

Regrowth

Imagining renewed values for space

Roos te Velde | Metropolitan Ecologies of Places Graduation Report

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Regrowth. Imagining renewed values for space

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Roos te Velde
Student number: 4646517

Supervisors
First Mentor: Cecilia Furlan - Environmental Technology and Design
Second Mentor: Remon Rooij - Spatial Planning and Strategy

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Urbanism

TU Delft
BK Bouwkunde

abstract

The way housing is planned and used in the Netherlands is rooted in economic growth. This system, coupled with the culture of malleability of the landscape, caused an ignorance towards the natural system. Due to the changing climate, the country is experiencing increased floods and subsidence, adding to existing ecological and housing crises, necessitating a transition. This study endeavours to envision a spatial framework for alternative growth in the Zwolle region, with a focus on values to navigate this transition. Despite the presence of alternatives to this growth model, the lack of spatial implications and convincing tools is impeding the transition. Central to this research is the question: "How can a renewed value-based spatial design stimulate an alternative growth in the Zwolle region, where the housing system can thrive within social and ecological boundaries?" Using methods such as mapping, policy analysis, interviews, and scenario development, this research illustrates the journey towards alternative growth through imagery and storytelling. Key findings underscore the pivotal role of translating shared values into actionable spatial strategies to guide the transition process effectively. Moreover, it highlights the instrumental role of spatial design in facilitating communication and negotiation, emphasising the necessity of multiscale evaluations and stakeholder engagement in creating convincing narratives amidst complex societal challenges.

Key words | value-based spatial design, alternative growth, values, planetary boundaries, housing crisis, Zwolle region

When you realise that in the theory of GDP,
a forest is worthless until it is cut down, you start
to understand the core of the ecological crisis.

National Geographic, 2017



Voerman sr, J. (1857-1941). Koeien langs de Ijssel bij Hattem [Painting]. Simonis & Buunk

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What is in this thesis understood as the challenge and what research questions are defined?

What are the leading theories guiding the project and what is the methodological approach to answer the research questions?

What are the social and ecological boundaries the housing system should lie in and how does the Zwolle region align?

What leading trends and values need to form alternative growth-based futures in the Zwolle region to live within social and ecological boundaries?

How are the alternative growth futures imagined and evaluated?

How can a renewed valued-based spatial vision stimulate the development of an alternative growth where human and non-human can coexist and the housing system can thrive within social and ecological boundaries?

motivation

'Luckily, I live in Drenthe!' was a sign at the Climate March on the 12th of November, where almost 85.000 people showed up to show their worries about the climate (NOS News, 2023). "I am worried!", "This road is a dead-end!" and "Act now!" said another few signs. It could be said that this biggest climate march in the Netherlands ever shows that awareness of the need for a transition is growing. Two weeks later, on the 22nd of November, the PVV ("Party for Freedom") won the national Dutch elections. The PVV is a far-right party that wants to discontinue the UN Paris Climate Agreement, to keep all coal and gas power plants, to have more and faster gas- and oil production in the North Sea and to stop the reduction of CO_2 (Poelen, 2023). It could, therefore, also be said that this shift in politics shows that fear towards the current policy is also growing.

In between these societal views, the ecosystem is crying out for solutions. After the flooding around Christmas 2023, the newspapers were full of reports and opinions on what to do with the scarce space and the water system. All agreed that there must be something change, either in the water system, how we use our space, or how we inhabit space. What to me prevails is that we have been living at the expense of the landscape. The earth currently 'belongs to people', instead of people feeling part of the earth's ecosystem. The ideology of the market and economic growth to save everything is a major cause. All the crises have in common is that we are facing limits. The limits to growth.

To describe my motivation for this thesis, I would like to borrow the words of Donella Meadows from 1972. In the book 'Limits to Growth', the writers start by saying they are 'quite frankly overwhelmed by the enormity of the job that must be done,' and that they hope the book will serve to interest other people and join them in preparing for a period of great transition, from growth to equilibrium (Meadows et al., 1972).

Roos te Velde, January 2024



Image 2. The climate march in Amsterdam on November 12, 2023.

01 introduction

What is in this thesis understood as the challenge and what research questions are defined?

Height map of area around Kampereiland, Zwarte Meer and the Ketelmeer (AHN, 2024)

Click here to go back to the table of contents.

1.1 context

Planetary boundaries | Humanity's actions on the climate and environment have such a dominant impact that the current era got its own name: the Anthropocene (Cambridge University Press, n.d.). This impact is alarming because it has led to the exceeding of planetary boundaries, which are crucial for maintaining the Earth's ecosystem. The planetary boundaries framework, which was first proposed by Johan Rockström and his colleagues in 2009 and has since been revised several times, includes climate change, the introduction of new substances, the depletion of stratospheric ozone, the loading of particulate matter in the atmosphere, ocean acidification, changes in biochemical flows, alterations in freshwater systems, changes in land usage, and damage to biosphere integrity (see image 3). Exceeding these boundaries causes irreversible negative changes to the Earth's system. The framework is necessary because it quantifies how humanity impacts these processes and creates a goal to work toward.

In 2023, the research team quantified all the boundaries for the first time and discovered that we had transgressed six of them (Richardson et al., 2023). We are only in the safe zone for ozone depletion, atmospheric aerosol loading and ocean acidification boundaries, and all the others have been breached (see image 3). To secure the future of our planet and all its inhabitants, we should prevent further breaches of these boundaries and work towards restoring them. This thesis focuses on the planetary boundaries connected to space and its use: land conversion, biodiversity loss, changes in biochemical flows and climate change.

This has two reasons: firstly, as these boundaries were the first four that we transgressed and secondly, as this is where an urbanism thesis, with spatiality as its focus. The construction of housing itself is also largely responsible for exceeding the planetary boundaries because of, for example, the extraction of materials, energy use, and air pollution. This is not the focus of this thesis. It is assumed that because the spatial plan comes before construction, some decrease or pollution occurs. The chosen project area is a region in the Netherlands. The context exploration starts with identifying the problem on a planetary scale, then moves to the European scale, then to the Dutch scale, and finally to the regional scale.

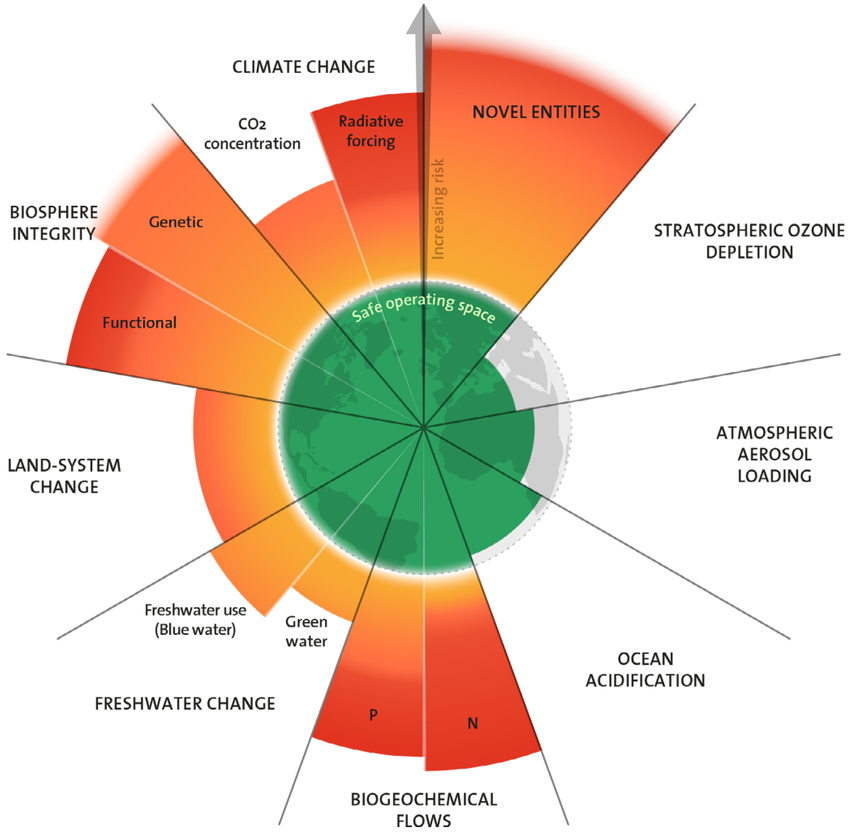


Image 3. The Planetary boundaries. (Azote for Stockholm Resilience Centre, based on analysis in Richardson et al (2023))

1.1 context

Technological reliance | Our consumption patterns are causing us to exceed many planetary boundaries. If every human lived like a European, we would require more than three planets to sustain it. The speed at which we are consuming resources surpasses the ecosystem's capacity (Richardson et al., 2023). Fortunately, more people are beginning to recognise the need for action. However, most strategies for tackling the environmental crisis focus on greening the production side of the economy (Schenderling, 2022). There is a significant reliance on technology, some of which have not yet been invented (Mommers, 2019; Wismans, 2023). History has demonstrated that relying on technology to improve our situation is not always practical. Technological advancements that increase efficiency often lead to an increase in consumption rather than a reduction (Schenderling, 2022; van Veelen, 2022). This phenomenon is known as the Jevons paradox. It underscores the importance of changing our consumption habits, necessitating a system-wide shift in how we organise the economy. The present economic growth-based system relies on continuously depleting resources, which is unsustainable and leads to massive environmental disparities (see image 4). Instead of making the existing system more eco-friendly, we need to develop a new one altogether.

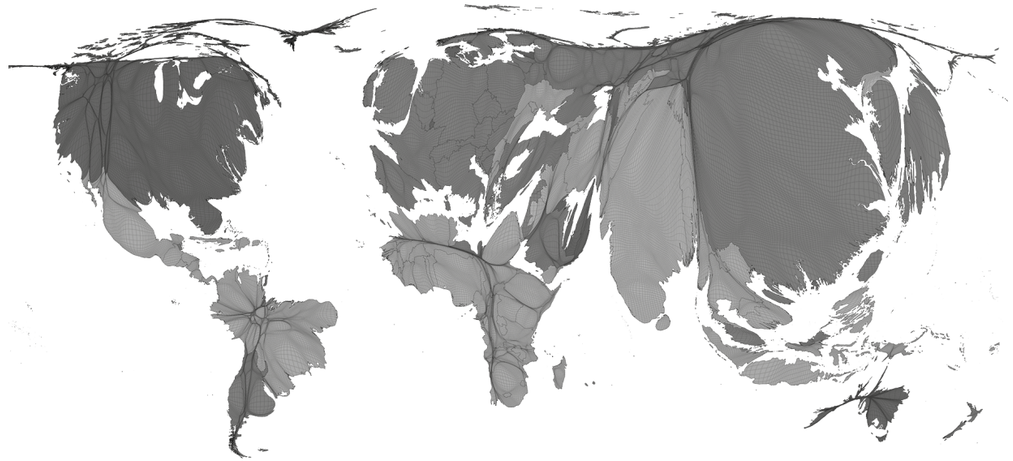
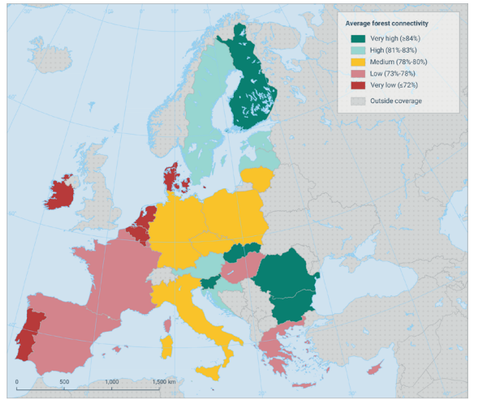


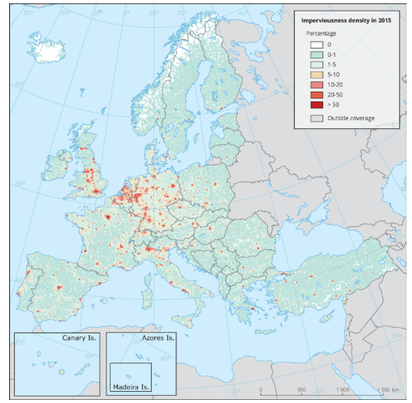
Image 4. Ecological footprint of consumption. Each transformed grid cell in the map is proportional to the total number of people living in that area multiplied by their national ecological footprint, which is measured in global hectare consumption per capita. (Worldmapper, 2019).

1.1 context

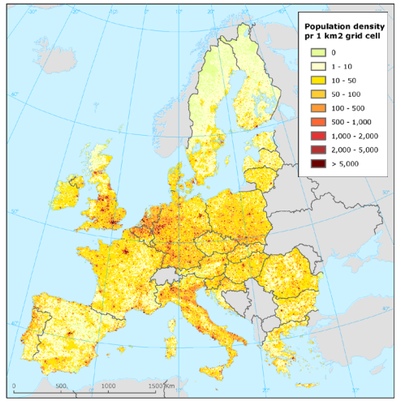
Climate adaptation | Exceeding planetary boundaries has already speed up the climate to change. According to the IPCC, the severity of impacts across natural and human systems and regional differences will increase (Masson-Delmotte, 2022). For Europe, extreme weather incidents like floods and drought will happen more often. The Netherlands is an extreme case, as one of the world's biggest economies is squeezed into a tiny country. Several problems become evident when looking at data maps of Europe. Several main rivers in Europe flow into the sea, meaning the country must deal with the quantity and quality of water from many other places. The forest connectivity indicates that the country is not doing well regarding planetary boundaries. Poorly connected or few forests mean low carbon capture ability and low biodiversity, while the population density lies way above the EU average. The Royal Netherlands Meteorological Institute (KNMI) published a report with four different climate scenarios 2100, based on the IPCC report (KNMI, 2023). There are heavy rainfalls and longer heat waves in all scenarios, ranging from a low carbon emission to a high one, and a wet and a dry situation. Adapting to these situations demands more space. Action to take measures to find how to live below the ecological boundaries is needed.



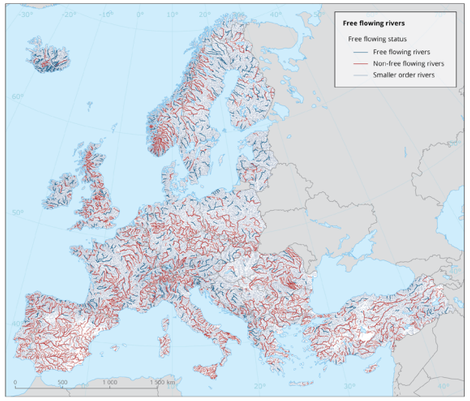
Forest connectivity (CO_2 capture, land useage, biodiversity)



Imperviousness (inability to absorb water)



Population density of Europe



River system of Europe

Image 5. Europe living beyond ecological boundaries with the Netherlands as an extreme case (European Environment Agency (EEA), several years).

Economic risks | In a country like the Netherlands, adapting to the changing climate is especially important. Flooding is happening more often and more severely, soil subsidence is causing foundations to break, and extreme droughts risk that not even everyone will be able to get quality drinking water in a few years, for example (Deltares et al. 2021; Phlippen et al, 2023). In short, the limits of the water and soil system have been reached. Climate-vulnerable areas could be highly problematic for the economy, and current solutions rely primarily on technological advancements. In the current economic system, the government and investors are not to blame. This is because prioritizing the preservation of the soil and water systems, such as choosing to widen a river instead of developing housing, is less profitable than investing in housing. However, water boards indicated in 2023 that they will need more than twice as much money than budgeted if they want to continue to protect the Netherlands in the same way they do now (van der Burg, 2023). Is a society imaginable where ecological profit can exist alongside economic benefits, rather than instead?

