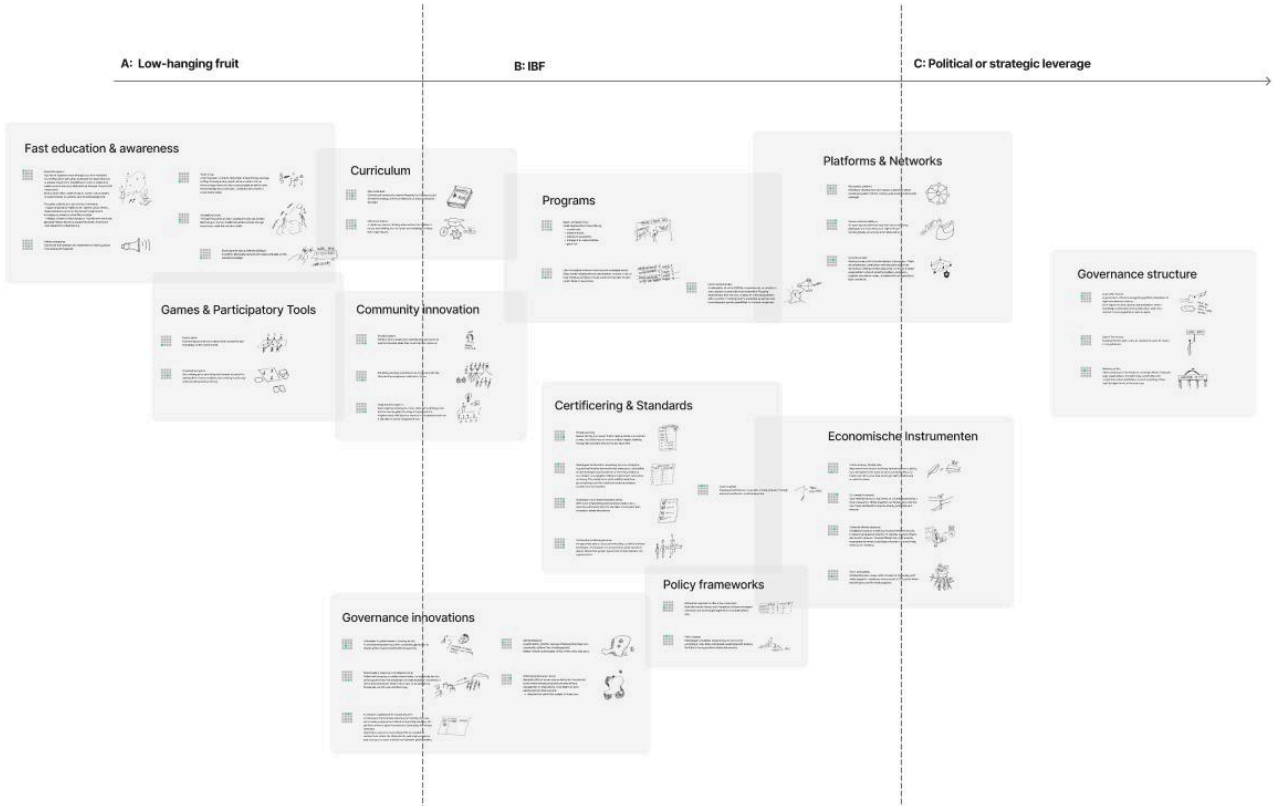


Figure 28: Overview of the thematic clustering of generated ideas following the cell-based ideation. The diagram visualizes how individual ideas were grouped into broader domains to identify strategic directions and areas of intervention.

Decision knowledge layer

Following the clustering and strategic assessment, a focus needed to be established on one of the cells within the framework for the rest of the design process. However, making this decision proved to be complex.

An initial discussion was held with my supervisor and the founder of IBF to jointly reflect on the design statements. At that stage, the conversation was closely tied to the early concept ideas, which made it difficult to distinguish between selecting a strategic direction and discussing specific product-like solutions. The focus tended to shift toward tangible outputs rather than underlying intentions.

To create clarity, the framework and accompanying design statements were simplified into a more distilled version (see Figure 18 on page 62). This reframing supported a shift in the discussion from concrete products toward broader objectives and long-term positioning.

Within the next conversation, it became clear that the knowledge layer was most aligned with IBF's future ambitions and organizational identity. For this reason, the project was positioned to focus on this layer (see Figure 29), ensuring that its outcomes would retain value beyond the duration of this graduation project.

In addition, IBF expressed a clear preference for Route A: interventions that could generate meaningful impact without excessive complexity. Ideas requiring extensive technical development were therefore deprioritized, as the organization does not have in-house engineering expertise and such developments would require significant financial investment and infrastructure.

While this decision emerged through multiple discussions with IBF and my supervisors, the final selection and positioning of the project focus were ultimately made by me as the designer.

Figure 29: Overview of the four societal goals embedded within the knowledge layer of the framework.

Structuring the ideas across four cells
Following the decision to focus on the knowledge layer, the four corresponding cells were further developed. Again based on their design statements, analogies, and associated qualities, a new set of ideas was generated for each cell.

As in the previous ideation phase, these ideas were subsequently structured to identify underlying patterns. During this process, it became evident that the concepts could be broadly categorized according to their relationship to existing educational systems. As illustrated in Figure 30, the ideas were structured into three learning contexts.
Some ideas operated clearly within the boundaries of formal education, situated inside established curricular structures.
Others extended beyond institutional education, proposing alternative forms of knowledge and skill development outside the traditional classroom context.
In addition, a third category emerged: experience-based forms of learning that could function both within and beyond formal educational settings. These ideas positioned learning as something that is not confined to institutional structures but can move fluidly between classroom environments and lived contexts.

A detailed overview of the ideas developed per cell can be found in Appendix D.8.

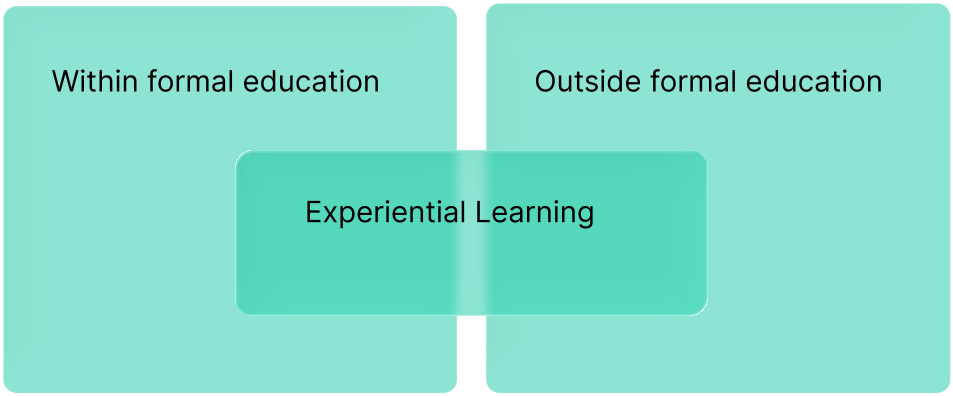


Figure 30: Categorization of the developed ideas into three learning contexts: Within formal education, Experiential learning, and outside form education.

Course concept decision
Following the ideation phase, another moment of selection emerged. A strategic decision needed to be made regarding the prositioning of the final concept.

IBF expressed a clear preference for situating the project within the existing educational system, with the ambition of gaining recognition and integration within formal structures. Initially, I was hesitant about this direction. Ideas that operated strictly within established educational systems appeared less innovative and less radical than some of the alternative propositions developed earlier. As a designer, particularly when working on designing transitions, there is often a tendency to pursue more transformative or disruptive directions.

However, upon further reflection, this decision aligned with an important intention I had set at the beginning of the project: not to “fly in, propose, and fly out,” but to meaningfully engage with the local context. In doing so, the aim was to create an outcome that IBF could realistically continue to develop beyond the scope of this project.

This became increasingly evident during discussions with the IBF team. While parts of the framework were experienced as conceptually complex, the idea of developing a course within the existing educational structure proved relatable and tangible. At the same time, the integration of the four societal goals and a future-oriented understanding of the human–nature relationship was perceived as innovative and distinct from conventional nature or biology education.

Building something new on top of an existing structure may, in this context, be more effective than introducing an entirely separate system. Combining familiarity with innovation can serve as a strategic pathway for transition, enabling gradual integration rather than resistance.

Furthermore, while Horizon 1 focuses on embedding the course within formal education, Horizon 2 offers the possibility for experiential learning elements to extend beyond the classroom walls. In this light, positioning the concept within the educational system was considered the most strategic and sustainable choice.

Research in the local education system
During the decision-making process regarding the knowledge layer and the positioning within the formal education system, further research was conducted into the local educational context.

Visits were made to a local primary schools, including multiple visitations, two interviews, and a shadowing day. These engagements provided insight into existing curricular structures, pedagogical practices, and contextual constraints. A detailed account of these findings is provided in Appendix D.10.

The insights gathered through this field research informed the finalization of the course concept and were integrated into the development of the lesson prototypes.

Conceptualisation
With the course concept defined (see pages X–X), the project was positioned as an additional subject integrated within the existing curriculum framework. This subject aims to materialize the four societal goals related to human–nature relationships from a future-oriented perspective.

Given the limited timeframe of this graduation project, developing a fully elaborated course was not feasible. Instead, the focus was placed on developing representative lesson prototypes to provide an indication of the course content and to assess whether the intended qualities were effectively embodied.

The four cells of the knowledge layer, functioning as pillars within the concept, were translated into individual lesson modules. In this process, ideas generated during the previous ideation phase were revisited, refined, and further developed. These were complemented with newly generated ideas to better align with the chosen course direction. For each pillar, the ideas were structured into concrete lesson proposals (see Figure 31; detailed descriptions are provided in Appendix D.9.).

These initial lesson modules were discussed during a two-hour feedback session with my supervisors in the Netherlands, both of whom have experience in education. In addition, the prototypes were reviewed in consultation with a local teacher involved in the planned testing phase.

The feedback from these discussions was integrated into the refinement of the lesson modules, resulting in the prototypes presented in the following section.

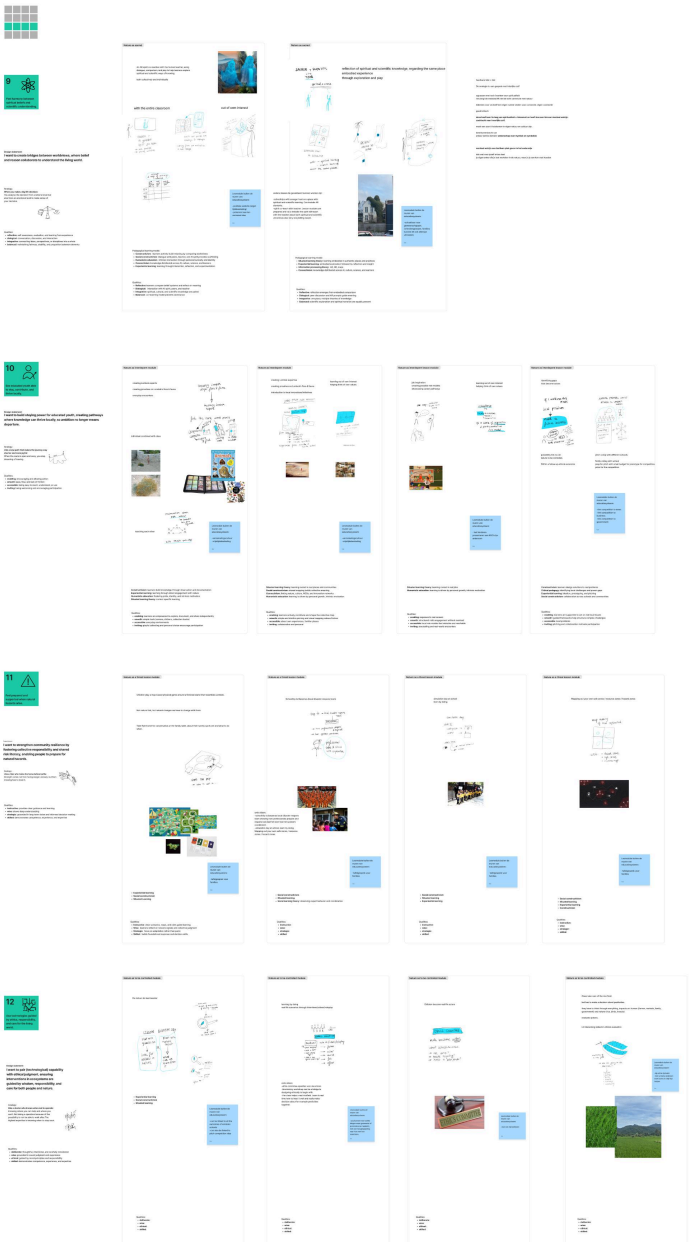


Figure 31: Overview of the lesson proposals developed for each of the four pillars within the knowledge layer.

Design and detailing

Lesson prototypes as scalable examples
Each lesson developed within this project functions as a prototype. The lessons are not intended as fixed models, but as examples that demonstrate how a pillar with its qualities, can take shape in practice. They provide a form, language, and structure that can be adapted, expanded, or reinterpreted by teachers and policymakers.

This approach supports scalability. The modules can be adjusted to different ages, locations, and capacities, making it suitable for broader implementation.

Affordances
Each lesson embodies the qualities defined in the framework.

The lessons are not intended as fixed models, but as examples that demonstrate how a pillar with its qualities, can take shape in practice. They provide a form, language, and structure that can be adapted, expanded, or reinterpreted by teachers and policymakers.

This approach supports scalability. The modules can be adjusted to different ages, locations, and capacities, making it suitable for broader implementation.

Target group
All lesson modules were tested with the same Year 3 elementary school class, consisting of children aged approximately 9–10 years. This group was selected in collaboration with IBF, as an existing partnership with the school made testing feasible within a real classroom context.

Year 3 was deliberately chosen based on research on children's attitude development. Around this age, children begin to show increased self-reflection, perspective-taking, and a more critical understanding of the world around them. Cognitively, they are situated within the concrete operational stage, allowing for logical reasoning about concrete situations while gradually developing reflective thinking (Piaget, 1952). Socially, children become more sensitive to fairness, group norms, and the viewpoints of others, making them particularly receptive to dialogical and reflective learning approaches (Eccles, 1999).

The proposed course will be designed to be adaptable across age groups. Both content complexity and pedagogical approach can be adjusted to align with students' developmental stage and evolving attitudes.

Figure 32: Overview of the lesson materials developed for the four pillars of the framework. Top left: Pillar 1 – Nature as sacred. Bottom left: Pillar 2 – Nature as interdependent system. Top right: Pillar 3 – Nature as uncontrollable. Bottom right: Pillar 4 – Nature as to be controlled

🔵 **Lesson 1,** ***pillar: nature as sacred***
This lesson explores the relationship between nature, meaning, and knowledge through both scientific explanation and cultural storytelling. Taking place at the beach, children engage with both scientific perspectives and spiritual Sasak knowledge connected to the same environment.

Through observation, listening, and moments of silent reflection, the lesson encourages children to relate rational understanding to personal experience. Rather than promoting belief, the lesson creates space for reflection and individual meaning-making.

Figure 33 presents the teaching materials used in this lesson, including a reflective diary and both a spiritual and a scientific story card. The full teacher briefing, story cards, diary prompts, and supporting materials are provided in Appendix D.2.

Scalability and further development
This lesson can be scaled by adapting the setting and stories to different natural environments. While the prototype takes place at the beach, similar formats could be developed for forests, rivers, rice fields, or schoolyards. Both the scientific explanation and cultural narrative can shift accordingly, drawing on local knowledge and stories connected to each place.

Future iterations could include additional sensory elements, such as sound recordings, movement-based exercises, or seasonal observations. The reflective diary format allows for adaptation across age groups and could be expanded into longer-term reflection practices.

Pedagogical strategies, lesson 1
- Experiential learning through place-based education, using a natural environment as the classroom
- Story-based learning to connect abstract knowledge with emotional and cultural meaning
- Reflective practice through silent individual writing or drawing
- Dialogical learning by combining scientific explanation and cultural storytelling
- Embodied learning through sitting, observing, and sensory awareness
- Mental well-being support by creating space for calm, presence, and inner reflection

Other lesson ideas that could be explored within this pillar:
- School trips structured as scavenger hunts, combining spiritual narratives and scientific observation of a specific place
- Lessons that integrate augmented reality elements to visualize invisible processes or place-based stories
- A co-teaching format in which a spiritual character teaches alongside the teacher via a digital platform
- Story-driven lesson modules delivered through a website, where a spirit narrates both scientific phenomena and cultural meanings

Affordances in lesson 1
The following affordances illustrate how the qualities defined in the framework are embodied within this lesson.

Reflective
Reflection is afforded through intentional moments of stillness and individual attention. Sitting in nature, observing the surroundings, and engaging in silent drawing or writing in a personal diary invite children to turn inward and connect what they learn to their own feelings, thoughts, and experiences. The absence of required outcomes supports reflection without pressure.

Dialogical
Dialogue is afforded by presenting two distinct knowledge perspectives on the same place: a scientific explanation of natural phenomena and a Sasak cultural narrative connected to the same natural phenomena. Neither perspective is positioned as more valid than the other. Instead, the lesson design encourages listening, comparison, and open conversation, allowing children to hold and discuss multiple viewpoints simultaneously.

Integrative
Integration is afforded by explicitly connecting different forms of knowledge into a coherent whole. Scientific understanding, cultural meaning, sensory observation, and personal reflection are woven together within one lesson structure.

Balanced
Balance is afforded through a lesson structure in which scientific explanation, cultural storytelling, and reflection are clearly separated yet equally present, with the natural environment serving as a common context for all activities.

Figure 33: Lesson materials developed for the pillar Nature as Sacred. From left to right: a reflective diary with prompts for writing and drawing; a story card presenting the spiritual lessons of Putri Mandalika and her connection to the sea; and a science-based story card explaining high and low tide.

Lesson 2, *pillar: nature as interdependent*
This lesson positions children as active problem-solvers within their local environment. Through a collaborative design workshop, they explore the interdependence between human actions and natural systems by addressing a shared and concrete issue: plastic waste entering the sea.

Rather than moving prematurely toward solutions, the lesson emphasizes developing a nuanced understanding of the problem from multiple perspectives, listening to one another, and experiencing collective agency. Children come to recognize that environmental challenges are neither abstract nor distant, but closely connected to everyday choices within their school and community.

Figure 34 presents the mind maps and poster materials used during this lesson. The full teacher briefing, worksheets, and supporting materials are provided in Appendix D.3.

Scalability and further development
This lesson is highly scalable through the selection of different locally relevant problem statements. While the prototype focuses on plastic waste, the same workshop structure can be applied to topics such as water use, food waste, school energy use, or biodiversity around the school.

The format can be extended beyond the classroom by connecting outcomes to pitching sessions with other schools or by sharing children's ideas with local initiatives or policymakers. In this way, the workshop can act as a bridge between education, community engagement, and policy dialogue.

Pedagogical strategies, lesson 1
- Problem-based learning grounded in a real, local issue.
- Collaborative design thinking through group discussion and collective ideation.
- Democratic dialogue by valuing multiple perspectives before proposing solutions.
- Agency-building by allowing children to shape ideas that matter to their environment.
- Creative expression through visual thinking and poster-based communication.
- Process-oriented learning, emphasizing exploration over correct outcomes.

Other lesson ideas that could be explored within this pillar:
- A collectible book with stickers or cards representing local flora and fauna, supporting knowledge-building and pride in Lombok's biodiversity.
- A shared classroom camera project, where children take turns photographing meaningful natural elements in their everyday lives, with printed images displayed at school.
- A personal "treasure map" or moodboard where children map places of interest related to nature, culture, animals, local businesses, or NGOs.
- School trips to local initiatives working on environmental protection, offering concrete inspiration for local action and community involvement.

Affordances in lesson 2
The following affordances illustrate how the qualities defined in the framework are embodied within this lesson.

Enabling
Enabling is afforded by framing children as capable contributors rather than passive learners. The design workshop invites them to analyse a real local problem and generate ideas together, reinforcing the sense that their thinking and creativity matter within their own community.

Smooth
Smoothness is afforded through a clear and supportive workshop structure. The lesson moves step by step from problem exploration to idea generation, selection, and presentation. This predictable flow reduces cognitive overload and allows children to focus on thinking and collaboration.

Accessible
Accessibility is afforded by working with a shared local problem that all children recognise and experience in daily life, making it easier to relate to and discuss. Open-ended brainstorming materials are placed openly on the table, allowing every child to contribute through drawing, talking, or pointing, without requiring prior knowledge or specific skills.

Inviting
Inviting participation is afforded through working in smaller, divided groups, which lowers the threshold for speaking up and active engagement. The emphasis on collaboration, visual expression, and the absence of right or wrong answers creates a safe and welcoming environment for exploration and dialogue.