Alternative growth | Since the 1950s, the economy has been growing continuously, which means that every year, the amount of goods and services produced per individual in the country increases (Schmelzer, 2015). It is becoming increasingly apparent that the natural system is reaching its limits to growth. Subsidence, flooding, and heat waves indicate that we cannot continue building in any way we want, and measures are required to ensure we live within ecological boundaries again. The natural system cannot support the continuous increase in production and consumption. Some researchers advocate for a strategy beyond economic growth, where the objective is to let the economy thrive rather than grow, to stay within the ecological boundaries and not deplete more resources. This is referred to as post-growth or degrowth and could provide an answer to the economic and ecological risks the society is facing. In later chapters, this concept will be explained in more detail.

Doughnut economy | Measures to live within the earth's capacity, however, should not be at the expense of fundamental human rights. This is why Kate Raworth (2017) developed the doughnut framework. This framework describes a new definition of economic success. It consists of an outer ring defining the ecological ceiling and an inner ring defining the social foundation. These form the boundaries in which the economy should thrive. An interpretation of this framework for this thesis' case study will be explained in further chapters.

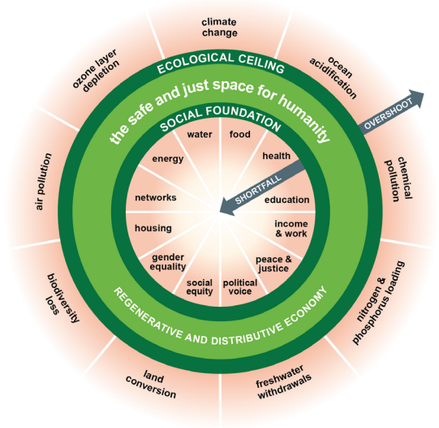


Image 6. The Doughnut economy framework by Kate Raworth (2017).

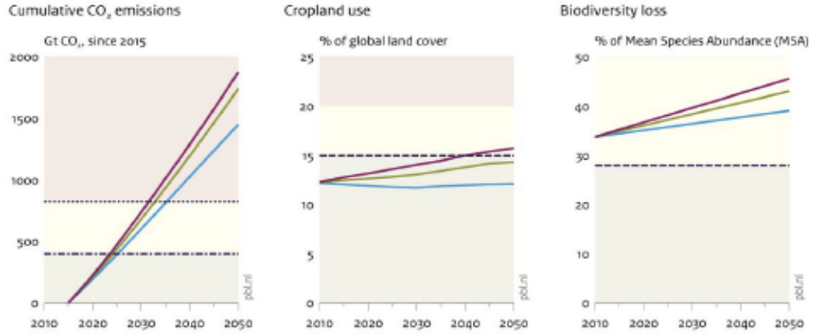


Image 7. Future developments of control variables for three of the planetary boundaries (PBL, 2018).

1.1 context

Housing crisis | An issue often contrasted with the demand for space for climate adaptation is space for housing. Finding housing in the Netherlands has not been as difficult as it is now since the housing crisis after World War II (Bogosavac, 2021). Since 2014, there has been a yearly housing shortage of more than 200,000 houses. This number is growing, and the prognosis is that it will not get below 300,000 before 2030 (see image 8). There are many different views on the causes and solutions to this problem, but what prevails is that a shortage of houses and high housing costs are the leading causes. The reintroduced minister of housing and spatial planning is taking measures to solve that (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023; Lörzing, 2021). He now believes that the market alone cannot solve this issue and that action is required to provide affordable housing to all those in need. The 'National Building and Housing Agenda' takes on three key points: availability, affordability, and housing quality (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023).

Current strategy | Two crucial steps are missing in the current strategy to fix the housing crisis. On the one hand, there is a lack of awareness that the housing industry in the current system contributes to crossing planetary boundaries by encouraging the same way of life. The technological reliance and ignorance towards the natural system remain, as the strategy builds on the fact that every municipality should build more housing. It will demand more material, space, and energy consumption if we continue to develop in this same system. It also ignores the soil system's needs, creating the same problems as subsidence and flooding. On the other hand, the 'housing deals', where the minister makes agreements with municipalities about where to build, do not consider location, security, or type of housing. This is for the municipality to decide, which is relying on the market. A house should be more than a roof over your head. The United Nations has set guidelines for adequate housing (Office of the United Nations High Commissioner for Human Rights, 2009). Besides a roof over your head, it must also provide safety from flooding, be within a certain distance of a hospital and fit age requirements, for example. The housing deals made by the government mainly look at the amount and affordability of housing but lack a vision of type or functional networks or safety. Other government programs look at building strategies per soil type, but the connection between the programs is lacking (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022). It could be said that the ecological ceiling and the social minimum, referring to the doughnut framework of Raworth, are exceeded.

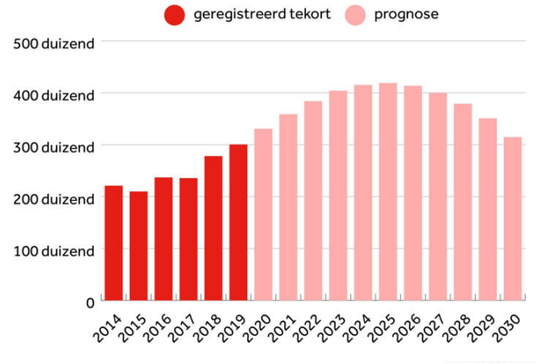


Image 8. Housing shortage in the Netherlands. (ABF Research in NOS, 2023)

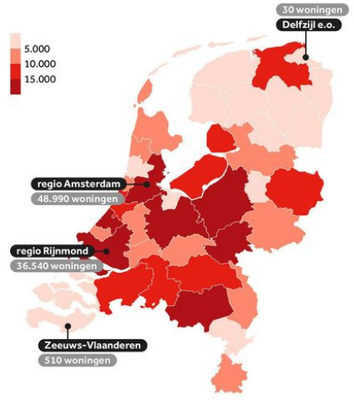


Image 9. Housing shortage per region. (NOS, 2023)



Image 10. Housing deals (Rijksoverheid, 2021)

Paradigm shift | The landscape and the economy have become strongly intertwined, especially in the Netherlands. The water and soil systems are based on maintaining water levels to the level best for local functions like agriculture. Throughout history, there has been a gradual shift from the landscape shaping the economy, with existing rivers and high ground determining infrastructure and urban development, to humans using technology to shape the landscape to suit their needs (Rutte & Korthals Altes, 2023). In the Atlas of Dutch Water Cities, the attitude of the Dutch towards water throughout history is described as going from defensive to offensive to manipulative (Hooimeijer et al., 2005). The manipulative attitude is now causing problems like soil subsidence or oxidation, leading to vulnerable areas that can only take up specific amounts of water. A new paradigm shift is required where the landscape determines the spatial layout and economy.

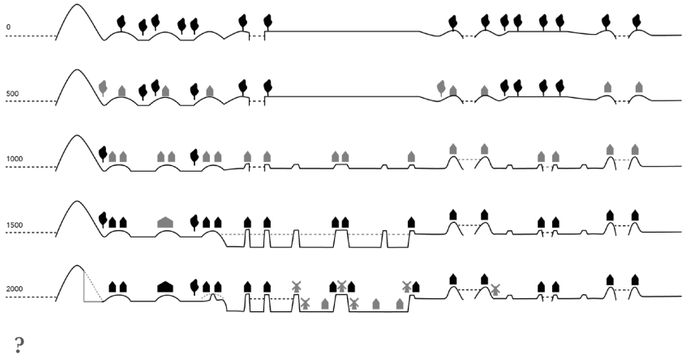


Image 11. The exploitation of landscape in relation to soil settlement. (Hooimeijer et al., 2005; modified)

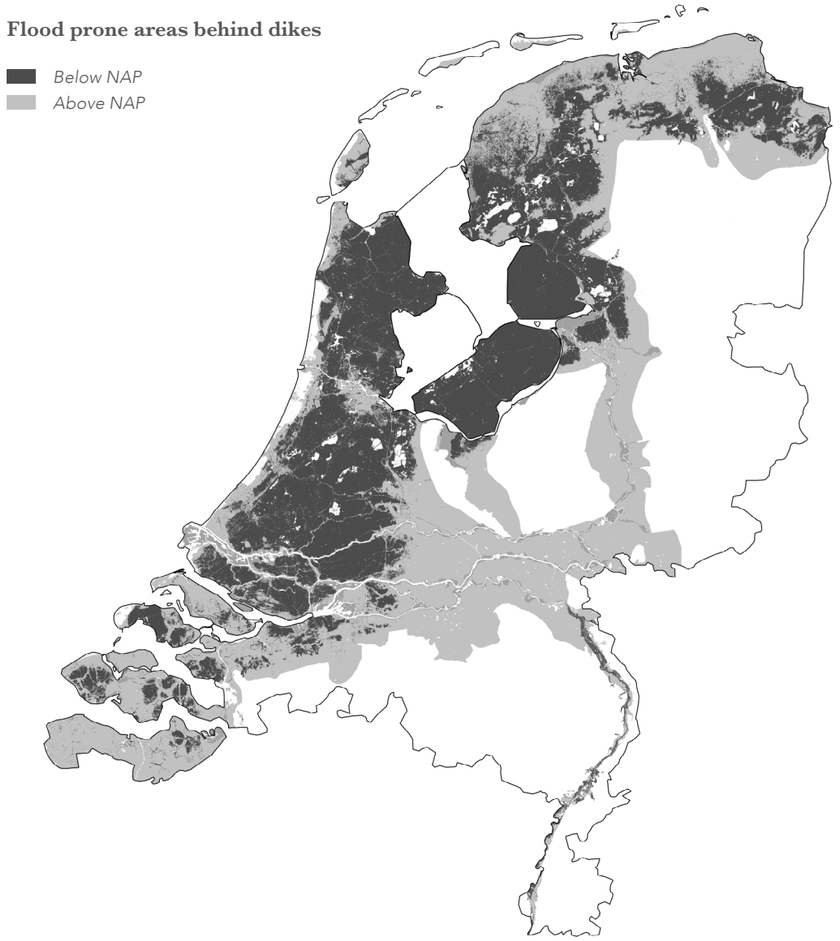


Image 12. Flood prone area (PBL, 2010; modified)

1.1 context | challenge descriptiom

Leading values in spatial planning | De Vries (2023) calls the decades after the Second World War the decisive epoch in spatial planning in The Netherlands. He names three critical turning points in the leading principles in spatial planning, within the 1950s economic prosperity and population growth. The fear of 'Los Angelosation', meaning the urban sprawl as known in the United States, led to the government taking great power in the spatial planning of the country, zoning out every square meter of the country. During the 1980s, globalisation and a thriving economy gave rise to neoliberalism, which led to cities gaining more power, forming a second turning point in leading values (de Vries, 2023; Lörzing, 2021). The focus was on large towns and companies, with the belief that their success would trickle down to everyone else. There was great confidence placed in the market. According to de Vries (2023), the third turning point was in the 2000s and 2010s, when there was a shift towards full economic liberalism, which resulted in many government tasks being decentralized to smaller government agencies such as provinces and municipalities.

The current ecological crisis and housing-related problems like lack of adequate housing and safety issues ask for a new turning point in leading values. The minister of housing and spatial planning calls it the 'great reconstruction' of the country (König, 2023). The new National Environment Vision (NOVI) intends to prioritise the water and soil system (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2020). There are even people advocating to lock this in legally, prohibiting building in vulnerable places (Kleinhans et al., 2023). However, where and how to build will always remain a local question. The problem is that in the current system, it is always more profitable to build (expensive) housing than to let nature thrive. New leading values are needed where, instead of the economy, the ecology can grow.

Climate-vulnerable areas | The current system will result in housing with high-climate risks like subsidence and flooding becoming cheaper because that number is increasing. Renovating housing in vulnerable regions with high climate risks will no longer be profitable. Housing without climate risks will become scarcer, which means more expensive in the current system. This means that wealthier people will be able to afford to live safely and have little notice of climate risks, and people who cannot afford to do so will live in houses that are at high climate safety risk. These areas can be called climate-vulnerable areas. According to a report from ABN Amro, there are more than 900 climate-vulnerable neighbourhoods (Phlippen et al., 2023). This forms almost a third of all neighbourhoods. Deltares also reported on 'limits to the adjustability of the water- and soil system', stating that the current system cannot fulfil its functions (Deltares, BoschSlabbers, Sweco, 2021). The landscape will get wetter, dryer, saltier, or flooded.

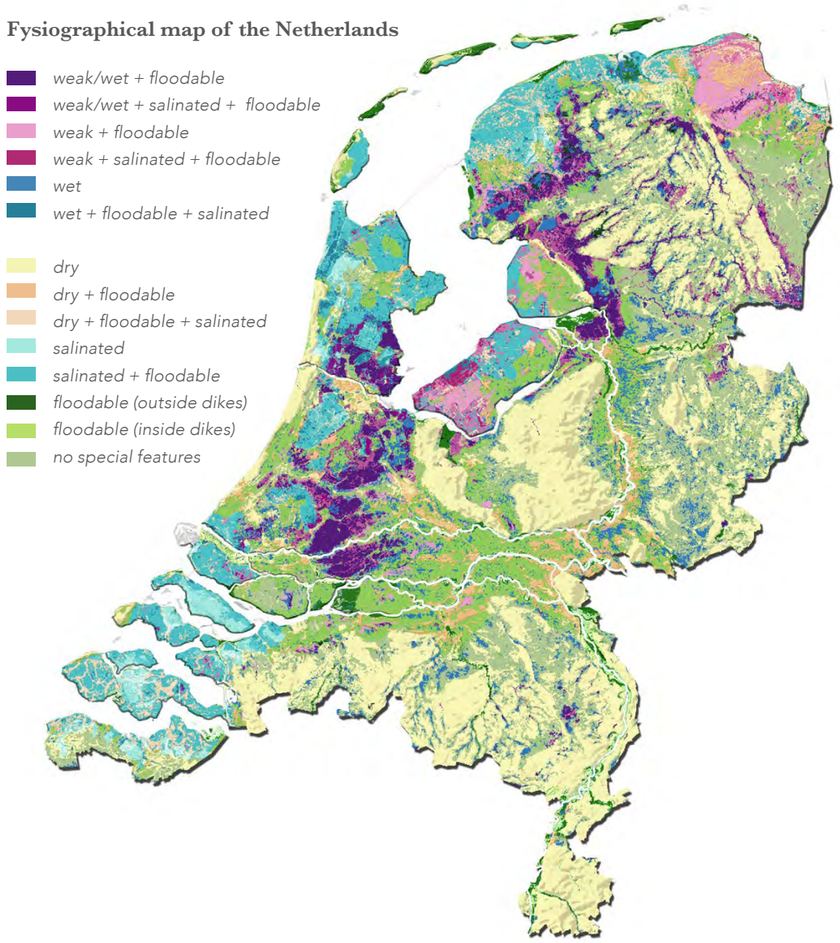


Image 13. 'The new physiographical map of the Netherlands,' (Deltares, BoschSlabbers, Sweco, 2021)

1.1 context | challenge description

A small Netherlands | Leading values in society and reliance on technological advancements created an ignorance towards the natural system in the Netherlands. Therefore, this project's investigation area is picked in a region where the water and soil system form an exemplary case for the rest of the Netherlands. The Zwolle region could be called a 'small Netherlands' when concerning future problems (De Zwarte Hond, 2023; König, 2024). It is a delta area where higher river water levels and sea level rise play a role, it has most of the Dutch soil types, and it is one of the growing areas in terms of population.