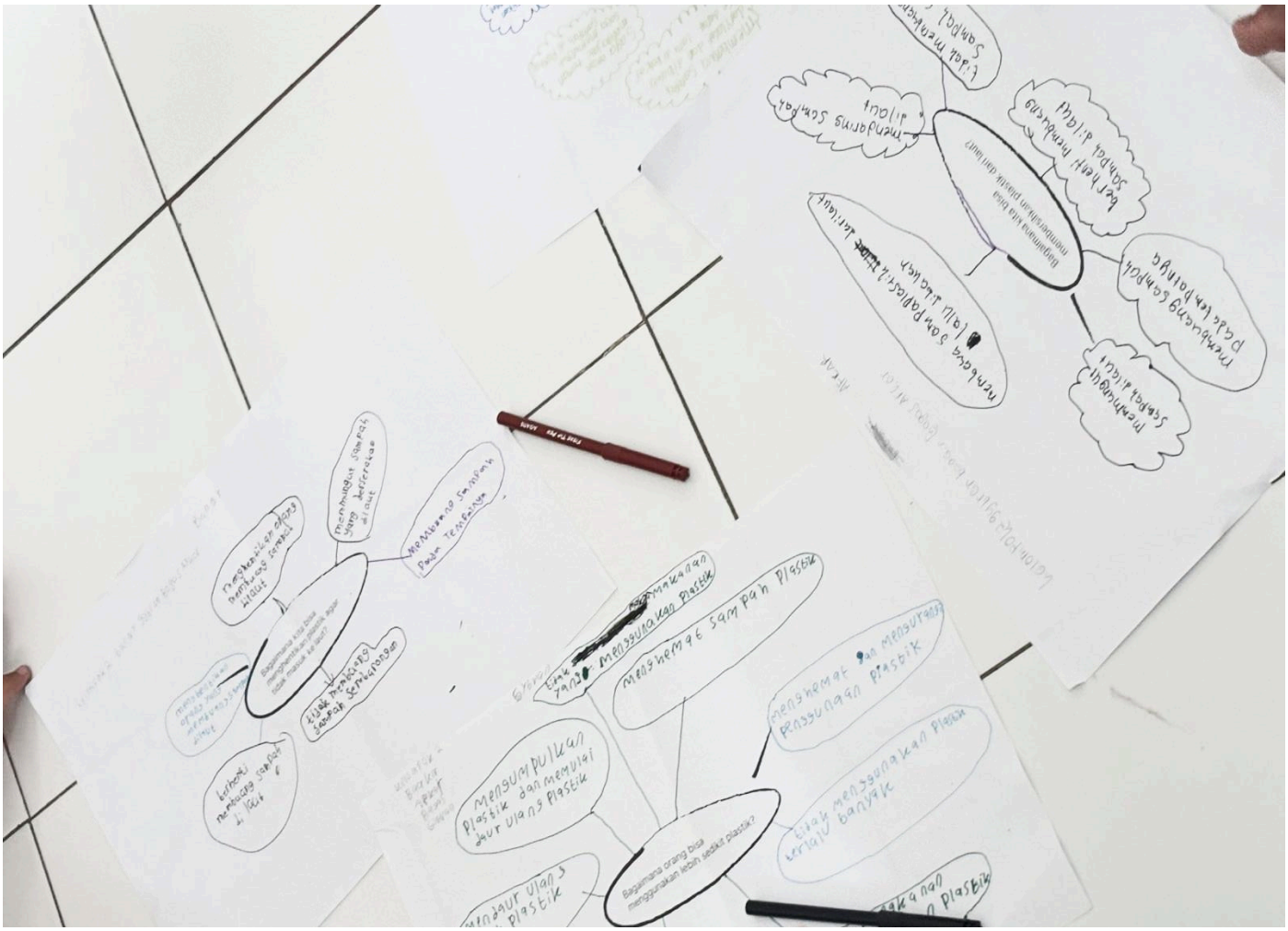


Figure 34: Lesson materials developed for the pillar Nature as Interdependent System. These include mind maps, a large sheet of paper for creating a poster, and drawing pencils.

🟡 **Lesson 3, *pillar: nature as uncontrollable***
This lesson focuses on understanding natural change and environmental hazards, and on learning how to respond to them calmly and collectively. Through a physical, discussion-based mapping activity, children explore common natural changes in Lombok and practice making thoughtful decisions without fear.

Rather than emphasizing danger, the lesson frames natural change as a condition that requires awareness, cooperation, and preparation. In a playful way, children learn that while they cannot control nature, they can develop the skills to respond wisely, remain connected, and support one another.

In addition, the lesson extends beyond the classroom by providing take-home questions designed to encourage discussion at the dinner table with family members.

Figure 35 presents the lesson materials, including the fictional map, natural change cards, personal game pieces, and a take-home flyer with discussion prompts. The full teacher briefing, natural change cards, map designs, and take-home flyer are provided in Appendix D.4.

Scalability and further development
This lesson can be scaled by adapting the scenarios and map to different local contexts. Natural change cards can be customized to reflect region-specific risks or seasonal conditions, making the lesson relevant across different areas.

The format also allows for expansion into larger experiential activities, such as simulation days at school or collaborations with local disaster response organizations. Over time, children can build personal and collective maps of safe zones, resource zones, and hazard zones connected to their own neighborhoods.

Pedagogical strategies, lesson 1
- Scenario-based learning through guided role-play and decision-making
- Situated learning by using place-based maps connected to real environments
- Calm facilitation to support emotional regulation and reduce fear-based responses
- Collective reasoning through group discussion and shared problem-solving
- Skill-building focused on preparedness, awareness, and cooperation
- Confidence-building by practicing responses rather than memorizing rules

Other lesson ideas that could be explored within this pillar:
- School visits to local disaster response teams such as BASARNAS, showing how professionals prepare, coordinate, and respond to natural change
- A full simulation day at school where children practice responding to different scenarios through embodied learning
- Personal mapping exercises where children identify safe zones, resource points, and potential hazards in their own neighborhoods
- Community-based mapping projects developed together with families or local organizations

Affordances in lesson 3
The following affordances illustrate how the qualities defined in the framework are embodied within this lesson.

Instructive
Instruction is afforded through concrete scenario cards that describe recognizable natural changes, such as shaking ground, rising water, or strong wind. Each card provides a clear situation that invites children to consider appropriate actions, making abstract risks understandable through specific, situated examples.

Wise
Wisdom is afforded by emphasising calm and thoughtful responses in moments of change. The lesson avoids fear-based framing and instead supports children in staying composed while deciding what to do. By repeatedly inviting reflection on action and place, the design reinforces the importance of remaining calm.

Strategic
Strategic thinking is afforded through the shared island map and movable figures. These elements allow children to explore spatial relationships between hazards, safe places, and gathering points. Placing figures on the map makes decisions visible and supports discussion about positioning, movement, and choices.

Skilled
Skill development is afforded by repeatedly engaging with different natural change scenarios. Through encountering multiple situation cards, children practice staying calm, reasoning clearly, and deciding how to respond when conditions change. By rehearsing responses across varied scenarios, the lesson supports the development of practical skills for acting thoughtfully and composedly in uncertain situations.

Figure 35: Lesson materials developed for the pillar Nature as Uncontrollable. From left to right: a fictional playful map; a set of cards including introduction cards and natural change cards; game pieces used during the activity; and, in the background, a take-home flyer with questions to discuss with family members.

Lesson 4, *pillar:* nature as to be controlled
This lesson introduces ethical decision-making by exploring how choices in nature unfold over time. Using an interactive case around rice farming and pesticide use, children are invited to weigh short-term benefits against long-term consequences for people, ecosystems, and future generations.

Through listening to multiple perspectives and reflecting on impacts across time, the lesson emphasizes that technological ability must be paired with care, responsibility, and ethical judgment. Children are not guided toward a single "correct" answer, but toward learning how to think carefully before acting.

Figure 36, shows the website flow. The full teacher briefing, interactive website, worksheets, and perspective scripts are provided in Appendix D.5.

Scalability and further development
This lesson can be scaled by adapting the ethical dilemma to other local contexts, such as water use, fishing practices, or building materials. The interactive structure allows for additional perspectives to be added over time, including voices from policy, health, or future scenarios.

The framework can also be expanded into longer-term projects where children revisit the same decision weeks or months later, reflecting on how outcomes change over time. This supports deeper understanding of delayed effects and long-term responsibility.

Pedagogical strategies, lesson 1
- Ethical reasoning by evaluating consequences across time
- Perspective-taking through human, non-human, and future voices
- Systems thinking linking environmental, social, and economic impacts
- Future-oriented thinking focused on long-term effects
- Developing an ethical compass through reflection on values and responsibility

Other lesson ideas that could be explored within this pillar:
- School trips structured as scavenger hunts, combining spiritual narratives and scientific observation of a specific place
- Lessons that integrate augmented reality elements to visualize invisible processes or place-based stories
- A co-teaching format in which a spiritual character teaches alongside the teacher via a digital platform
- Story-driven lesson modules delivered through a website, where a spirit narrates both scientific phenomena and cultural meanings

Scan to see the website for the prototype lesson

Website user flow

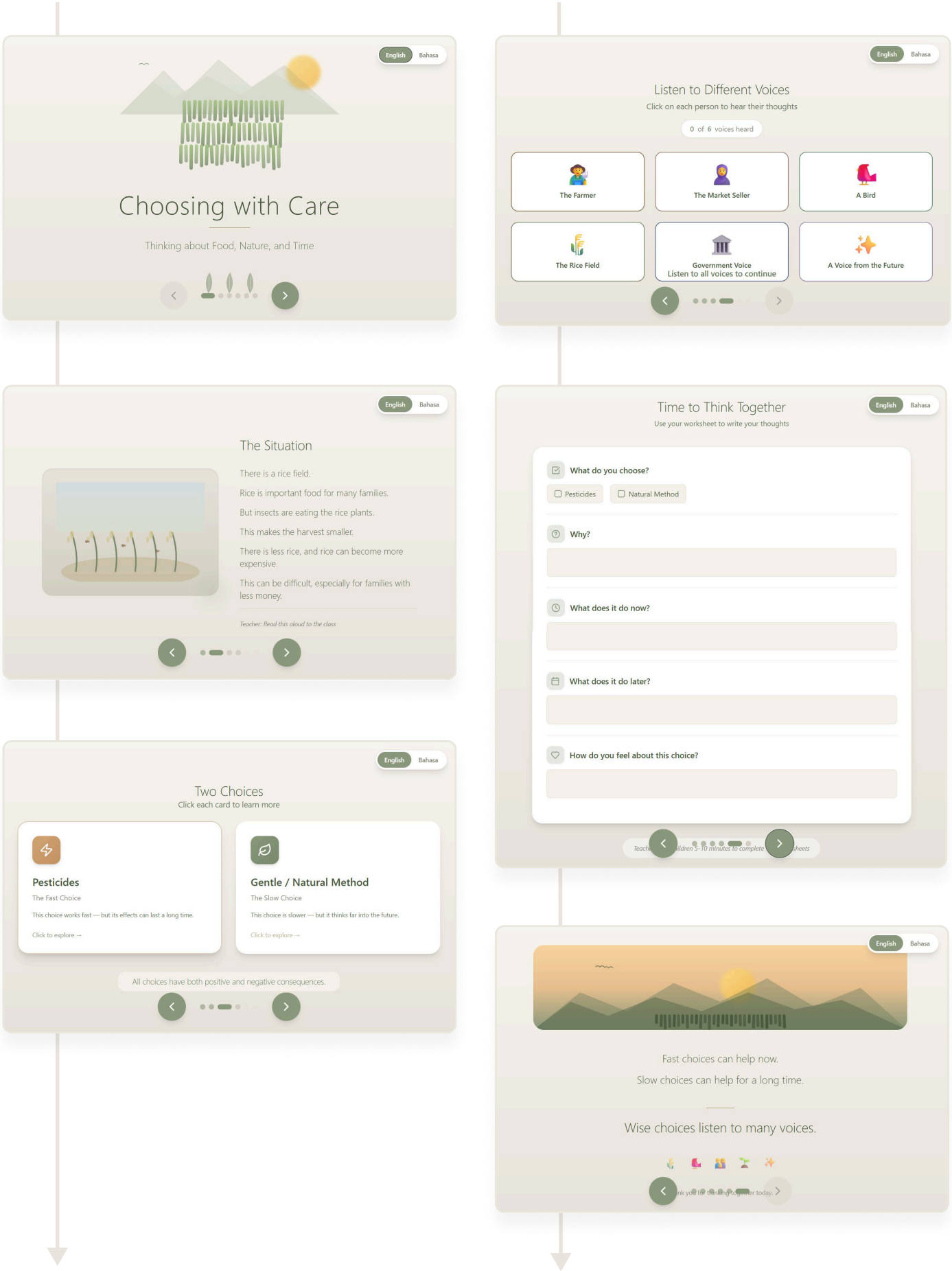


Figure 36: Website user flow for the prototype lesson in pillar 4, guiding students from introduction and option evaluation to perspective-taking, ethical reflection, and closure

Affordances in lesson 4
The following affordances illustrate how the qualities defined in the framework are embodied within this lesson.

Deliberate
Deliberation is afforded through sustained attention. The lesson focuses on one decision for the full duration of the class. By listening to different perspectives and postponing the moment of choice, children are encouraged to take time before answering.

Wise
Wisdom is afforded through the explicit comparison between short-term and long-term consequences. Children are guided to consider what a choice does now and what it does later, helping them understand that decisions can have different meanings in the short and long term.

Ethical
Ethical reasoning is afforded through perspective-taking. By hearing human, non-human, and future voices, children are invited to consider responsibility, care, and impact beyond their own position.

Skilled
Skill is afforded through structured reflection. The worksheet, see Figure 37, guides children to articulate a choice, explain their reasoning, consider its immediate and future effects, and reflect on how the decision feels. This supports the practice of making and explaining value-based decisions.

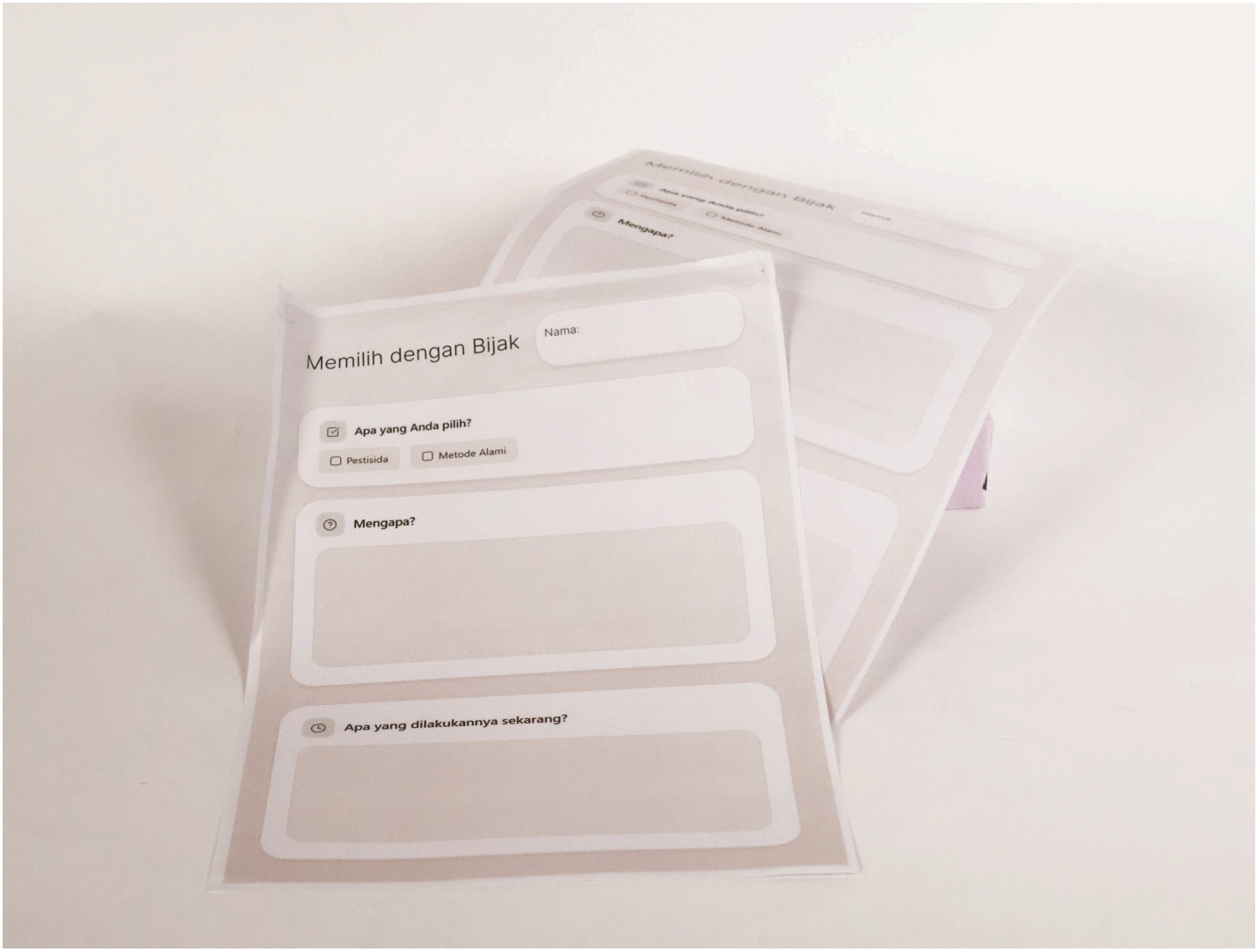


Figure 37: Worksheet in line with the website for prototype lesson in pillar 4.

Testing and validating

This section outlines how the developed lesson modules were tested in practice and how insights were gathered to assess their effectiveness, contextual fit, and potential for further development. It describes the test setup, evaluation methods, and data collection approaches applied during implementation in primary schools.

Test setup

The findings presented in this report are based on testing conducted at two schools: one private school and one public schools. I had direct contact with these schools and was able to follow the full testing and evaluation process. In total, 44 children participated in the complete test cycle, including all evaluation components described in this chapter.
And two teachers, expect for lesson 1 and 2, there I already tested with 3 teachers

Materials of the lesson packages

Each lesson package consists of the four lessons, with a distinct colour assigned to each lesson to support clarity and recognition. For every lesson, I created a physical folder containing all required materials and a teacher briefing. In addition, I recorded a short instructional video for each lesson, in which the learning objectives are explained both verbally and visually. These videos were intended to support teachers in preparing and delivering the lessons consistently.

Evaluation strategy

To validate the lessons, I used a mixed-methods evaluation approach, combining quantitative and qualitative methods. This approach allowed me to gather insights from multiple perspectives, including children, teachers, and classroom observations.

The evaluation focused on:

1. whether the intended qualities were achieved per lesson
2. whether the lessons were appropriate within the local context
3. whether the concept has potential to be repeated and scaled towards a full course.

The following evaluation methods were used:

- child evaluation forms
- teacher evaluation forms
- classroom observations
- short, semi-structured teacher interviews.

Child evaluation forms

Child evaluation forms were used to assess whether the intended qualities and affordances were achieved during each lesson. The questions were designed to be age-appropriate and easy to understand, avoiding complex wording.

Children were asked to rate statements on a five-point Likert scale, ranging from disagreement to agreement. In addition, checkbox questions allowed children to indicate which elements or activities they remembered or actively engaged with during the lesson.

The child evaluation forms per lesson are included in Appendix D.11.

Teacher evaluation forms

Teachers completed digital evaluation forms that focused on the same core themes: the achievement of the intended qualities, alignment with the local context, and the perceived scalability of the concept.

The forms consisted of five-point Likert-scale questions combined with open-ended questions that allowed teachers to provide qualitative feedback and suggestions for improvement. The full set of teacher evaluation questions per lesson can be found in Appendix D.11.

Classroom observations
Due to time constraints during the fieldwork period, I conducted classroom observations within one fixed class of children aged 9 to 10 years. All lessons in this class were taught in Bahasa Indonesia.

As I do not speak Bahasa Indonesia fluently, the observations focused primarily on non-verbal aspects such as body language, levels of engagement, moments of confusion, teacher–student interaction, and visible responses to specific lesson elements. These observations provide contextual insight and complement the evaluation forms and interviews, which offer more in-depth qualitative information.

Teacher interviews
I conducted short interviews with teachers after each lesson in the observation class and again after completion of the full lesson sequence. These interviews built upon the responses from the evaluation forms and allowed for deeper reflection on the lessons.

The interviews focused on:
- which elements of each lesson worked well and which did not
- opportunities for improvement
- whether the learning objectives were achieved per lesson
- the teaching experience
- the feasibility of integrating the lessons into regular school practice

Extension of lesson packages
As my time on Lombok was coming to an end, I explored whether IBF would be willing to continue working with the concept independently. IBF responded positively and expressed interest in further developing and distributing the lessons. Supported by additional available funding, this led to the development of ten additional lesson packages.

For these additional packages, I applied a modified evaluation approach. Including child evaluation forms for all packages would have resulted in approximately 1,200 individual forms (10 packages × 30 children × 4 lessons). Collecting, processing, and manually digitising this amount of data would have been logistically inefficient and too much paper usage.

For this reason, the additional lesson packages were evaluated using digital teacher evaluation forms combined with short interviews. At the time of writing, these lesson packages are still being distributed by the IBF team.

Findings Lesson 1

For a full overview of the quantitative findings, see Appendix D.11. The section below focuses on the overall conclusions.

1. Achievement of the intended qualities
As shown in Figure 38, both child and teacher evaluations indicate that all four intended qualities were present in Lesson 1. Scores consistently fall within the upper mid-range of the scale, and no dimension scored below 3. This suggests that none of the intended qualities were absent or unsuccessful in practice.

A clear pattern emerges in which teachers evaluated the lesson slightly more positively than students across most dimensions. Importantly, both perspectives indicate that the reflective, dialogical, integrative, and balanced elements were recognisable and implemented.

At the same time, the clustering of scores around 3.5–4 suggests that while the qualities were achieved, they were not yet maximally developed. The findings therefore point to successful implementation combined with room for further strengthening and refinement in future iterations.

2. Appropriateness within the local context
The beach setting added significant experiential value and strengthened students' engagement with natural phenomena. Teachers reported that the lesson felt relevant to the local context and adaptable to other natural environments.

However, practical challenges emerged. Outdoor distractions, limited shade, waste on the beach, and the need for firm writing surfaces created minor disruptions.