Climate-vulnerable region | In the Zwolle region, there are areas with a population growth prognosis of more than 10% and areas with 10% shrinkage. According to the government, the region must provide between 50.000 and 90.000 houses before 2040. The region has a high broad prosperity compared to the rest of the Netherlands, meaning prosperity in health, education, social cohesion, and safety. One of the oldest and one of the most recent polders of the country are here: the Mastenbroekpolder is from 1348, and the Flevopolders are from 1967. There is a lot of soil subsidence, water nuisance, and a high flooding risk for half of the region. Water is coming from everywhere.

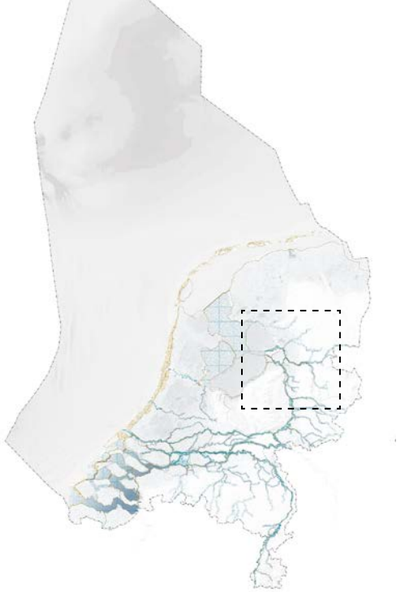


Image 14. Water safety (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2021)

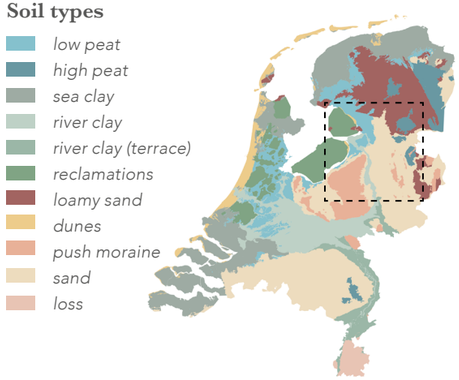
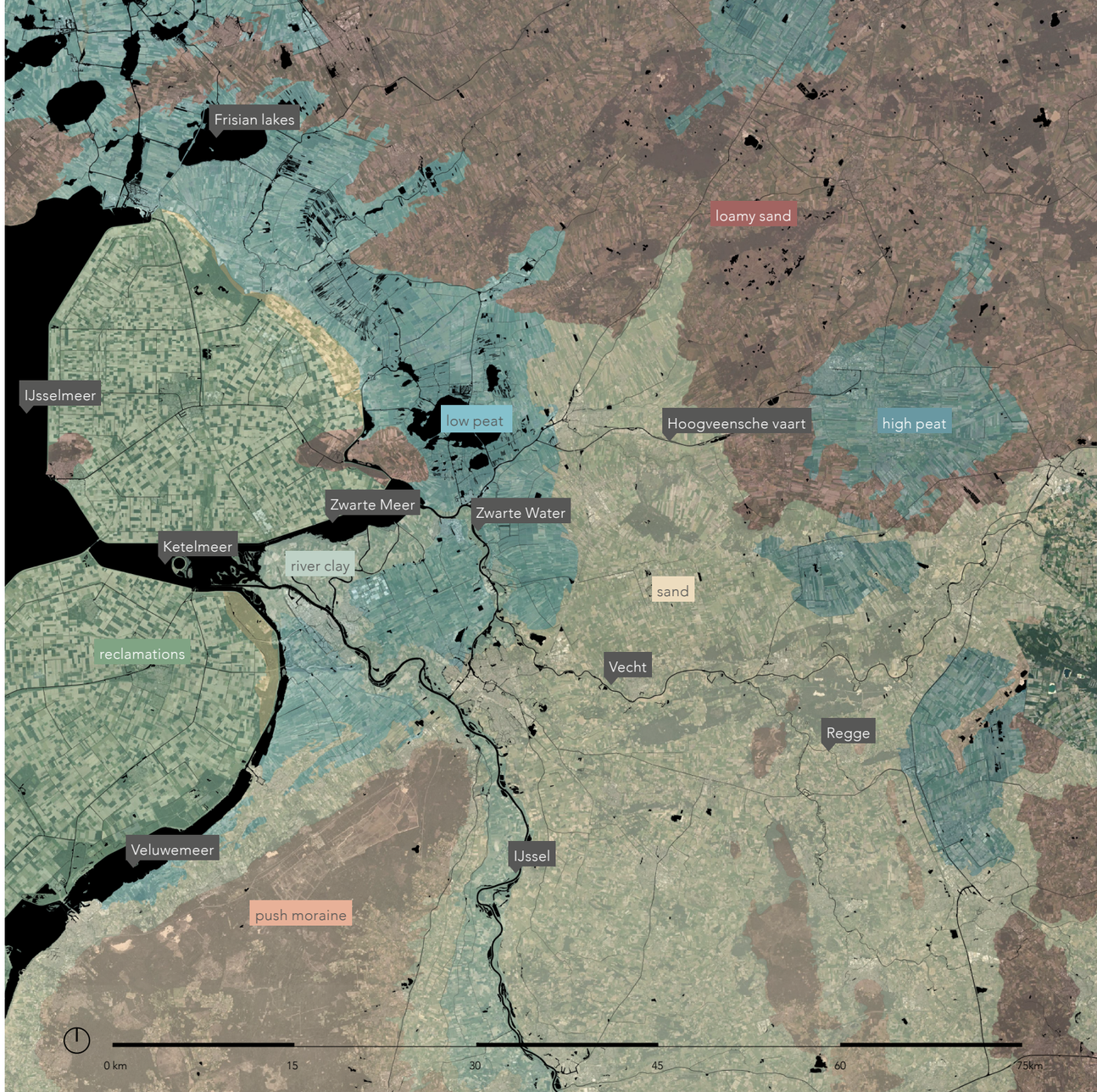


Image 15. Soil types of the Netherlands. (Klimaateffectatlas, 2023; modified)

Image 16. The Zwolle region with its soil types and main water bodies. >



1.2 problem statement

The economy profoundly influences how space is valued (Savini, 2022). Due to technological advances, the Dutch have transformed swampy and uninhabitable land into one of the wealthiest countries in the world (Rutte & Korthals Altes, 2023). However, this modification of natural forces and land has caused a **growing disconnection** between the habitation and the territory we inhabit. This is now starting to show its consequences. Subsidence and flooding are increasingly common, and even banks start to question housing insurance in certain places (Philippen et al., 2023). Despite these challenges, new housing plans continue to focus on areas where things are going well, constructing more houses, and simultaneously attempting to solve ground-related issues and reduce flood risks as much as possible. In the ongoing housing crisis, there is a growing tendency to construct new homes as quickly as possible (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022). Considering that the lifespan of a house is around 100 years and the urban structure is even longer, it is **essential to pivot how housing is planned**.

There are good intentions from the government that wants 'water and soil system to be guiding for spatial planning' (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023) and scholars who write about transitions and alternatives to the economic growth paradigm that is causing the growing disconnection between community and territory (Rotmans & Loorbach, 2009; Loorbach et al., 2015; Jackson, 2019; Hickel, 2020; Savini, 2021; Savini, 2022; Schenderling, 2022), but there remains a gap when it comes to the **spatial implications and convincing tools** for policymakers, planners, designers, and residents on how to get the housing system to thrive within social and ecological boundaries. There is a lack of a **convincing narrative** (van Noort, 2024).

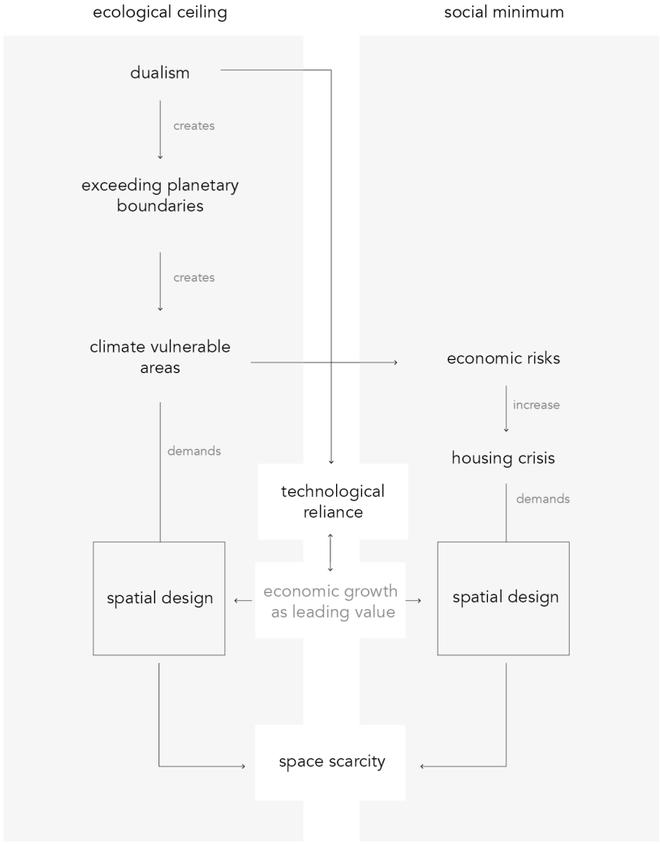


Image 17. Problem framework

1.3 research questions

Objective | This project imagines a spatial translation of an alternative growth of the Zwolle region, where current strategies face a disconnection between economic risks, housing crisis, and ecological sustainability. A redefinition of the **social and ecological boundaries** of the housing system is set out, relinking social prosperity and the ecological system. By envisioning a **renewed value-based future**, this project fills a part of a research gap: the translation of transitions into spatiality. **Alternative futures** are proposed that allow us to stay within the earth's ecological carrying capacity and provide adequate housing for everyone, now and in the future. Above all, the project shows that such a future is desirable.

The central research question guiding this project is:

How can a **renewed valued-based spatial vision** stimulate an **alternative growth** in the Zwolle region where the housing system can thrive within **social and ecological boundaries**?

This overarching question will be answered using several sub-questions:

1. What are the **social and ecological boundaries** the housing system should lie in and how does the Zwolle region align?
   Aim: set boundaries of the housing system and analyse the region using that framework

2. What leading trends and values need to form **alternative growth**-based futures in the Zwolle region to live within social and ecological boundaries?
   Aim: understand the current values and trends in the region and research how they can be used to form alternative growth-based futures

3. How are the alternative growth futures **imagined** and evaluated?
   Aim: understand what is needed to change and what that could look like

For every sub-question, theories and situations are reviewed and applied to the Zwolle region. The main research question is answered in the conclusion. In the discussion, the limitations are discussed. In the reflection, the broader value of the project is described, followed by an appendix that also involves tips for all readers and key takeaways for spatial planning professionals.

02 approach

What are the leading theories guiding the project and what is the methodological approach to answer the research questions?

Height map of area between IJssel river and Raalte (AHN, 2024)

Click here to go back to the table of contents.

2.1 theoretical framework

Limits-to-growth | This thesis builds on the imagination of a post-growth society. This is an attitude in literature that addresses the "limits-to-growth" dilemma. In 1972, the Club of Rome published "The Limits to Growth" (Meadows et al., 1972). The book was a response to the economic and population growth system and warned that the earth may not be able to sustain itself beyond the year 2100, even with advanced technology (Meadows et al., 1972). The research was based on five primary factors: population increase and non-renewable resource depletion. Using different assumptions, the authors created multiple scenarios that formed a warning: we can live within the earth's boundaries if we change our way of living. It has been fifty years since the Club of Rome reported on the state of the earth's ecosystem. As stated in the problem statement of this thesis, unfortunately, the Club of Rome was primarily right. The Stockholm Resilience Centre recently highlighted that humankind surpassed six out of nine processes that regulate the planet's stability, known as planetary boundaries (Richardson et al., 2023). Exceeding these limits is highly dangerous as they are all interconnected, and most overshoots cannot be reversed.

Dualism | In the 18th century, philosopher Descartes' vision of dualism became a leading value in European society (Hickel, 2020). This vision is based on a clear distinction between humans and the rest of the living world. This laid out the base for our current economic system, built on the idea of perpetual growth, requiring continuous depletion of resources and space (Schmelzer, 2015). Current policies count on technology to solve any problems along the way. It is still widely believed that economic growth is essential for social and ecological development and has been the foundation of political systems since the last century (Schmelzer, 2015). It is worth noting that this concept of economic growth is relatively recent and only gained momentum after World War II. Before the Second World War, there was 'hardly any trace of interest in economic growth' (Arnd, 1978). The OEEC (Organisation for European Economic Co-operation), hugely affected by the war, did not aim for endless growth but wanted to get the economy back to a 'satisfactory' level and maintain it there (Arnd, 1978). However, national goals quickly centred around economic expansion, turning complex political conflicts into technical questions on collectively increasing GDP (Schmelzer, 2015). Growth became a common good.

There are several reasons why this approach is not sustainable, as highlighted by the Club of Rome and numerous studies afterwards (Meadows, et al, 1972; Hickel, 2020; Schenderling, 2022). Firstly, the earth's ecosystem cannot sustain the ongoing expansion of consumption, as resources and space simply are finite. Secondly, the system is based on the Global South, which bears the burden of the ecological debt created by the Global North. This makes the approach intrinsically unfair. Lastly, research has demonstrated no correlation between a country's economic growth and the well-being of its citizens after a certain point of prosperity. Although there is a certain threshold where economic development can contribute to well-being, most European countries reached this threshold in the 1970s and have not seen significant improvements in human well-being since (Schenderling & Olthaar, 2023; Philips et al., 2021). The reliance on the ongoing expansion of the economy is destroying the planet, and it is proven impossible to decouple economic growth from sustainability because of the Jevons paradox (Jackson, 2021; Schenderling, 2022). Scholars refer to Sustainable Development Goal 8, Economic Growth, as a "Trojan horse" as it may hinder the achievement of other SDGs (Meynen & Martinez Alier, 2019).

Post-growth | The concept of post-growth provides an answer to this paradigm. Post-growth is an approach that argues that unlimited expansion of production and consumption is not imaginable on a finite planet (Savini, 2022). It describes a timeframe, the one after the timeframe of economic growth, and is an alternative to the approach of Green Growth, where the goal is to decouple the economy from sustainability (EU, 2022). Degrowth, furthermore, is a planned contraction of economic activity aimed at increasing well-being and equality (Schmelzer, 2015). Compared to the concept of post-growth, it provides a more concrete plan of what is needed, that is, to find a place to thrive within the planetary boundaries. The term degrowth usually arouses uncomfortable feelings among policymakers. This is because degrowth asks for a reduction of excess in the wealthy side of society (Savini, 2022). That side is usually well-represented in government and much lobbied for, for example, the aviation industry. This project imagines a future in the post-growth era. The term degrowth will be avoided as it is not a goal to do something about the economy, but to think differently about our leading values.

Douhgnut economy | Both concepts of degrowth or post-growth aim for a system that lies within the planet's ecological boundaries. As stated in the problem field, the other important side of the goal is the social boundaries of society. The Doughnut Economy by Kate Raworth (2017) provides this framework. Raworth takes the nine planetary boundaries as the outside borders and takes ten social minimal boundaries as the inside borders, creating a doughnut shape. Compared to the concept of post-growth and degrowth, this framework is concrete on what needs to be done. It is a tool for reaching a post-growth society and provides an alternative measurement of the well-known GDP.

The previous chapter explained how the current economic system had caused a disconnection between how we live and the space we occupy, as well as the lack of convincing narratives in the current solution to this problem. Post-growth literature provides a solution, as the main goal is societal well-being while living within the earth's boundaries. The gap in research remains in empirical evidence of real-world applications of provided solutions, especially the spatial implications. This project aims to use the Zwolle region as a case study to dive into this gap.

2.2 conceptual framework

After positioning the research in the theoretical framework, the problem framework can now be modified. Instead of space scarcity and not being able to find space for solutions to all problems, a new valued-based spatial design is placed at the bottom, led by alternative growth. A design that finds overlap in problematic areas needs to be led by a system different from the current one.

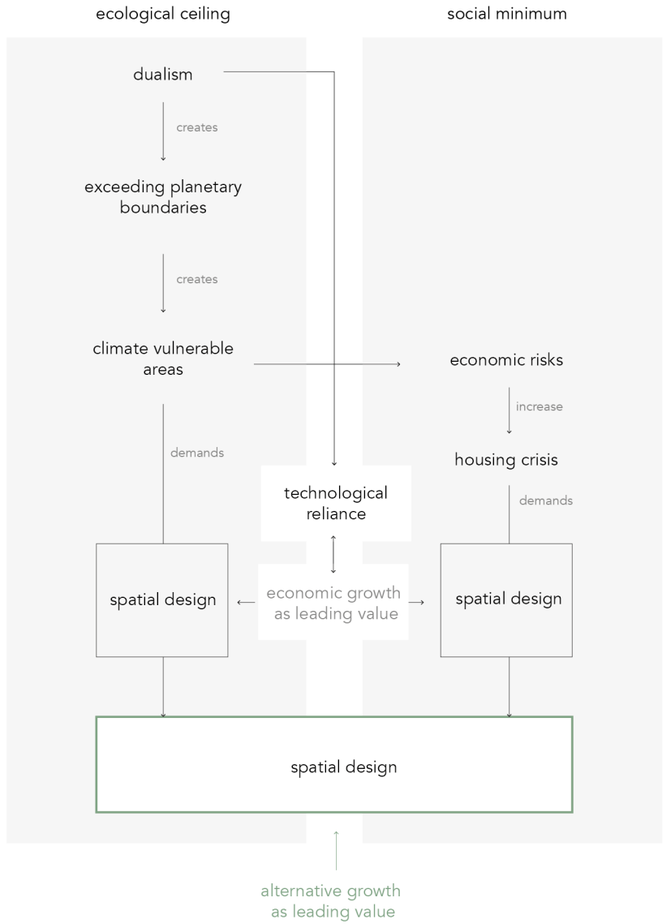


Image 18. Problem framework with a new valued-based spatial design as solution forms the conceptual framework

2.3 method

The different research questions are set out in the methodological framework. The relationship between the outcomes, methods, and questions becomes clear. The main methods include mapping with input from policy and history analysis, interviews (to either collect information for the governance and value analysis or to collect information for the micro-stories), and scenario building, which will be illustrated with imaging and storytelling.

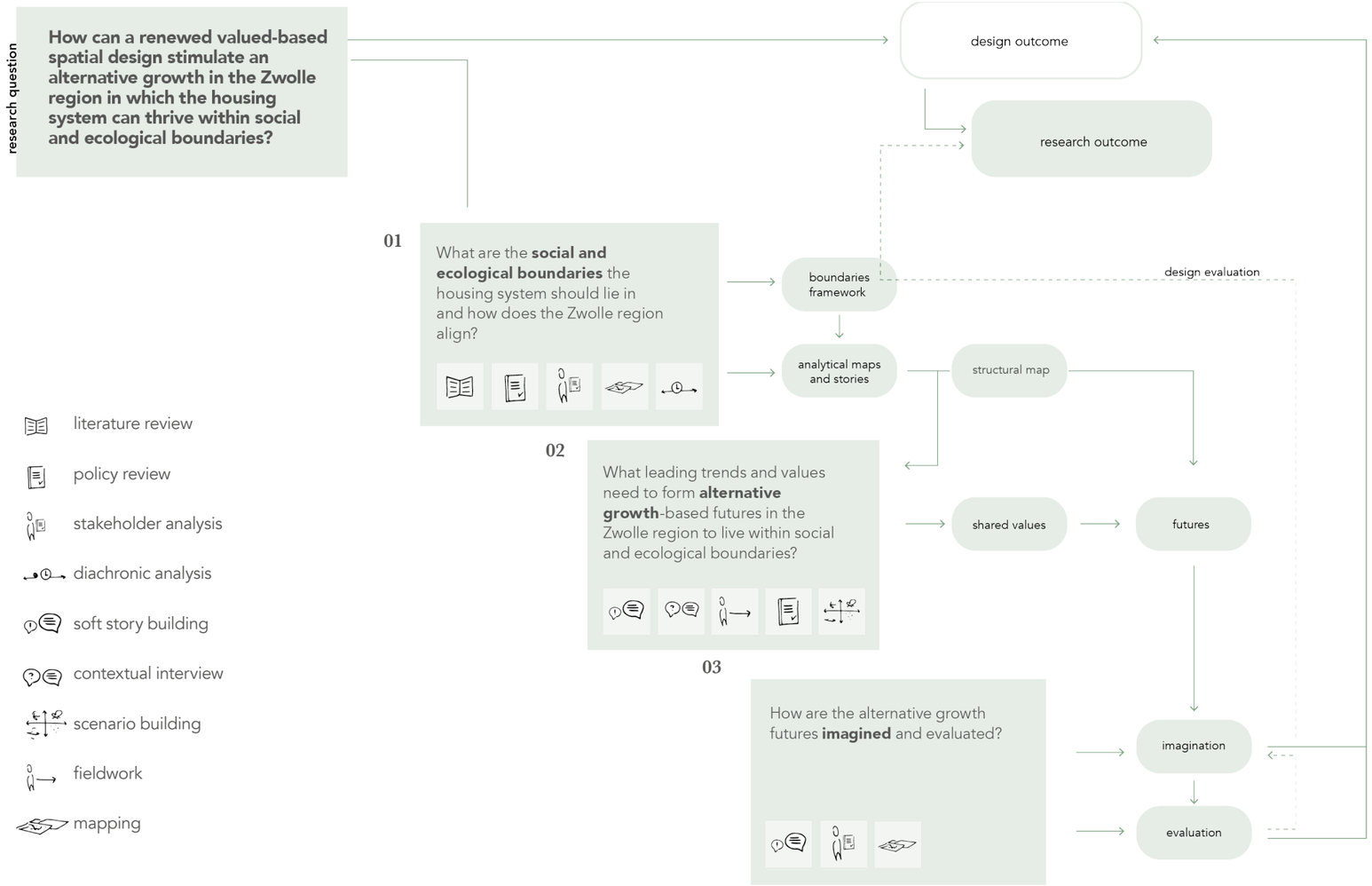


Image 19. The methodological framework shows the interplay between the outcomes of sub-questions and how they together form the design and research outcome.

2.3 methods

Various methods are used to define problems and design solutions, which help interpret and confirm data from different sources and analyses. This thesis will use a range of methods, mixed per research question. The methods are explained in detail on this page.

Soft stories | One method to point out is the soft stories. This method is based on the *micro-stories* by Paola Viganò and Bernardo Secchi (2009), combined with the *soft atlas* by Jan Rothuizen (2023). Viganò and Secchi used micro-stories as a new method in urbanism, illustrating the visions and scenarios they had for Antwerp by showing one family or housing situation. Rothuizen also developed a new method of storytelling, weaving together visual illustrations with great attention to detail and a personal perspective to explore the different layers of urban environments. Rothuizen lent the word 'soft' from the writer Raban, who wrote the book "Soft City" in 1974, in which he also plays with the balance between the built environment and the subjective experience of people in it (Rothuizen, 2023).

In this thesis, soft story building is used to illustrate a household's living situation and related values. Long and short conversations with people are combined into reality-based personas, and their living environment is illustrated in drawings.



Literature review
Action: Reading scientific articles, books, and news articles on the topic. Summarise and conclude findings
Outcome: Understanding of the current (scientific) status concerning the problem and the solutions. Understanding of the knowledge gap
Source: Google Scholar, TU Delft library, bookshops



Policy review
Action: Reading policy documents of different levels of government (national to municipality)
Outcome: Understanding of the past and current policies, including their relations and underlying values
Source: https://www.rijksoverheid.nl/documenten, websites of provinces



Stakeholder analysis
Action: Map out the different stakeholders related to the spatial planning and their relations
Outcome: Understanding of the stakeholder's problem perception, leading values, and relations
Source: Newspapers, government websites



Diachronic analysis
Action: Reading past policy documents and maps
Outcome: Understanding of how the landscape was formed
Source: Books, Topotijdreis, archival documents, cultureelerfgoed.nl



Soft story building
Action: Have a semi-structured interview with inhabitants of the area and convert into narrating drawings, have street interviews with local people, read local news articles
Outcome: Several truth-based exemplary cases of inhabitants of the region, including their problems and values
Source: Own network, streets of Zwolle region, newspapers, LinkedIn



(Contextual) interview
Action: Have a semi-structured interview with policymakers in the area
Outcome: Understanding of past and present values and the current solutions. Evaluation of the futures.
Source: Municipalities, own network



Scenario building
Action: Setting out parameters based on the outcome of other actions. Imagine in different products (story, map, collage)
Outcome: Alternative futures, worked out in different
Source: All outcomes of other methods



Fieldwork
Action: Going walking/cycling/driving through the area and experience. Take pictures, videos, and notes
Outcome: Understanding of the characteristics of the area
Source: The landscape



Mapping
Action: Mapping spatial structures on different scales, mapping how different futures would work spatially and analysing (iterative process).
Outcome: Maps that show the relationship between structures in different time and size scales
Source: Various data sets (see Chapter 7.1)

2.4 reading guide

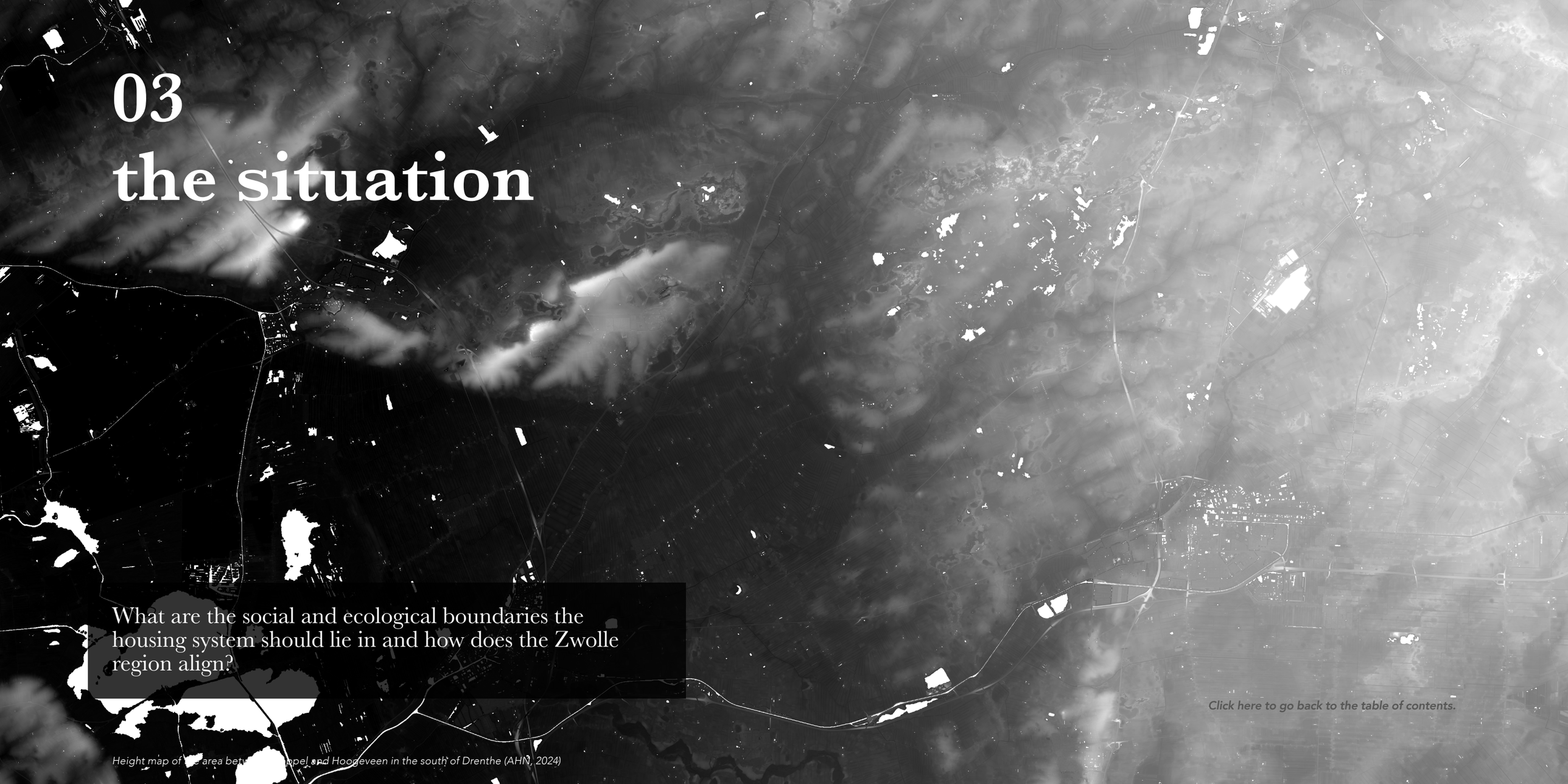
In summary, the ecosystem is under pressure because of the current socio-political system, which creates vulnerable places. This thesis aims to show how a different system could relieve that pressure for all living beings. In this scheme, the different questions, aims, methods, and outcomes and where to find them are set out.

Chapter 7.2 will set out the main takeaways of this research as an appendix. It also provides various tips for personal and professional life.

	question	chapter	aim	method	products
	How can a renewed valued-based spatial design stimulate an alternative growth in the Zwolle region in which the housing system can thrive within social and ecological boundaries?	06			
the situation	What are the **social and ecological boundaries** the housing system should lie in and how does the Zwolle region align?	03	set boundaries of the housing system and analyse the region using that framework	literature review, policy review, stakeholder analysis, mapping, diachronic analysis	framework, analytical maps, diagrams, and stories
the alternative	What leading trends and values need to form **alternative growth**-based futures in the Zwolle region to live within social and ecological boundaries?	04	understand the current values and trends in the region and research how they can be used to form alternative growth-based futures	soft story building, fieldwork, contextual interviews, scenario building	fleading values and trends and alternative growth-based futures outline
the imagination	How are the alternative growth futures **imagined** and evaluated?	05	understand how futures would work in space and society	soft story building, mapping, interviews	alternative growth-based futures envisioned and evaluated in different scales and methods
	What can you do?	*07*	*help the reader of this thesis to work towards living within social and ecological boundaries*	*summary making*	*recommendations*

03
the situation

What are the social and ecological boundaries the housing system should lie in and how does the Zwolle region align?



Height map of the area between Zwolle, Kampen, and Hoogeveen in the south of Drenthe (AHN, 2024)

Click here to go back to the table of contents.

3.1 boundaries framework

In this chapter, social and ecological boundaries will be defined. A spatial analysis of the region will follow using three perspectives (soil, water, and housing), which will then be linked to the exceeding of the boundaries. A systemic analysis will follow, where the cause of the exceeding will be set out. Finally, the conclusions will be presented by combining the three perspectives and the framework.