	Child evaluation:	Teacher evaluation:
Reflective score	3,5	4
Dialogical score	3,5	4,2
Integrative score	3,7	4,2
Balanced score	3,9	3,9

Figure 38: Mean quality scores for Lesson 1 as reported by children and teachers (1 = not at all, 5 = very much).

3. Potential for repetition and scaling
All teachers indicated that the lesson could be repeated or adapted (3/3 yes). High student engagement, continued questioning after the lesson, and strong teacher recommendation indicate promising scalability.

Nevertheless, improvements are recommended before scaling:

- Clearer behavioral agreements before outdoor sessions
- Shorter instruction blocks to sustain attention
- Adapted materials for outdoor writing
- Deepening the cultural component to strengthen dialogical balance

Overall conclusion
Prototype Lesson 1 demonstrates strong potential as a foundational component of a broader course. The lesson successfully implementated all four intended qualities. With a few refinements, the concept shows clear viability for repetition and further development toward similar structures about other topics, within the course Nature Relation.












Findings Lesson 2

For a full overview of the quantitative findings, see Appendix D.11. The section below focuses on the overall conclusions.

	Child evaluation:	Teacher evaluation:
Accessible score	3,8	4,7
Enabling score	4,0	4,9
Smooth score	4,1	4,9
Inviting score	4,0	4,9

Figure 39: Mean quality scores for Lesson 2 as reported by children and teachers (1 = not at all, 5 = very much).

1. Achievement of the intended qualities
As illustrated in Figure 39, all four intended qualities were clearly achieved. Children evaluations cluster between 3.8 and 4.1, while teacher evaluations are consistently very high (4.7–4.9). No dimension falls below the upper mid-range of the scale, indicating overall implementation.

A notable pattern is the consistently higher teacher ratings compared to student ratings. The ratings of the teacher indicated almost no room for improvements. While the children were more critical.

Overall, the intended pedagogical qualities were clearly present and operationalised effectively.

2. Appropriateness within the local context
The lesson centred on a local plastic waste issue, which teachers explicitly described as relevant and relatable to students' lived environment. The children recognised the issue as connected to their own surroundings, and a large majority indicated that they reflected on how their ideas could contribute to their community.

Classroom observations further suggest that the topic resonated beyond the lesson itself. In the weeks following the session, children continued discussing the issue, indicating sustained relevance and cognitive activation .

However, practical challenges were observed in classroom management, particularly related to seating arrangements and maintaining focus during group work. These challenges do not undermine contextual relevance but highlight the need for clear structural facilitation when working with participatory formats.

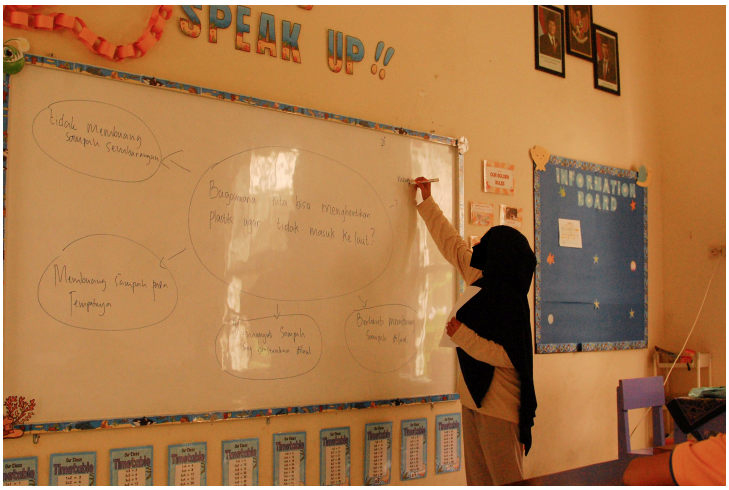
Overall, the lesson appears well aligned with the local context and meaningful to both students and teachers.

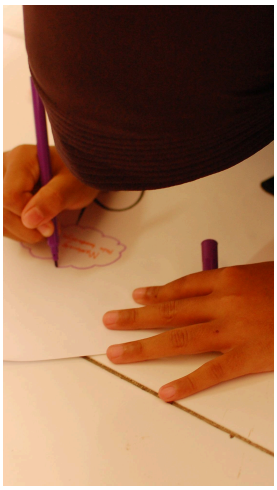
3. Potential for repetition and scaling
All teachers indicated that the lesson could be repeated or adapted for other local issues (3/3 yes). The teacher were very positive in their feedback, combined with high student engagement and continued discussion after the lesson, suggests strong scalability potential.

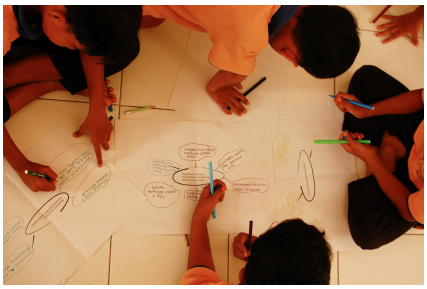
The structure of working with a real local problem, small-group collaboration, and final presentations appears transferable to other themes.
However, refinement is recommended before broader implementation. Suggested improvements include:

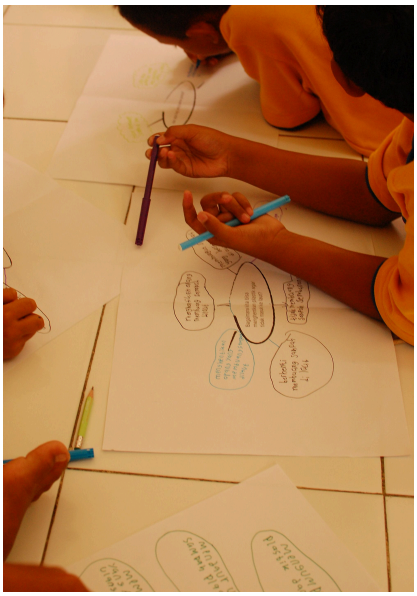
- Encouraging stronger justification of ideas ("Why do you think this will work?")
- Strengthening classroom management strategies for group-based formats

With these adjustments, the lesson demonstrates potential to function as a scalable model within the broader course concept.









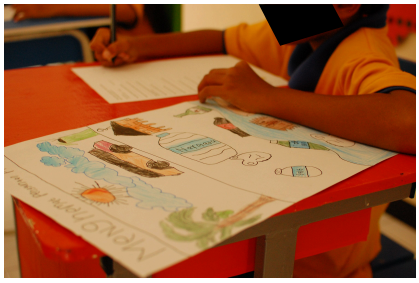


Figure x: Photographs taken during Lesson 2

Findings Lesson 3

For a full overview of the quantitative findings, see Appendix D.11. The section below focuses on the overall conclusions.

1. Achievement of the intended qualities
As illustrated in Figure 40, the four intended qualities, Instructive, Wise, Strategic, and Skilled, were successfully achieved. Student scores range between 3.8 and 4.0, while teacher evaluations are consistently high, between 4.5 and 4.8. No dimension falls below the upper mid-range of the scale, indicating overall implementation.

A consistent pattern emerges in which teachers evaluate the lesson more positively than students.

An initial design concern was that the topic might evoke fear. Teacher evaluations and classroom observations did not report visible signs of distress during the lesson. However, student self-reports indicate a more nuanced picture. As shown in Figure 41, five students indicated lower scores on the statement "I did not feel scared during this lesson", resulting in a mean score of 3.5, which is slightly lower than most other item means.

This suggests that while the majority of students felt calm and secure, a small group did experience moments of fear or discomfort. Given the nature of the topic, which addresses natural change and potential threat, some degree of emotional response may be inevitable. In fact it reflects genuine engagement with the realism of the scenarios. The key pedagogical consideration is whether such emotions are supported and contained within a safe learning environment.

2. Appropriateness within the local context
The lesson addressed natural change and disaster preparedness, themes that are directly relevant to the local context. Teachers indicated that the topic was meaningful and helped children feel more prepared. Student responses show that a clear majority reflected on where to go and what to do in changing situations, with endorsement rates between 75 and 79 percent.
Observations confirm strong engagement and enthusiasm. Overall, the lesson aligns well with local realities and feels practically relevant.

	Child evaluation:	Teacher evaluation:
Instructive score	3,8	4,5
Wise score	4,0	4,7
Strategic score	4,0	4,8
Skilled score	4,0	4,5

Figure 40: Mean quality scores for Lesson 3 as reported by children and teachers (1 = not at all, 5 = very much).

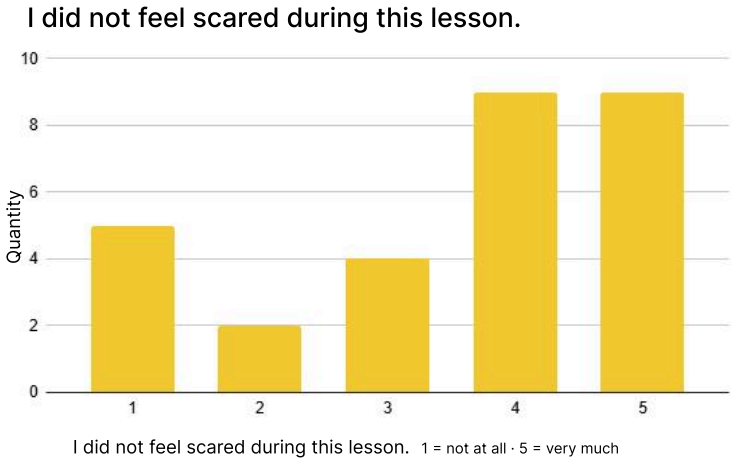


Figure 41: Distribution of student responses to the statement "I did not feel scared during this lesson" (Lesson 3, 1 = not at all, 5 = very much).

3. Potential for repetition and scaling
Both teachers indicated that the lesson could be repeated or adapted for other local issues. The combination of practical skill development, high engagement, and limited instructional complexity suggests strong scalability.

At the same time, critical reflection is needed regarding material use. The design and printing of maps, scenario cards, and supporting materials require financial resources. When expanding the course, these material can be reused or adapted across lessons. For example, the island map or personal game pieces could return in later sessions, allowing continuity while reducing additional production costs.

The scenario card and mapping structure is transferable to other themes. If materials are reused efficiently, the lesson has realistic potential for broader course implementation.













Figure x: Photographs taken during Lesson 3

Findings Lesson 4

For a full overview of the quantitative findings, see Appendix D.11. The section below focuses on the overall conclusions.

	Child evaluation:	Teacher evaluation:
Deliberate score	4,3	4,3
Wise score	4,3	5
Ethical score	4,0	4,7
Skilled score	4,2	4,8

Figure 42: Mean quality scores for Lesson 4 as reported by children and teachers (1 = not at all, 5 = very much).

1. Achievement of the intended qualities
As illustrated in Figure 42, all four intended qualities, Deliberate, Wise, Ethical, and Skilled, were strongly achieved. Student scores range between 4.0 and 4.3, while teacher evaluations range between 4.3 and 5.0. This indicates consistent and high realisation of the pedagogical aims.