Ecological ceiling | For the ecological ceiling, the planetary boundaries that have been exceeded and relate to spatiality will be used. The ones that are most directly influenced by spatial design are land-system change and biosphere integrity. Land-system change is particularly worrying in the conversion of forests to farmland. In the Netherlands, there is almost no forest left. Especially in the Zwolle region, nearly 70% of the land is used for agriculture, while less than 20% is left for nature and water (CBS, 2021). The boundary for cropland use of the global land cover lies at 15%, meaning the Netherlands is far over the boundary. This results in massive damage to the biosphere's integrity. Biodiversity can be measured in mean species abundance (MSA), which is the population size of native species relative to the natural undisturbed situation. In 2000, the MSA in the Netherlands was 15%, meaning there is only 15% left of the local population of plants and animals compared to 1900 (CBS, PBL, RIVM, WUR, 2016). The boundary lies at a little below 30%. Compared to Europe and the world, the Netherlands is doing particularly poorly. Image 21 shows the number of species on the endangered species list per square kilometre.

Climate change and biochemical flows, two other planetary boundaries already exceeded, are closely connected to how we use our space. These will not be discussed in detail, although a brief analysis of the region will be done. It is assumed that if the land system changes and biosphere integrity boundaries decrease, these two will follow. The quantifying of the limits is very important (PBL, 2018), but this is not the aim of this thesis. It will demonstrate a new way of thinking that prevents the boundaries from expanding further.

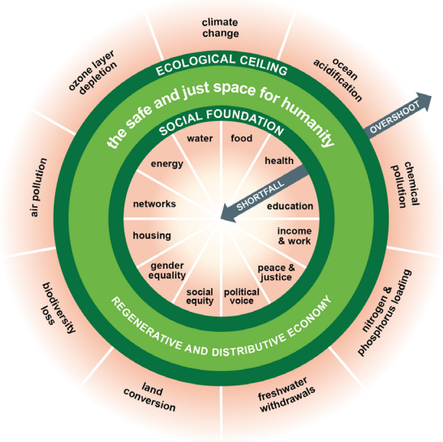


Image 20. The doughnut framework by Raworth (2017)

Image 21. Biodiversity and protected nature. Blocks of 1km by 1km, with amount of species on the red list. (Compendium van de Leefomgeving, 2023) >

3.1 boundaries framework

Social foundation | Almost nine out of ten Dutch people feel that there is a housing crisis (Kellij & Hilhorst, 2023). There is not enough and not enough affordable housing available in the Netherlands. Over the last few decades, a divide has emerged between buyers who enjoy all kinds of benefits and renters who are increasingly marginalised (Hochstenbach, 2022). The shortfall in the social foundation becomes clear. However, the claim is growing that just building more affordable housing is not the solution (van Bockxmeer, 2022; Hochstenbach, 2022). The demographics and lifestyles have changed a lot over the last few decades, demanding other types of housing (van Manen, 2023). Furthermore, the current system makes a house a product of the market, meaning that prices go up in a time of scarcity, resulting in unaffordable housing. In 2022, a person with an average income could buy less than 4% of new houses (van Manen, 2023). This shows that the housing crisis is affecting an increasingly large people.

The Office of the United Nations for Human Rights (2010) claims that housing should be more than just a roof over one's head and argues that there are seven criteria for housing to be adequate, including security of tenure, availability of facilities like energy and heating, affordability, habitability (space and protection), accessibility, location (access to basic facilities like education or dangerous areas), and cultural adequacy.

In 2008, the Dutch government created a tool to monitor the liveability of an area, the Leefbaarometer ('Liveability meter'), aiming to quantify social boundaries. This tool was renewed in 2021 and distinguishes five criteria: physical environment, housing stock, facilities, social cohesion and nuisance and safety (Mandemakers et al., 2021). This could be an excellent tool to connect to the criteria set by the UN. As well as for the ecological boundaries, quantitatively defining the social foundation limits is a very good step. One critique of this tool is that the vast amount of data per criterion can lead to ambiguous outcomes. For instance, if a neighbourhood scores poorly on housing stock, it is difficult to determine whether it is due to the foundation's pile rot or the housing size. Moreover, numerous assumptions are involved in determining the criteria, such as the assumption that owner-occupied housing is better for liveability than rented housing. Lastly, it is noteworthy that safety risks such as soil subsidence and flood risk in both monitors are in different criteria. When looking at recent reports and literature, it could be argued that environmental risks will play a more prominent role in deciding where we live and the environment experience (Deltares et al., 2021, NOS, 2023). Banks and insurance companies are also involved (Philippen et al., 2023). This is why in this project, the data of the Leefbaarometer tool is used for an overlook, but the housing is analysed independently as well. A combination of the UN criteria and the Dutch governmental criteria of a liveable area is used for the social foundation. This results in four themes: affordability, location, safety, cultural adequacy, and functional network.

The resulting framework is called the habitat doughnut and has four ecological and social parameters. A habitat is the natural environment of an animal or plant, and it is also used more informally as a person's usual surroundings (Cambridge University Press, 2024). The word comes from the Latin word *habitare*, which means to dwell or to live.

In the following sections of this chapter, the Zwolle region will be studied to see how it aligns with this framework. Three perspectives, as they are under high pressure in the country, will be studied: the soil and water systems, and the housing system. The soil and water systems are mostly linked to the ecological ceiling, and the housing system is mostly linked to the social foundation, but correlations between those will also be explained.

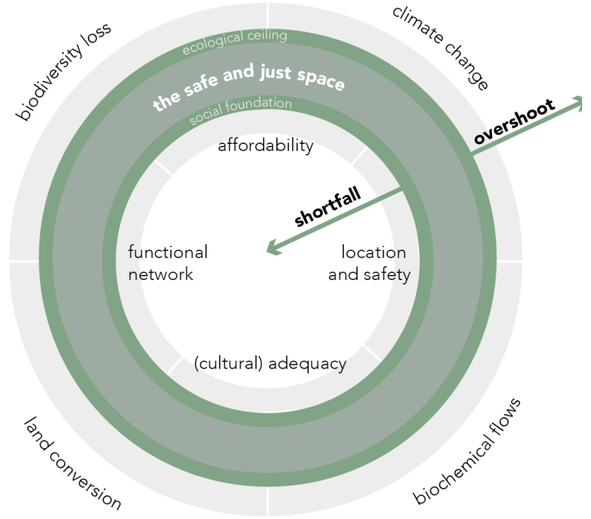
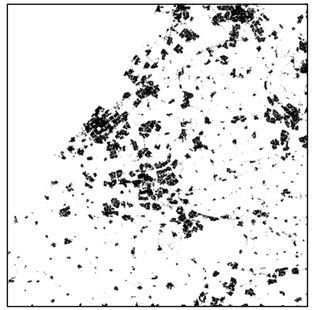


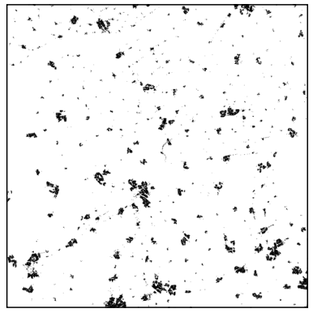
Image 22. The habitat doughnut. Inspired by the framework by Raworth (2017).

3.2 spatial analysis

The Zwolle region is in the northeastern part of the Netherlands. It forms the delta of the Vecht River and Ijssel River and has deep polders and high, dry sandy soils. Due to the presence of the most important soil types in the Netherlands, the region is often called' a small Netherlands'. The region has 750.000 inhabitants, around the same as the cities of Amsterdam or Rotterdam. Compared to the Randstad region, it is a very sprawled-out region.



Randstad region (80km x 80 km)



Zwolle region (80 km x 80 km)



Dwingelderveld (Karin Broekhuizen)



Weerribben De Wieden (Maarten van de Biezen)



Flevopolder (John David Verolme)



The Vecht River (RTV Oost)

Image 23. Zwolle region with its settlements, main roads, railways and waterways. Basemap: Landelijke Voorziening Beeldmateriaal, 2023) >

3.2 spatial analysis

Type of landscapes | Four main landscape types are described. The reclamation landscapes are linked to the perpetual battle against water (Rutte, 2023, Tisma & Lorzing, 2023). The Dutch expanded their territory through land reclamation projects by reclaiming land from seas and lakes, featuring polders enclosed by dikes. A significant endeavour was the Zuiderzee Works in the early 20th century, transforming the Zuiderzee into the Ijsselmeer.

The lowland peat bog landscape evolved through centuries of organic material accumulation in low-lying areas. Initially vital for fuel, construction, and agriculture, extensive peat extraction led to wetlands. Agricultural drainage altered these landscapes, reclaiming many peat bogs, now characterised by unique flora and fauna.

The river clay landscape, shaped by major rivers like the Rhine and Maas, features fertile plains formed by clay sediment deposition. Historically vital for agriculture, this region benefited from river system management, including dike and riverbank construction, which was crucial for shaping and protecting the landscape.

The sand belt landscape, found in sandy regions in the eastern and southern Netherlands, historically posed challenges for agriculture. Innovative farming and afforestation efforts adapted these areas. The Veluwe, a prominent sand ridge cloaked in extensive forests, forms an example of the sand belt landscape.

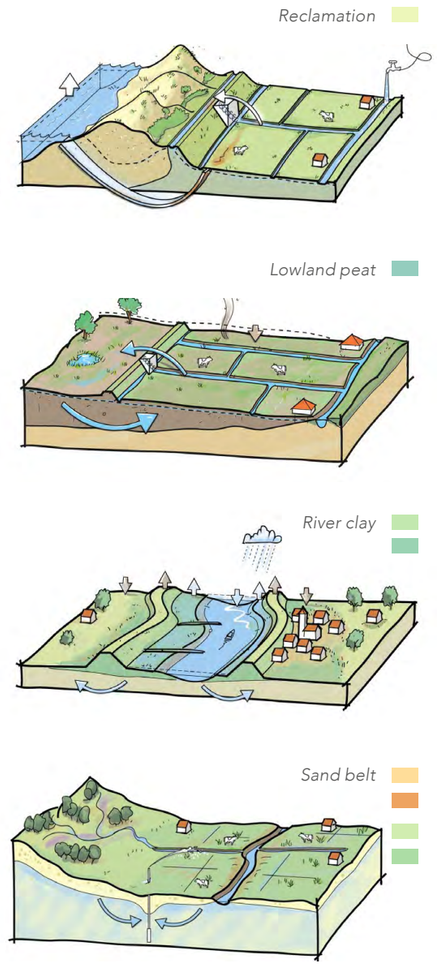
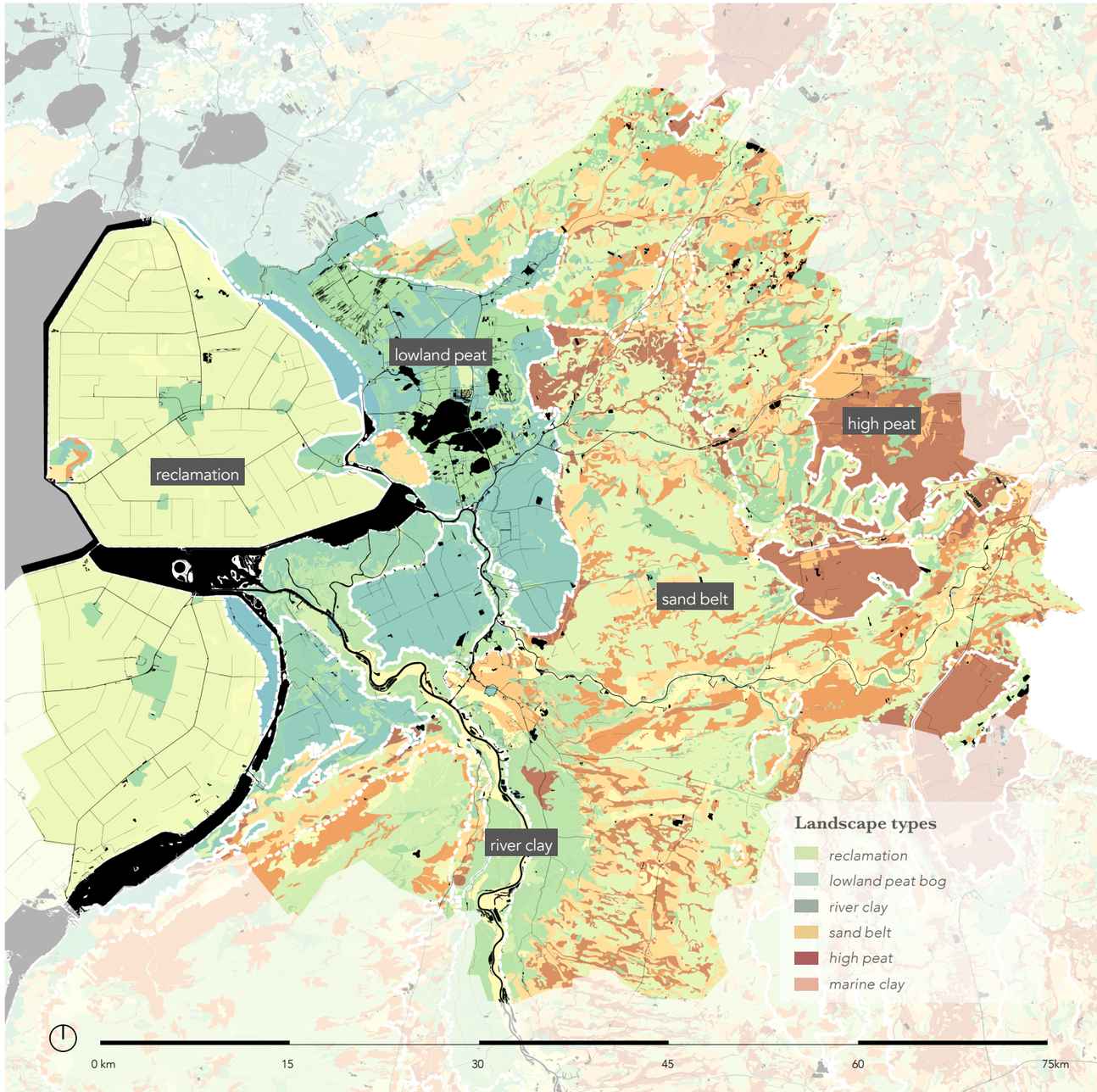


Image 24. Landscape types (reprinted from Deltares et al., 2023)

Image 25. Main landscape types (based on Rutte & Korthals Altes, 2023) >



3.2 spatial analysis | soil

The first lense that is used to analyse the region is soil.

Subsidence | When the land use of the natural system changes too much, it influences the soil. The famous Dutch modifications of the soil and water system resulted in a soil subsidence of over 10 metres in the last 1000 years (Deltares, BoschSlabbers & Sweco, 2021). This is on top of the natural tectonic movement in soil. In the subsidence analysis, it is visible that the amount of subsidence differs per soil type. Most of the subsidence happens in the Flevopolder reclamations and the low peat areas. It is not surprising that these are the wettest soil types in the area, as most of the water needs to be drained, causing the soil to subside. Subsidence can cause damage to foundations and pipelines. Additionally, the drainage of water from these grounds causes the soil to oxidise, leading to the emission of carbon dioxide.

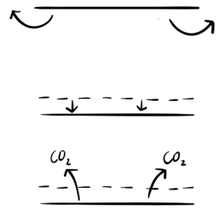


Image 26. Subsidence by drainage causes oxidation and CO_2 emission



Image 27. Land subsidence in the Mastenbroekpolder

Image 28. Landscape types and subsidence show a correlation (Klimaateffectatlas, 2023) >

Subsidence

- *> 50cm subsidence in 2100*
- *> 10cm subsidence in 2100*
- *> 3cm subsidence due to load*
- *transition soil type*
- *open water*

0 km 15 30 45 60 75km

3.2 spatial analysis | soil

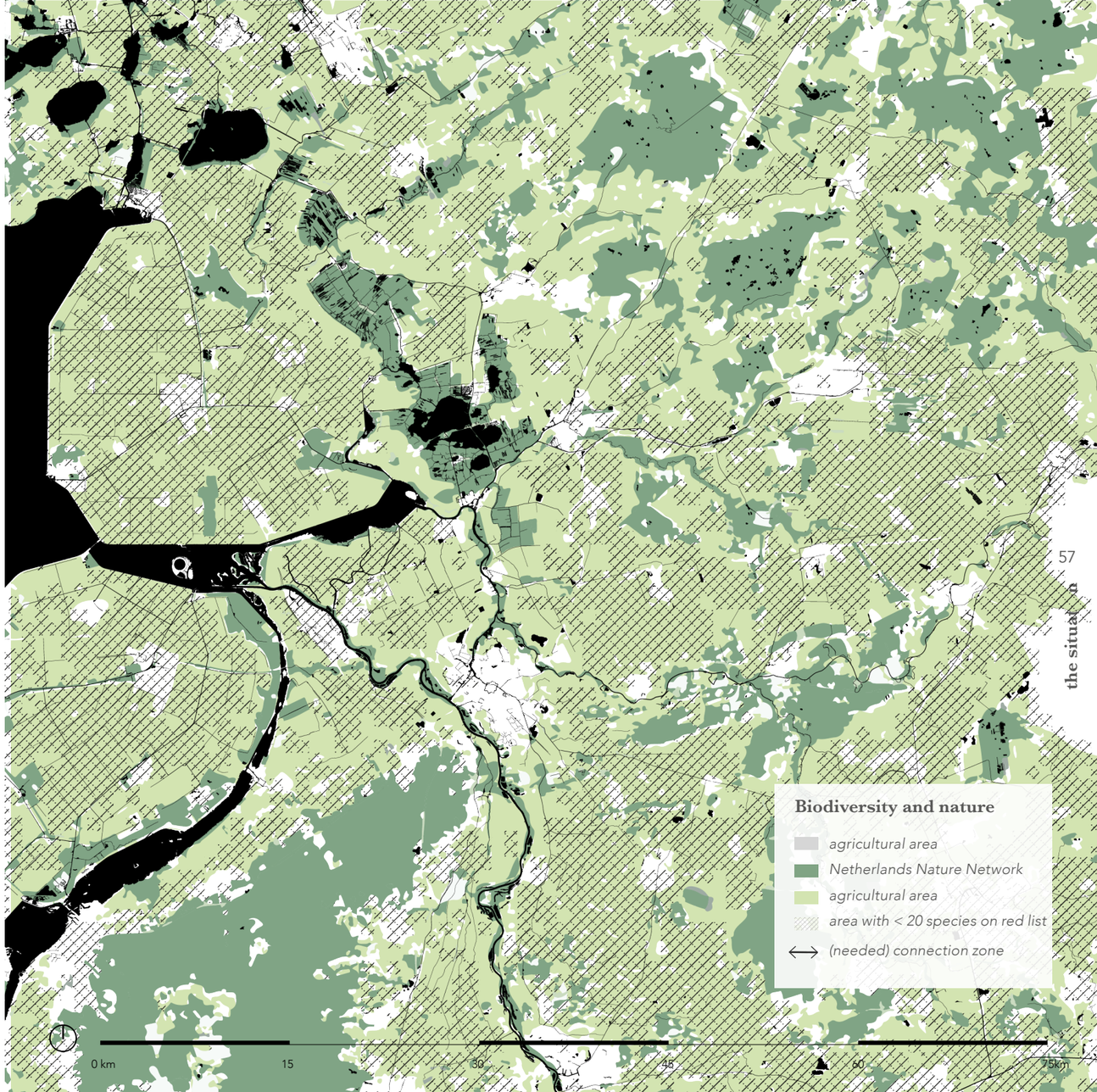
Biodiversity | Besides the modification of the soil, land use changes influence biodiversity. In the maps, the marked areas are places where there are less than 20 species on the 'red list' left. The Red List is an overview of species that have disappeared or are in danger of disappearing from the Netherlands. It is determined based on rarity and negative trends by the Dutch government (Compendium voor de Leefomgeving, 2023). The map shows that agriculture has the most influence on this; in almost all areas with agriculture, the biodiversity is under high pressure. There is no correlation visible between biodiversity and soil type. In the protected areas, either by the Natura 2000 law or the National Nature Network (NNN) law – the grey areas in image 27 – there is almost no pressure on biodiversity.

The NNN consists of existing and future natural areas in the Netherlands and is designed to prevent fragmentation and strengthen biodiversity. Provinces are responsible for the realisation of the future areas. Reality shows that the goal of the NNN is not getting realised. There are, for example, some needed connection zones.



Image 29. Grassland with low biodiversity

Image 30. Space use and biodiversity show a correlation (Klimaateffectatlas, 2023) >



3.2 spatial analysis | soil

Height | The Netherlands is often described as flat, but the Zwolle region shows this is not the case. The height in relation to the NAP (Normal Amsterdam Level, roughly the average of the North Sea level) ranges from -5 in the Flevopolders to +50 on the Veluwe. The Flevopolders were reclaimed from the Ijsselmeer in the 60s. More about the changing coastline will be described in section 2.3. A clear height difference is seen in the north, between the low peat lands (-2,06m NAP) and the 'Drents plateau' (+15,58m). The Vecht River cuts through the high sand and creates a small valley. The Ijssel river originates in the Rhine and flows along the Veluwe, The 'stuwwallen' (push moraines) are soil structures pushed by glaciers, more than 150,000 years ago.

The height analysis brings us to the lense of water. which follows on the next page.

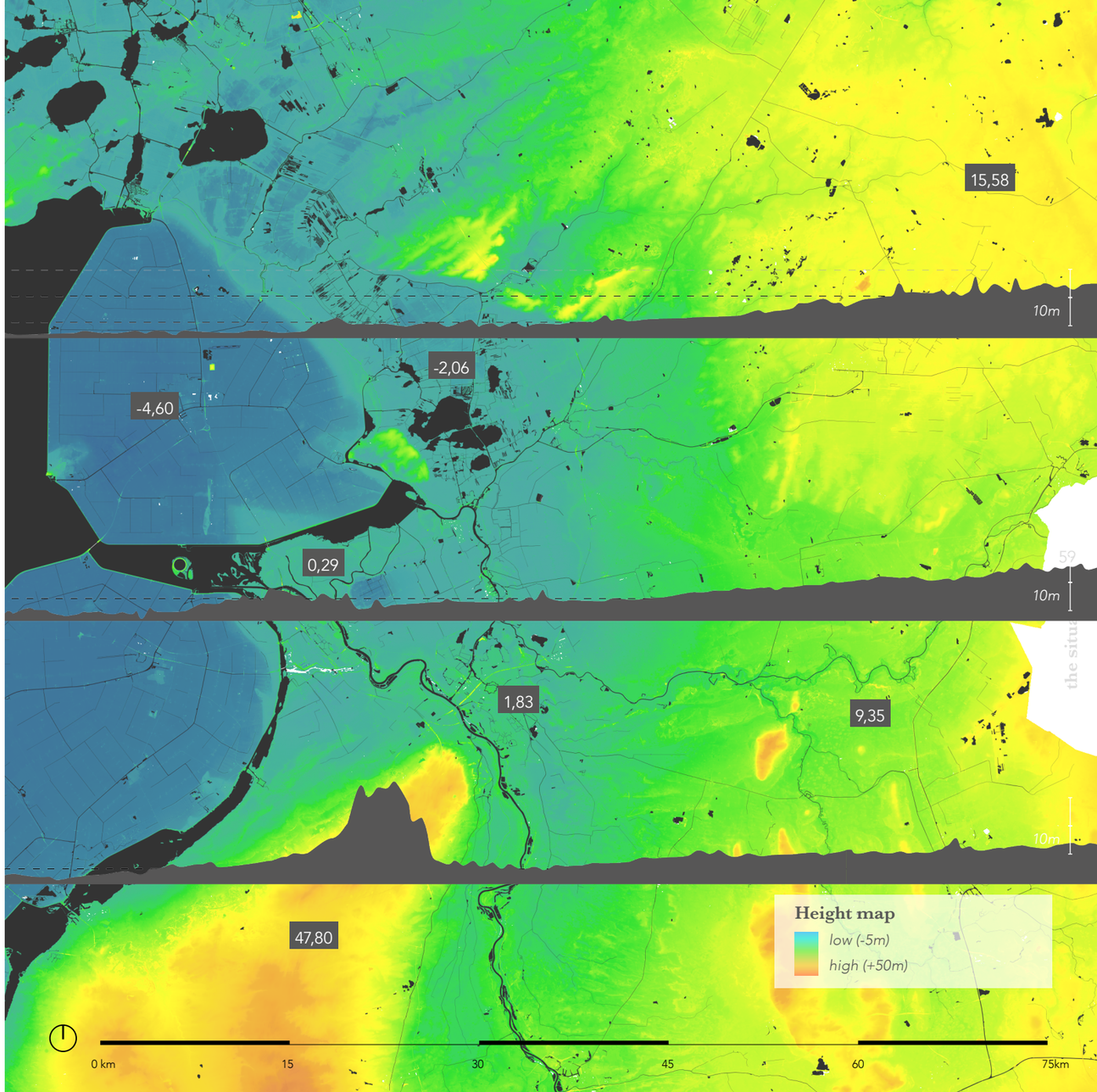


Image 31. Height map with sections. The dotted line is the average water level of the North Sea (AHN, 2024) >

3.2 spatial analysis | water

Wetness | "Nothing is really dry, only less wet." This is a quote from Dilip da Cunha and Amurada Mathur, with which Veras Morais (2020) started her thesis. Height differences create areas for water to flow, causing it to get less or more wet. This is also the case in relatively flat Netherlands. The Ijssel was formed because the Veluwe hills got in the way of the Rhine and the North Sea, causing it to branch to the north (Horst et al., 2023). There used to be a delta area of the Ijssel around Kampen, but the Flevopolder reclamations caused this area to change. The Vecht, a rainwater river, carved out its own valley in between smaller push moraines in the east of the region (Horst et al., 2023). Smaller creeks flow from the Drents plateau in the northeast into the low peat areas.

Water is pumped out of the landscape constantly. If pumps would quit working, almost half the region would flood up until 20 centimetres. Because of dikes and pumps not quitting working, however, a flood like this only happens once every 300 to 3000 years (see image 32). Because of sea level rise, protecting this area will become more expensive, questioning this type of water management. A flood that will occur once every 30 to 300 years would also be quite problematic, especially for Zwolle city. This flood happens mostly because of heavy rainfall events around Europe, which will happen more often due to climate change.



Image 31. High water levels along the Ijssel.

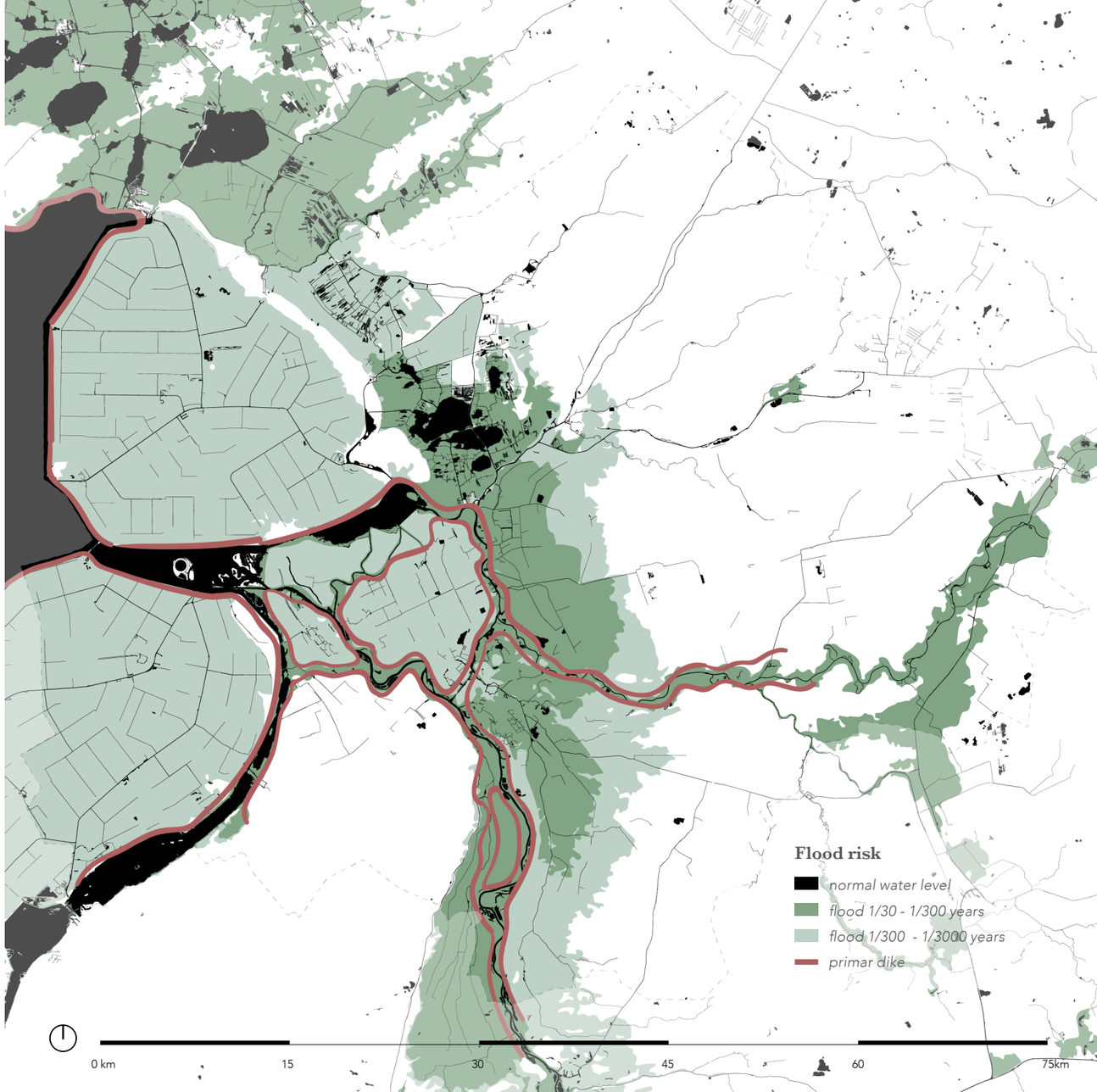


Image 32. Dikes and flooding (Klimaateffectatlas, 2023; Informatiehuis Water, 2022) >

3.2 spatial analysis | water

Water nuisance | Heavy rainfall over a short period can cause localised flooding, particularly in paved areas. These floods are most common during summer cloudbursts. The data of the Klimaateffectatlas is based on a simulation called the 'Rainfall overlay' of Tygron (2023) and is based on several assumptions like the interaction with the sewage system and the surface water, and a simulation time of 2 hours.

The map shows all cities being problematic, but mostly the Flevopolders stand out. This is due to a combination of the poorly permeable clay and the limited drainage capacity, as the Flevopolders were not designed with such extreme weather events in mind (source).