Students reported having time to think carefully and consider consequences for people, nature, and the future. Observations confirm that they were able to articulate and justify their choices, suggesting deliberate and reasoned decision-making.

Although most students selected the natural option, which may reflect some influence of framing, the overall findings indicate strong ethical awareness and structured thinking. The qualities appears to achieved.

2. Appropriateness within the local context
The lesson addressed agricultural choices and environmental impact, topics directly connected to local realities. Teachers indicated strong relevance and confirmed that students engaged with consequences for health, economy, and future generations.

Classroom observations show high engagement, partly by the use of the smartboard, which increased motivation and participation. Students were able to complete evaluation forms calmly and articulate their reasoning clearly.

Overall, the lesson aligns well with the local context.

3. Potential for repetition and scaling
Both teachers indicated that the lesson could be repeated or adapted for other local issues. The structured use of digital tools and worksheets supports repeatability, and the format of guided decision-making can be applied to other ethical dilemmas.

At the same time, scaling requires attention to balance in information framing. Introducing structured debate or explicitly presenting counterarguments may strengthen critical reasoning and reduce potential steering effects.

With minor adjustments, Lesson 4 demonstrates potential for integration into a broader course structure.

Figure x: Photographs taken during Lesson 4

Recommendations

Based on the design and testing phases, several recommendations can support further development and long-term implementation of the course.

1. Strategic collaboration

For sustainable integration, collaboration with key stakeholders should be strengthened. Partnerships with Bappeda NTB, Universitas Mataram, school leaders, teachers, curriculum developers, and potential funders are essential. Establishing these collaborations early increases the likelihood that the course evolves beyond a prototype and becomes sustainably embedded within the educational system.

2. Development of a digital platform

While the lesson materials were designed, printed, and fabricated for initial testing, large-scale physical distribution across Lombok would not be feasible in this format. It is therefore recommended to develop a centralized digital platform alongside the physical materials.

Inspired by the positive response to the website-based lesson prototype, such a platform could include:

- Teacher briefings for each lesson
- Downloadable worksheets and adaptable materials
- Structured lesson overviews per term
- Clear alignment with the four pillars and societal goals

Providing structured, ready-to-use materials reduces preparation time for teachers and increases consistency of implementation.

Figure 43 presents a design proposal that outlines the structure of the digital platform. The platform would allow teachers to monitor course progression across each term and adapt materials to contextual factors such as class size. Basic personalization options could support flexible implementation.

Some lessons may be delivered partly through the website, as demonstrated in Prototype 4. However, digital delivery should not become the default format. Experiential and context-based lessons should not be replaced by screen-based instruction, but supported where appropriate.

3. Coherence & material sustainability

Further development should focus on stronger coherence across lessons. Concepts introduced in one lesson can be revisited in later sessions for deeper reflection. For example, an idea designed in an earlier module could be evaluated in the ethical lesson, strengthening progressive learning and holistic understanding.

Material reuse should also be considered. Physical elements such as maps, markers, or game components can return in multiple lessons. This reduces costs while reinforcing conceptual continuity.

In addition, introducing a longer-term assignment across the term could strengthen ownership. For example, students could take turns documenting nature in Lombok through photography during weekends. These observations could be integrated into weekly discussions, gradually building ecological awareness through personal engagement and interests.

4. Iterative refinement

Before wider implementation, each module should continue to be tested and refined. Attention should be given to clarity, balanced reasoning, and effective embodiment of the intended qualities. Through iterative design, the course can evolve into a coherent and sustainable curriculum addition.

Recommendation for website further development

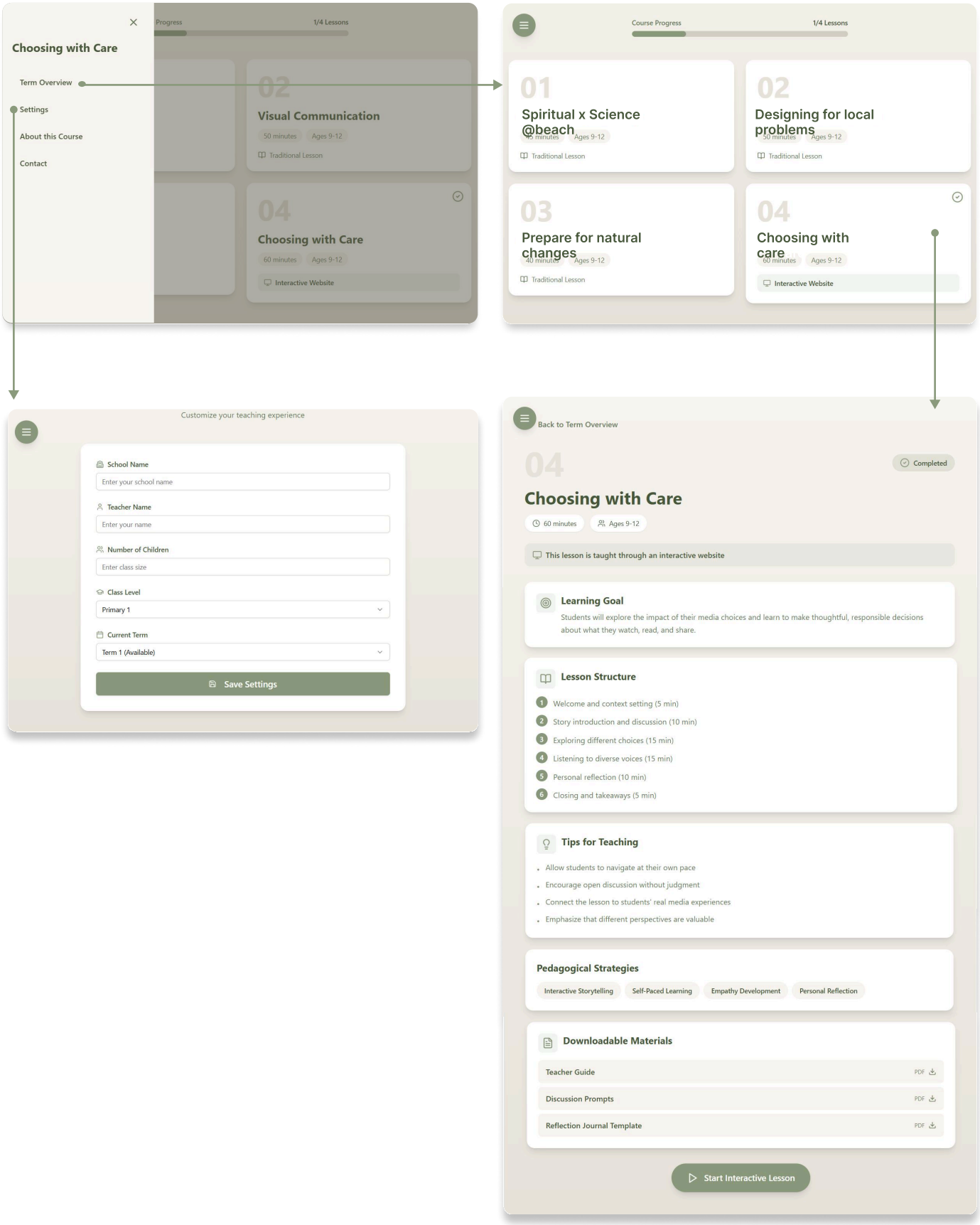


Figure 43: Conceptual design proposal for the digital course platform, showing the navigation menu (top left), settings (bottom left), term overview (top right), and lesson overview (bottom right).


GO
GO

GO GO GO!

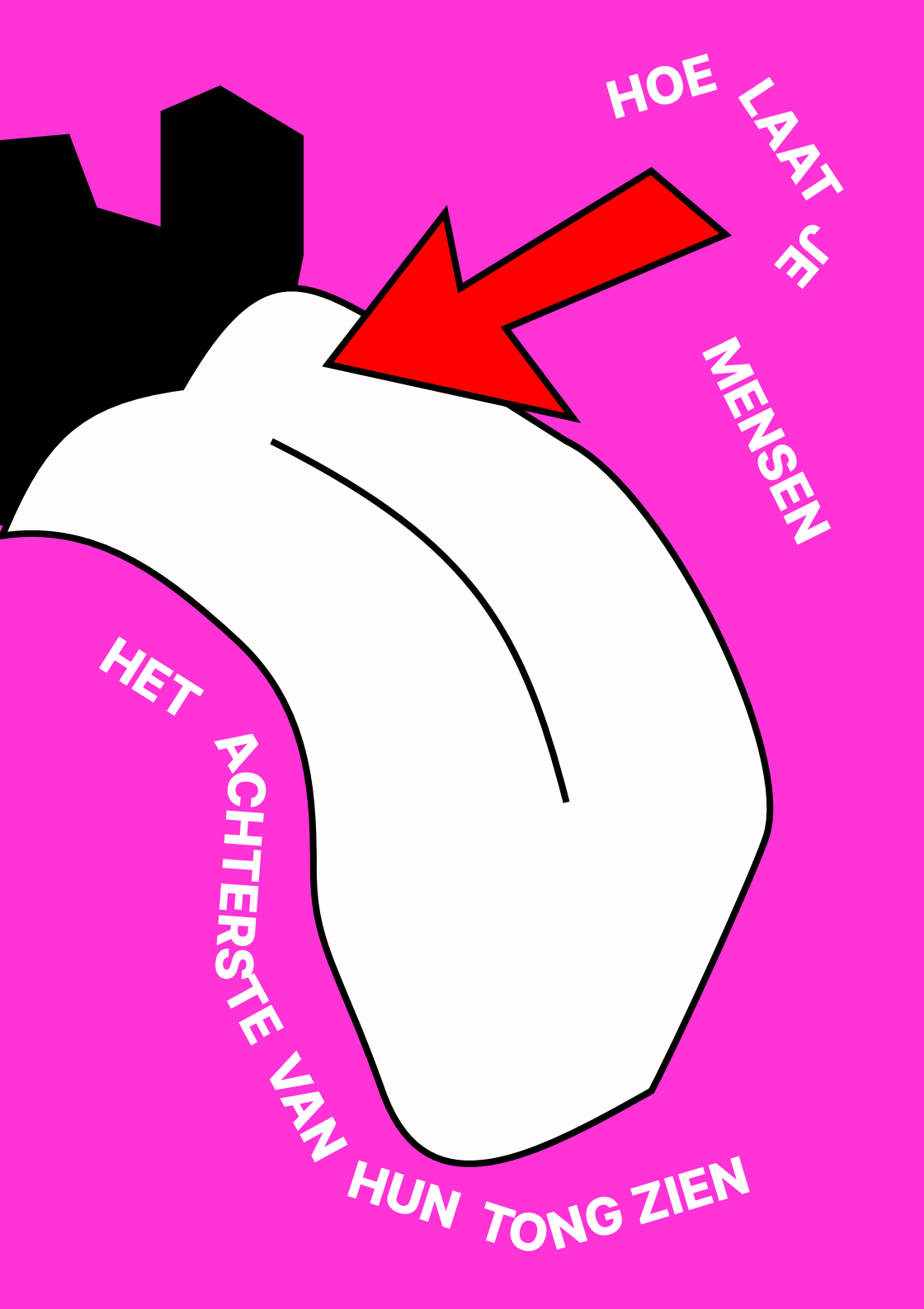
Entrepreneurship has become an essential part of the way I work. It is about taking initiative, showing up, asking questions, and simply doing. I have learned that once your attitude is right, being proactive opens many doors.