Image 33. High water levels along the Regge. Photo by Lenneke Lingmont

Image 34. Water level after short-term heavy rainfall (Klimaateffectatlas, 2023)



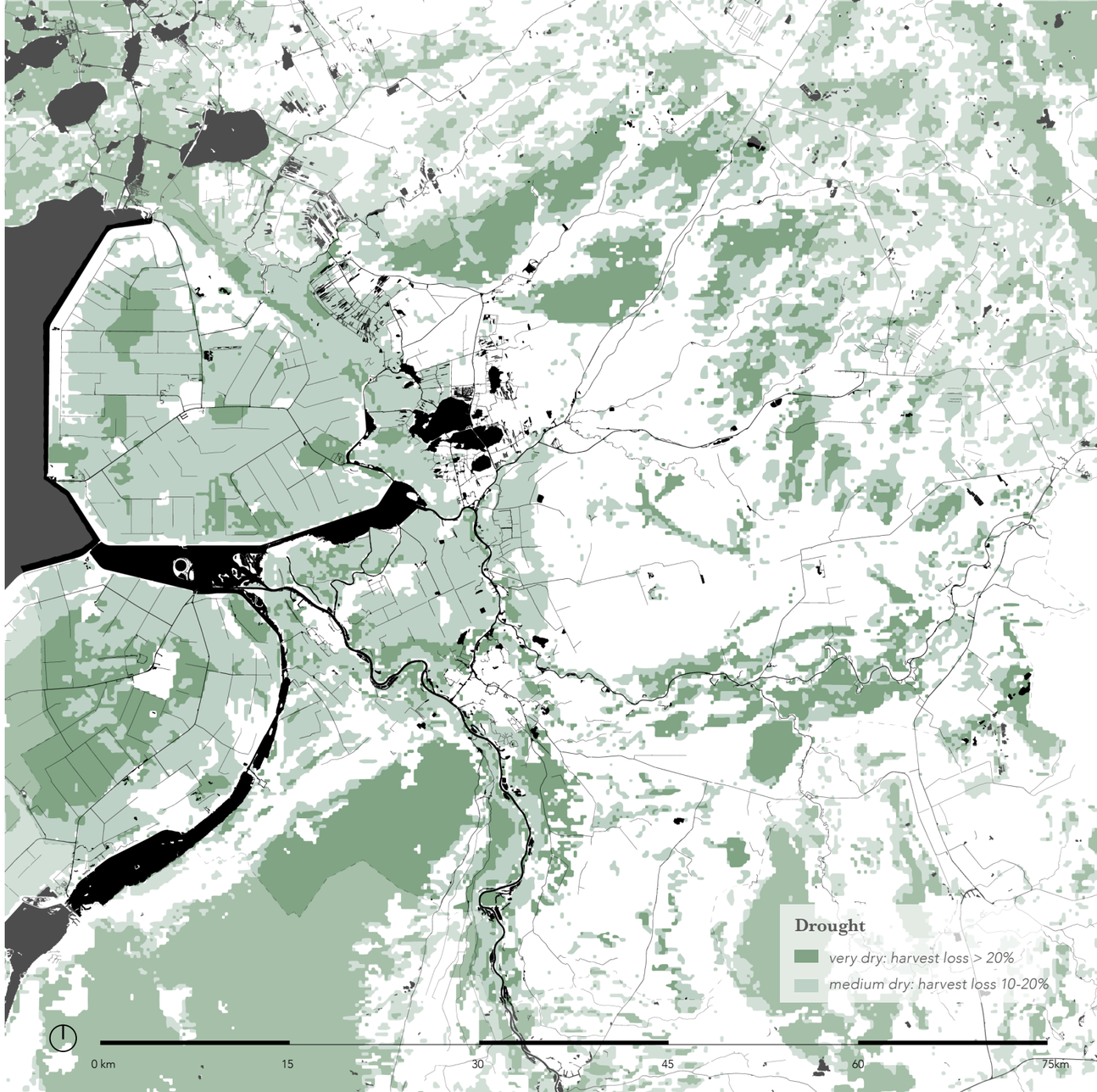
3.2 spatial analysis | water

Drought | The event of the region being less wet – thus too dry – will also happen more often due to the changing climate. Not very surprisingly this mostly happens on the higher sandy soil types in the east of the region. The Flevopolder reclamations are also problematic. The fact that this area gets too wet and too dry in extreme water scenarios shows that the water system is reaching its limits. Interestingly, the Vecht Valley has drought problems, as well as flooding problems as stated in the previous part.



Image 35. Drought in Drenthe (LTO Noord, 2022)

Image 36. Drought prediction 2050 with extreme climate consequences (Klimaateffectatlas, 2023) >



3.2 spatial analysis | water and soil boundaries

The water and soil analysis are pre-concluded in a natural boundaries map. The national map by the ministry (2024) and the analysis of Hekman & Ter Horst (2022) are taken as a base, but categories are expanded based on the parameters of the habitat doughnut. The base maps are mainly used for housing, indicating where the soil is suitable for building without significant issues. Biodiversity, for example, was not considered. This results in four categories.

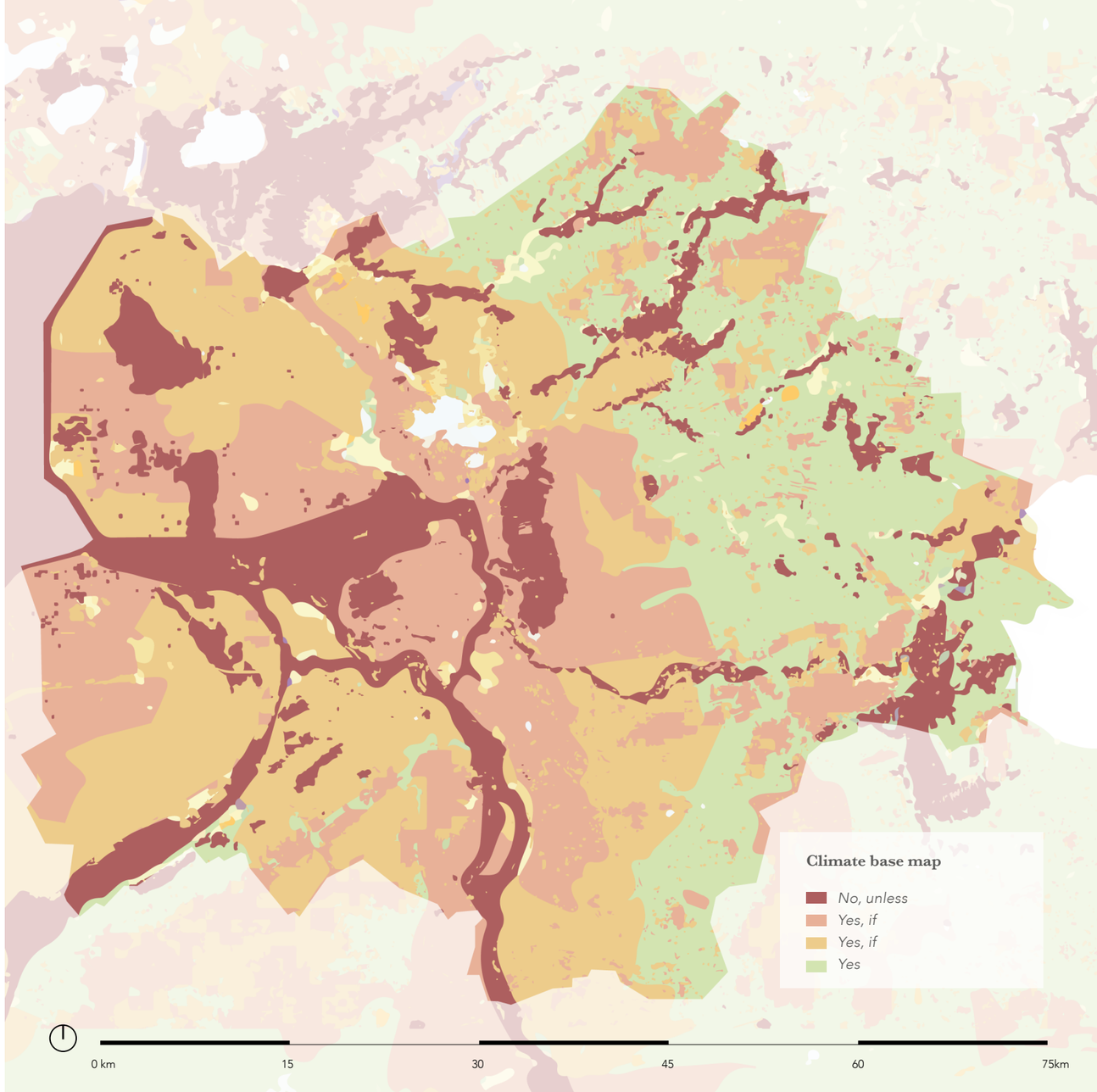
No, unless | Peat soil or creek valley, and/or extreme subsidence (>50 cm in 2050), and/or biodiversity extremely under pressure. The 'unless' is when very strict requirements are followed, like building adaptive to a high ground water table and weak underground. Building 'ground water positive'.

Yes, if | Clay and sand, floodable 1/30-1/300 years and/or very salinated. Consequence mitigation (construction heights, evacuation routes, shelters), encourage self-reliance. Adapt construction to wetter conditions, ground water positive.

Yes, if | Clay and sand, floodable 1/300-1/3000 years . Adapt construction to wet conditions.

Yes, and | Mostly sand, take into account higher groundwater levels and exploit opportunities for infiltration and water retention.

Image 37. The boundary conditions concerning water and soil >



3.2 spatial analysis | housing

Neighbourhoods | The Zwolle region has a varied housing landscape characterised by a mix of historic centres and predominantly 70s-neighbourhoods and smaller free-standing structured villages. It shows that for a long time, the settlements in this area were quite small and only in the seventies this area started to grow. The bigger cities like Zwolle, Kampen, Emmeloord, and Hoogeveen have a higher variation in neighbourhood types.



Image 38. Neighbourhood types (Klimaateffectatlas, 2023; Landelijke Voorziening Beelmateriaal, 2023)



3.2 spatial analysis | housing

Affordability and functional network | The southeastern part of the region is well connected by public and private transport, according to 'Accessibility indicator' (BBI) (CBS, PBL, RIVM, WUR, 2024). This part also has the most expensive housing per municipality (over 250,000 euros, which is considered affordable) (CBS, 2023). The less connected areas in the northwest of the region are more affordable. Here, the percentage of renting is on the governmental aim level (30% of all housing). Affordability in the Zwolle region, in comparison to the entire Netherlands, falls within the average range. However, when compared to the expensive housing market of the Randstad, which encompasses major metropolitan areas, the Zwolle region emerges as a relatively more affordable option. This comparison underscores the regional distinctions in housing affordability within the broader national context.

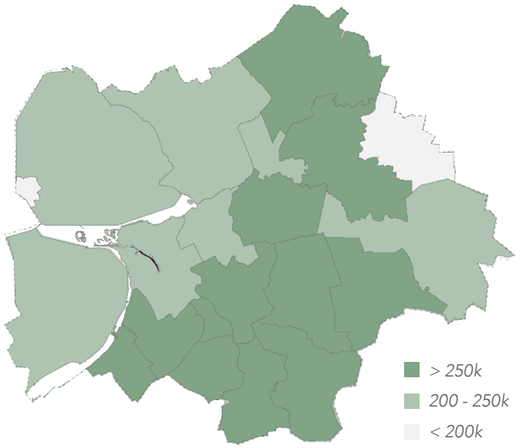


Image 39. Average house price per municipality (CBS, 2023)

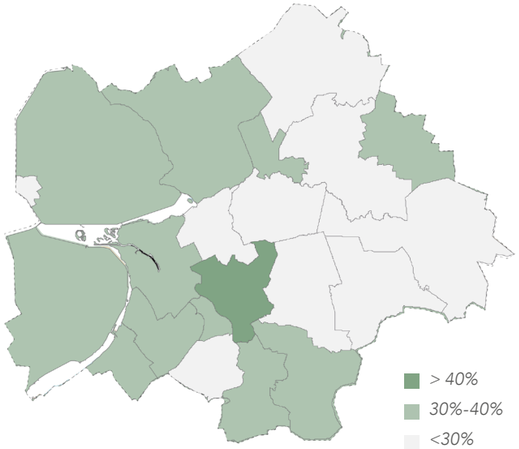


Image 40. Percentage renting per municipality (CBS, 2023)

Image 41. The functional netwerk of the region (Prorail and Nederlandse Rijkswegen, 2024) >



3.2 spatial analysis | housing

Adequacy | The average household size is over 1.5 persons in most areas. Smaller households are only common in the centres of the largest cities. Larger households are notably found on the outskirts of cities, particularly in the city of Urk and Kampen. In Zwolle, there is the highest number of small households (less than 1.5 persons), as well as in Hoogeveen and Meppel.



Urk. Photo by Mart Bolle

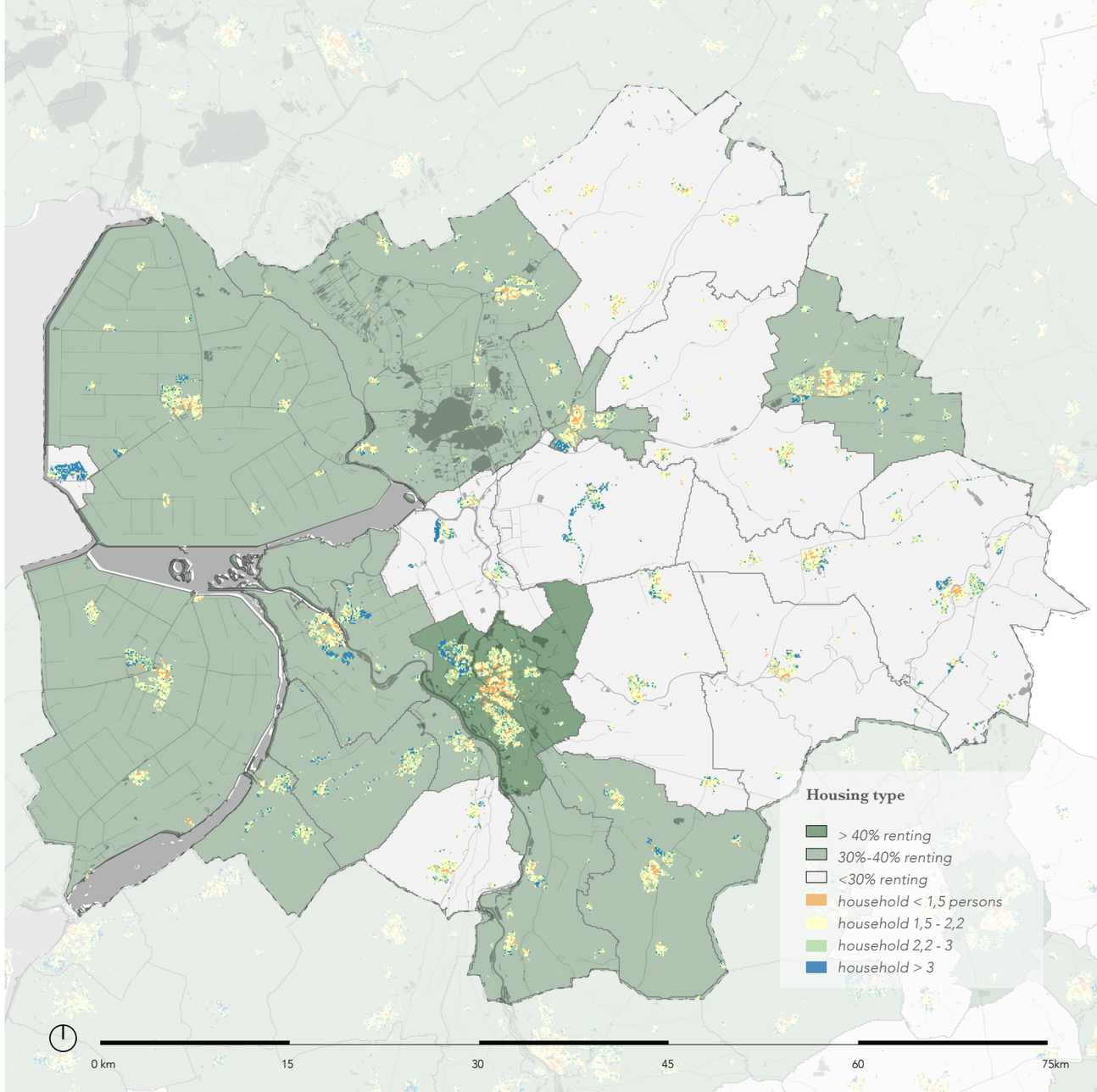


Stadshagen, Zwolle. Photo by Arvide



Holtenbroek, Zwolle. Photo by Alex Mulder

Image 42. The household size and percentage renting per municipality (CBS, 2023) >



3.2 spatial analysis | conclusion map

To conclude the spatial analysis, it can be said that the region is indeed 'a small Netherlands'. Most problems that the country is facing because of the huge modification of soil and water systems like subsidence and flood risks, are applicable here. The space scarcity is not as big as in the Randstad, as seen by the fact that the housing is still affordable. The renting percentage is also already at a quite high level. The household size, however, is larger than in other parts of the Netherlands and does not meet the demands of smaller household housing.