Taking initiative is especially important in a project that is carried out by one person. Waiting for others to define the pace or structure often leads to stagnation. In practice, initiative is almost always received positively, as long as it is grounded in respect and awareness.

While working in Lombok, I realized that communication functions very differently than I was used to. Sending emails often led nowhere, whereas showing up in person changed everything. When you come by, people take the time for you, conversations unfold naturally, and human contact proves far more effective than written communication.

At the same time, I had to adjust my expectations around time and efficiency. Things move at a different pace than I am used to in the Netherlands. Tasks that would normally take a minute, such as printing a document, suddenly require improvisation, a scooter ride, and twenty minutes of patience.

This experience taught me that entrepreneurship in this context is not about speed, but about adaptability. Moving forward means staying active, flexible, and present, while learning to work with a different sense of time rather than against it.


HOE LAAT IS
MENSEN
HET ACHTERSTE VAN HUN TONG ZIEN

BEYOND POLITE ANSWERS

Working as a designer in a culture I did not yet fully understand made me aware of how feedback is shaped by social norms and comfort. Although most of the feedback I received was positive, I noticed how much effort it took to receive critical or negative responses. I often had the feeling that what was shared verbally was polite, rather than a reflection of what people actually thought.

Especially as an outsider, I realized that direct verbal feedback was not always the most comfortable option. Asking people to openly critique ideas in a group setting sometimes seemed to create hesitation rather than clarity.

Over time, I discovered that written feedback worked far better in this context. When people could respond individually and in writing, their answers became more nuanced and honest. Slightly lower scores or brief written comments often revealed more than verbal conversations did, and gave me concrete starting points for follow-up questions.

This experience taught me that meaningful feedback does not emerge by simply asking the right questions, but by designing the right circumstances.

AMBITION AS A TOOL, NOT A DESTINATION

People have always described me as someone with perseverance. When someone tells me I can't do something, it only fuels my desire to prove that I can.

This journey to Mount Rinjani, the highest point of Lombok, often framed as a spiritual experience, taught me something entirely different from what I expected.
I had done hikes like this before and expected it to be tough but doable, as long as I kept pushing. Pushing myself has always felt like one of my strongest qualities. What I didn't expect was that the lesson would be the opposite of that.

It began with rhythm. The hike had to be done with a guide, and the group I was placed in moved very fast. My first real moment of listening was choosing not to keep up, but to walk behind them at my own pace. That was where the first crack in my ego appeared.
At altitude, my breathing became shallow, matching their tempo pushed me close to hyperventilation. Staying with them meant crossing my own physical boundary. Slowing down meant accepting it.

The next moment came after a sleepless night. At 1:30 a.m. we started the final ascent. My groin was swollen and painful, I couldn't lift my leg while lying down, most likely due to a small inflammation or issues related to my varicose veins. And then there was no choice left but to stop.

That moment broke something open.
My ego shattered, and once again the lesson surfaced, quietly but unmistakably, listening meant knowing when to stop.
It brought me back to something Matthijs said at the beginning of my graduation project, *ambition is a beautiful tool, but it should never become the end goal.*

My ambition to reach the highest point of Lombok brought me to a breathtaking place and taught me a great deal. But the true value was never the summit itself; it was what I had already received, a profound spiritual lesson, grounded in the body, accompanied by an extraordinary view.

This story goes beyond this mountain. It speaks to every symbolic mountain in my life.

I am deeply ambitious when it comes to climbing the metaphorical peaks that appear on my path. Ambition moves me forward, but it is a means, not the destination.

Mount Rinjani • 3.726 m

8°24′29″Z 116°24′58″O


UP !!
OUR GOLDEN RULES

BEING A FLY ON THE WALL

During my studies at TU Delft, I was often encouraged to act as a “fly on the wall” when conducting research on design interventions. The goal was to create a situation that felt as natural as possible, to observe without interfering, and to avoid influencing interactions so that behavior would remain authentic.

In this context, however, that approach proved to be unrealistic.

As a foreign researcher and designer, I stood out immediately. With my blonde hair and height, significantly taller than the average Indonesian, I was visibly different. Especially when working with children, my presence alone attracted attention. I was not invisible, and there was no way to pretend to be.

The idea of being a neutral observer collapsed quickly. My presence inevitably influenced the situation. Participants were aware of me, and reacted to me. In this setting, the principle of being a “fly on the wall” was simply unattainable.

I came to realize that such neutrality may only be possible for local or familiar individuals, those who blend into the social fabric of the environment. For someone visibly and culturally different, invisibility is not an option.

Instead of trying to disappear, I had to accept that I was part of the dynamic. The research was never neutral, and neither was I.

IMPACT OF A PHYSICAL TRANSLATION

As mentioned earlier, one of the main barriers I encountered was a barrier of content. The Vision in Design method, especially within a context where design is often associated with graphic or product outcomes, proved difficult to grasp. Many participants had never encountered this strategic, future-oriented way of working before.

I noticed that the abstract and long-term nature of the method made it sometimes hard to follow.

However, when the pillars of the framework were translated into four concrete lesson modules. This translation was not only a simplification, but a new interpretation. By structuring the vision into tangible modules, the overall process suddenly became clearer. People could see how it would unfold in practice. The concept became understandable because it became applicable.

This worked not only for the concept itself, but also for the way it was communicated. I noticed that highly polished graphics or beautifully designed frameworks sometimes left little room for critique. They appeared finished, almost unquestionable. In contrast, thinking together on a whiteboard or a simple sheet of paper created space for discussion. The unfinished format invited contribution.

This taught me that design communication is not neutral. The way something is presented shapes how people engage with it and even understand it.

VISION IN DESIGN

At the beginning of this project, the Vision in Design method felt overwhelming. I had applied it once before during my bachelor, but at the time it was poorly explained. I remember feeling confused at about what to do and where the process was leading.

Returning to the method in this graduation project changed that perspective.

Looking back, the structure that ViP provided turned out to be one of its greatest strengths. In a long, individual project filled with complexity and uncertainty, having a clear way methodology helped me stay oriented. It offered direction without dictating exact outcomes. Instead of feeling lost, I had something to return to when the process became overwhelming.

Beyond structure, I began to appreciate the philosophy behind the method. Vision in Design encourages thinking beyond solutions (often the focus TU education) and focusing on long-term societal impact. The darwintinsic look of design, speculating about futures what to keep, what to change and what to get rid of.
This way of thinking has been very inspiring. It is an approach I intend to carry with me into my professional career.

CONCLUSION

6

6. Conclusion

This chapter structures the research findings by translating them into contextual factors, clusters, and ultimately a coherent framework, further addressing RQ1.1 and preparing the ground for RQ1.2.

The identified contextual factors are analysed and grouped into clusters based on shared meanings, tensions, and underlying values. Through this structuring process, a futuring framework.

This framework provides the foundation for exploring plausible and preferable human–nature relationships toward 2045 in the following chapter.

5.Conclusion

RQ1: How might society in Lombok relate to nature in 2045, and how can design contribute to shaping these relationships?

This graduation project demonstrates that the relationship between society in Lombok and nature in 2045 cannot be understood as singular or fixed. Instead, sixteen distinct human–nature relationships were identified and structured within a future framework. This framework positions relationships along two dimensions: ways of relating to nature (Nature as Sacred, Nature as Interdependent System, Nature as Uncontrollable, and Nature as to Be Controlled) and scales of agency (from community-driven to institutional and global).

Together, these dimensions describe sixteen plausible relations of how people in Lombok might relate to nature in 2045. The framework functions as both an analytical and generative tool: it structures contextual insights while simultaneously opening up a design space for intervention. In doing so, it makes explicit the societal values embedded in different future trajectories and supports the deliberate shaping of human–nature relationships toward 2045.

From this exploration, four broader intervention layers were distilled:
Economic systems and market relations
Governance principles
Learning and knowledge cultures
Community strength

Each layer articulates a domain in which societal transformation may take place. While all four layers are relevant to shaping future human–nature relationships, the design process ultimately focused on the layer of learning and knowledge cultures. This focus was chosen based on strategic alignment with local partners and the potential for long-term systemic impact.

The four societal goals derived within this layer were translated into curriculum pillars and embodied in a course concept integrated within the existing educational system. Through the development and testing of four lesson prototypes, the design statements and associated qualities were materialized in practice. The testing phase demonstrated that the intended qualities could be meaningfully embodied, while also revealing areas for refinement.

In addition, three development horizons were defined to connect the present to 2045. These horizons outline how the project can evolve over time in terms of vision, activities, and collaboration. Across these horizons, the project builds on existing structures while gradually introducing new developments, strategies, and forms of cooperation. In this way, the transition toward 2045 is framed as a gradual development rather than a radical shift.

In this way, the project answers RQ1 by showing that design can contribute to shaping future human–nature relationships not by predicting a single outcome, but by articulating plausible futures, positioning a preferable direction, and materializing this direction through concrete, context-sensitive interventions.

The sub-questions supporting RQ1 are addressed across the thesis as follows.

RQ1.1 is explored in Chapters 2 and 3, where key contextual factors shaping future human–nature relationships in Lombok are identified and structured.

RQ1.2 and RQ1.3 are addressed in Chapter 4, which presents the sixteen plausible futures and formulates preferable futures through design statements, analogies, and associated qualities.

RQ1.4 is addressed in Chapter 5, where these values and qualities are translated into concrete design interventions, lesson prototypes, and three development horizons connecting the present to 2045.

Limitations

This project was conducted within a limited timeframe, which constrained the depth of research in schools and the extent of prototype refinement. The lesson modules were tested on a small scale and over a short period, limiting the ability to assess long-term educational, behavioural, or systemic impact. While efforts were made to align the content with age-appropriate learning levels, further iteration is required.

The framework and resulting interventions reflect my interpretation of contextual insights and theoretical perspectives. Although local collaboration informed key decisions, the project remains influenced by my positionality as an external designer. Language, cultural, and content-related barriers were addressed throughout the process, yet not always fully overcome. Some loss in meaning, nuance, or interpretation across language and cultural contexts may have occurred.

Future research
Concept-related recommendations for further development and implementation have been outlined in the previous section. Beyond these practical next steps, several directions for future research emerge from this project.

First, follow-up research could examine how relational understandings of nature develop over time within educational contexts. While the lesson prototypes demonstrated the embodiment of the intended qualities in short-term testing, future studies could investigate how sustained exposure to such a curriculum influences values, behaviours, and collective agency.

Second, further research is needed into the institutional embedding of the course within formal curriculum structures. This includes examining how collaboration with governmental bodies, curriculum authorities, and teacher education institutes can support long-term integration. Investigating policy alignment, accreditation pathways, and governance mechanisms would strengthen the feasibility of systemic implementation.

Third, comparative research across different regions of Indonesia could explore how human–nature relationships are shaped by diverse cultural, religious, and socio-economic contexts. Such research could test and adapt the framework beyond Lombok.

WHY DESIGN IN A CROSS CULTURAL CONTEXT?

CULTURAL DIFFERENCE AS A BARRIER AND AN OPPORTUNITY

Language barriers and cultural differences functioned both as obstacles and as sources of enrichment within this project.

On the one hand, there were moments when I genuinely questioned what I was doing there. People did not understand me, I struggled to understand them, and I did not always know how to reach the people I wanted to work with. In those moments, it felt obvious that a local person could navigate these situations far more effectively than I could.

On the other hand, this unfamiliarity also became a strength of my work. Because everything was new to me, I approached the context with curiosity. I asked questions I would never have asked within my own culture, questions that might seem obvious locally but turned out to be essential. Being an outsider allowed me to notice things differently.

Outsider preconceptions can also create opportunity. Of course, I carried my own assumptions into this project. However, because I had never been in this context before, they were not deeply rooted. They were based on expectations rather than lived experience, which made them easier to question and adjust.

When I design within my own culture and context, I also carry assumptions shaped by a lifetime of experience. These may be more deeply embedded and less consciously examined.

I also came to see that different ways of thinking can enrich any context. Just as my perspective offered new angles here, I believe that designers from Lombok working in the Netherlands would bring insights that are equally unfamiliar and valuable. Cultural difference, in that sense, is not only a barrier to overcome, but a lens that can reveal new possibilities.

ADVICE TO MYSELF

Looking back at everything I have come to realize throughout this project, if I could give advice to myself at the beginning, it would be this:

Be prepared for more than just the project itself. There will be extra work you cannot fully anticipate, applying for funding, moving across the world, finding a place to live, and building a sense of home from scratch. Even simple things will work differently. Communication will take more time, translation will be constant, and clarity will rarely come instantly.

Be flexible. Not just in methods or planning, but mentally. Let go of rigid expectations and accept that things will unfold differently than imagined. Meetings shift, systems function differently, and progress rarely follows a straight line.

Adopt an open, calm, and responsive attitude. Pay attention to your surroundings. Be alert to how people respond, verbally and non-verbally, and adjust when things seem unclear or uncomfortable. Creating comfort, for yourself and for others, is not a side task but a condition for meaningful collaboration

Take initiative. Do not wait for ideal conditions or perfect clarity. Showing up, asking questions, and being present often opens doors.

Do not fear loneliness. At times, it will feel heavy and confronting. But if embraced consciously, solitude can become a source of focus, reflection, and strength. It can sharpen your awareness, your work rhythm, and your connection to your own body and limits.

Accept that everything will be different from what you expect. That difference is not a failure of preparation, but the core of the learning experience. It is precisely this complexity, discomfort, and unpredictability that made this project my most valuable learning experience as a student, and one that I hope to carry with me into my professional practice.

CONCLUSION

Reflecting on this project, I have come to understand that designing in a cross-cultural context in a culturally sensitive way is not about fully understanding another culture, nor about representing it. It is about recognizing that complete understanding is neither possible nor necessary.

Operating sensitively as a designer means being aware of one's own position, limitations, and influence. It requires an attitude of flexibility, alertness, and self-awareness, combined with a willingness to listen, adapt, and be corrected. Rather than directly imposing solutions, culturally sensitive design emerges through collaboration, presence, and responsiveness to the local context.

At the same time, this project made clear that there are inherent limitations to designing for a society that differs significantly from one's own cultural background. Language barriers, differing social norms, and unequal power dynamics cannot be fully bridged. These limitations do not disappear through good intentions or preparation. Acknowledging them is therefore an essential part of responsible design practice.

In this sense, cultural sensitive design is not about eliminating distance, but about working consciously within it. The designer does not stand outside the system, nor fully within it, but operates in between. Accepting this in-between position allowed me to engage with the context more honestly.

RQ2: How can a designer responsibly operate within a cross-cultural context while acknowledging their positionality and limitations?

A designer can operate responsibly in a cross-cultural context by recognizing that they are never neutral, never fully informed, and never fully inside the system they are designing for. Responsibility begins with acknowledging one's own positionality, background, and visible presence as active factors in the process.

Rather than attempting to eliminate distance, the designer must work consciously within it. This means adapting methods to the local context, lowering barriers for participation, inviting multiple perspectives, and remaining open to correction. Responsible practice is not about control or certainty, but about responsiveness, flexibility, and self-awareness.

It also requires accepting that there are limits to what can be understood and influenced. Designing responsibly does not mean designing perfectly; it means continuously reflecting on one's role, impact, and boundaries

RQ2.1: How does the designer's position and background influence decisions and interpretations in a cross-cultural context?

In several moments, I realized that my initial interpretations were not always correct. I only discovered this when I checked my assumptions with multiple people or validated them during participatory sessions. The misunderstandings I noticed were corrected. The ones I did not notice, I am unaware of. It is likely that some still remain. For that reason, I believe it is important that the project continues with people who grew up within the local culture and can further refine and improve it.

Looking back, I also made different design decisions than I would have made in the Netherlands. In a familiar context, I might have chosen bolder or more experimental directions. In Lombok, I listened more closely to IBF and the local context. Partly because I wanted the outcome to be useful for them, but also because when local partners are more enthusiastic about a concept than you are, it makes more sense to follow their direction, as they understand the context better.

In the Netherlands, I might have pushed ideas further beyond existing boundaries. In Lombok, I did not always know where those boundaries were. That uncertainty influenced my decisions and made me more cautious in my design choices.

RQ2.2: What attitudes and design approaches help a designer work in a culturally sensitive way when operating in an unfamiliar context?
Culturally sensitive practice requires alertness, flexibility, initiative, and openness. It means observing how people respond (alertness), adapting methods when confusion arises (flexibility), initiate activities (initiative), and creating comfort in meetings and participatory sessions (openness).

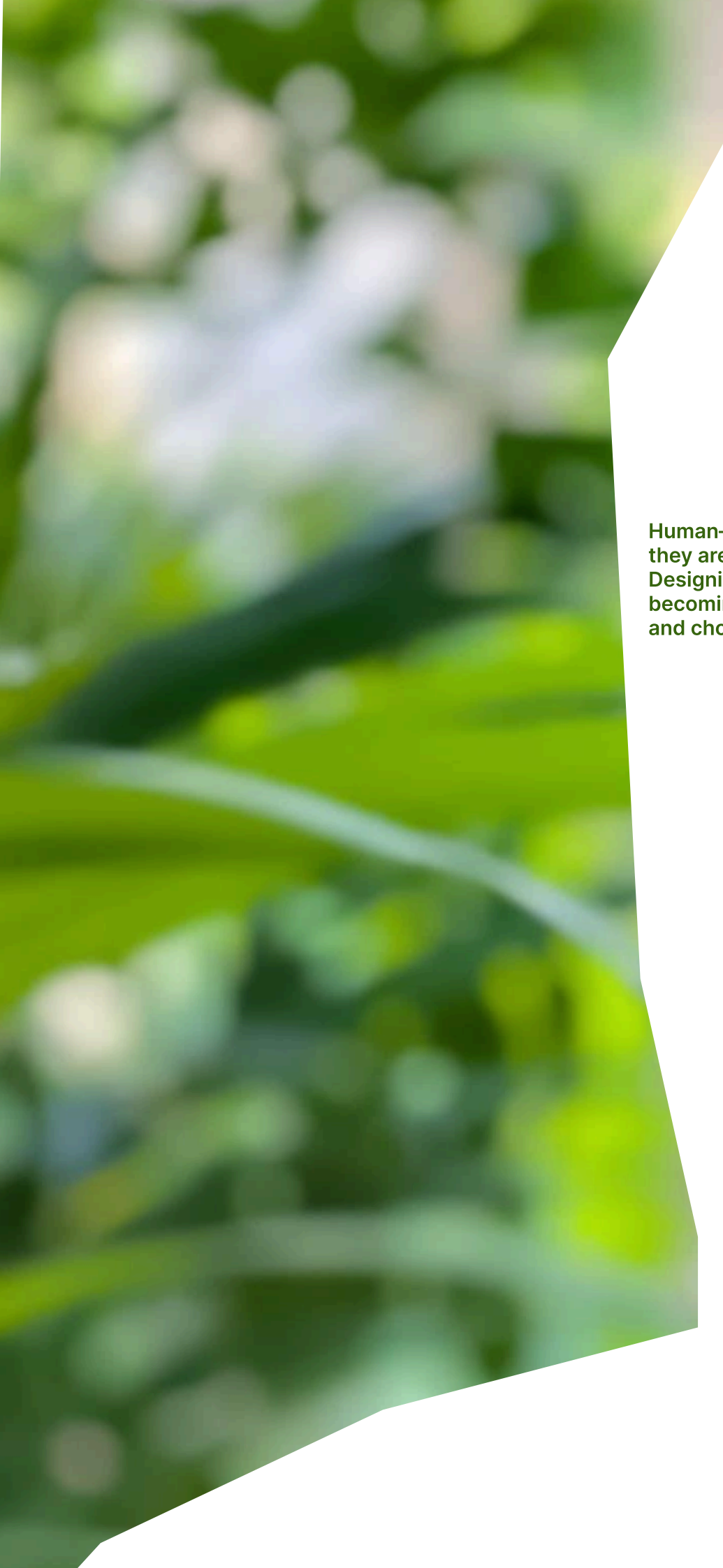
In practice, this meant simplifying frameworks to their essential elements, translating not only language but also ways of working, hosting participatory sessions, and staying curious. It also required patience, allowing time for trust and collaboration to develop.

Sensitivity is not a fixed method, but an ongoing attitude of adaptation and reflection.

RQ2.3: What limitations and ethical boundaries remain when designing for a society that is not one's own?
There are structural and ethical limits that cannot be removed. Language barriers, cultural norms, power dynamics, and systemic inequalities remain present. Complete understanding cannot be achieved within a few months. However, meaningful progress and deep learning is still possible, especially when approaching the context with genuine curiosity.

A designer from outside a culture cannot determine what that society's future should look like. The ethical boundary lies in recognizing this and shifting from directing to facilitating, structuring processes in a way that supports and amplifies local input.

Meaningful contribution is possible, but only when these limitations are acknowledged rather than ignored.



Human–nature relationships are not fixed, they are continuously shaped. Designing transformation means becoming conscious of how we relate, and choosing that relation deliberately.

human nature

Exploring future relations to nature across scales of agency through design in a cross-cultural context.

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