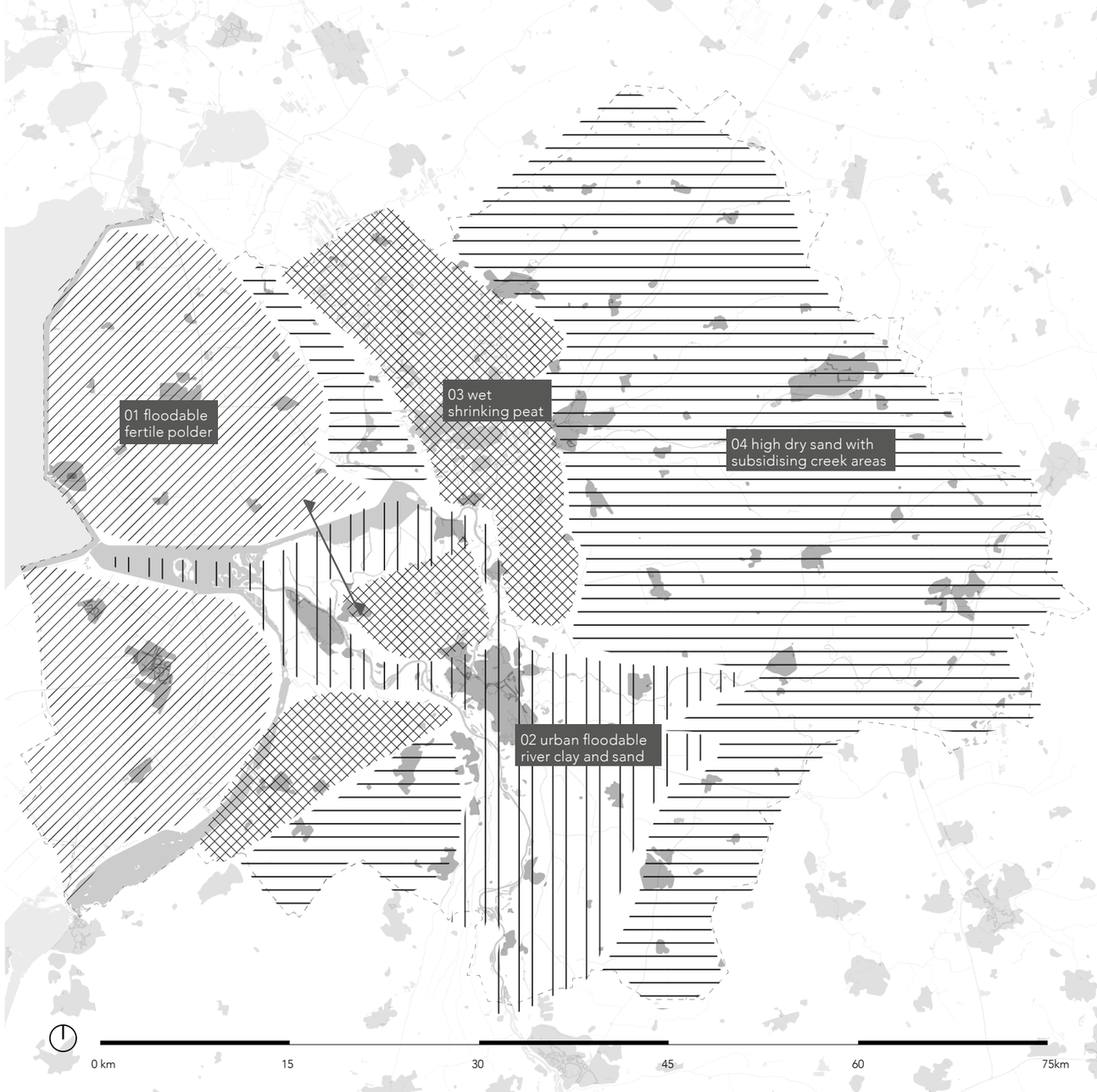
Understandably, the government is seeing a chance for this region to grow, but the fact that it wants to compete with the Randstad is reason to worry. When continuing in the same strategy as before, there will just be the same problems as in for example the Randstad: unaffordable housing that is built in unsafe places and therefore later not being able to get sold. This will be explained more in the next part of this chapter, the system analysis.

When the habitat doughnut is applied, four parts of the regions come across, strongly linked to soil type. Zone 1 is the Flevopolders, fertile clay soil with a high flood risk as this used to be the bottom of the Ijsselmeer. The housing is affordable and mixed but is badly connected. Zone two is the main Ijssel-Vecht-delta area with the larger cities Kampen and Zwolle. Safety risks are lower, but due to the intense use of the landscape by the cities, the ecological boundaries are all very much exceeded. Zone three is the shrinking peat areas. Luckily there are not many urban areas in this part, because the areas are under extremely high safety risk due to flood risk and subsidence. The current use of the landscape is causing it to emit carbon dioxide instead of taking it up. Zone four is the higher, dry sandy areas in the east. Here, there are a lot of opportunities to connect biodiverse areas. Housing is also well-connected but is now mostly expensive to buy housing.



Image 43. The housing doughnut applied to the region

Image 44. The combination of the housing, water, and soil system results four different zones >



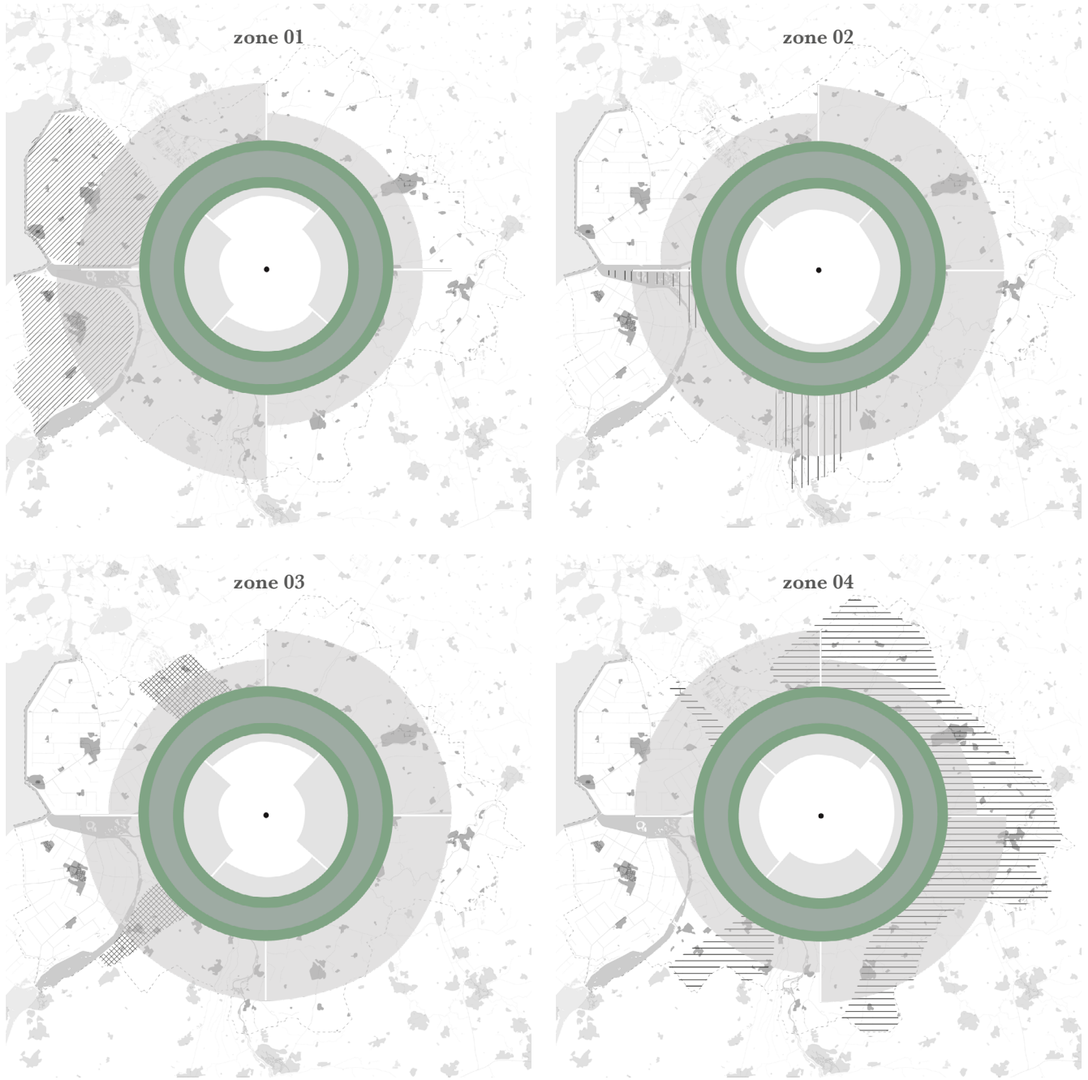


Image 45. The four zones.

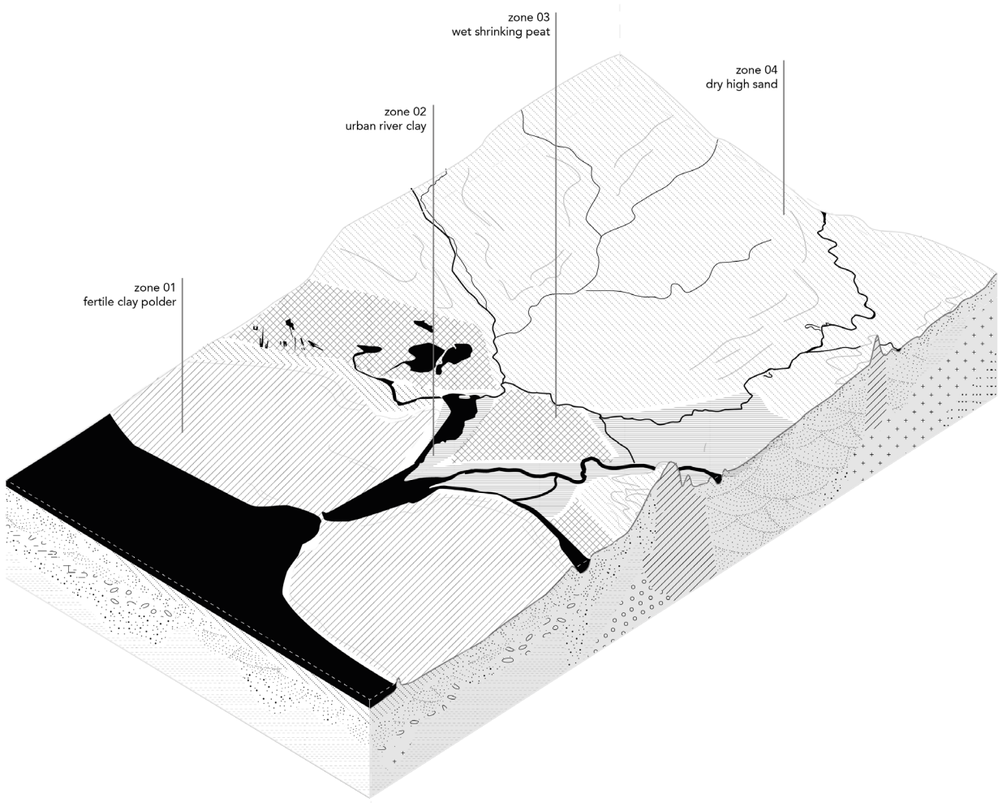


Image 46. The combination of the housing, water, and soil system results four different zones

3.3 diachronic analysis

This map from from the 17th century shows the difference in landscape. The darker grey is marked as ‘moeras’, a swampy landscape. The Veluwe ‘mountains’ are clearly visible, as well as the various small streams. In this paragraph, the history of the region will be explained in relation to the economy and the spatial layout.

It gives detailed descriptions of some places, for example about which lakes are dry during summer (“Somers meest drooch”, in old Dutch). The maker of the map, Nicolaas ten Have, was the director of the Latin School in Zwolle.



Image 47. Zwolle region in the 17th century (ten Have, 1690) >

3.3 diachronic analysis

Trade region | The history of the Zwolle region is marked by a dynamic interplay between natural geography, economic development, and urban expansion (Rutte & Abrahamse, 2013). Although the city of Zwolle is currently the most important in the region, that was not the case for a long time. in the 10th century, cities such as Vollenhove and Elburg were situated on the Zuiderzee, which made them very important (see image 48). Located at the mouth of the IJssel River, Kampen was an early part of the Hanseatic League in the Middle Ages, a trade network reaching all the way to Talinn. Hattem and Hasselt were also bigger than Zwolle for a long time. Zwolle was still a small settlement situated along the small river Aa and evolved into a regional market centre by the 12th century and was granted city rights in 1230. The map shows that most cities were built on sandy soils, right next to the peat (image 54). Sand provides a steady building ground, but the peat was closer to the rivers and the sea.

Zwolle city | Some say that the name Zwolle comes from the Latin word “suollu”, which means a higher-located area that stays dry during floods (Hanzestad Zwolle, n.d.). During the 13th and 14th centuries, Zwolle city experienced prosperity because of the strategic location at the nodes between rivers. In the centuries after, the city’s expansion was relatively gradual compared to other Dutch cities, but still Zwolle grew to be the most important regional city and a provincial capital. Infrastructure developments like the Willemsvaart Canal and railway connections further contributed to the city’s growth.

Habtitat doughnut | When the habitat doughnut is applied in history, it could be said that until roughly the 19th century, the region was living within the planetary boundaries. The social minimum, however, was not always sufficient, as a lot of people had to work extremely hard or had unsafe housing situations. People were mostly living an agricultural life. The Industrial Revolution in the 19th century was the starting point for exceeding ecological boundaries and social boundaries even more. Living conditions worsened as city populations exploded, leading to unsafe living situations.

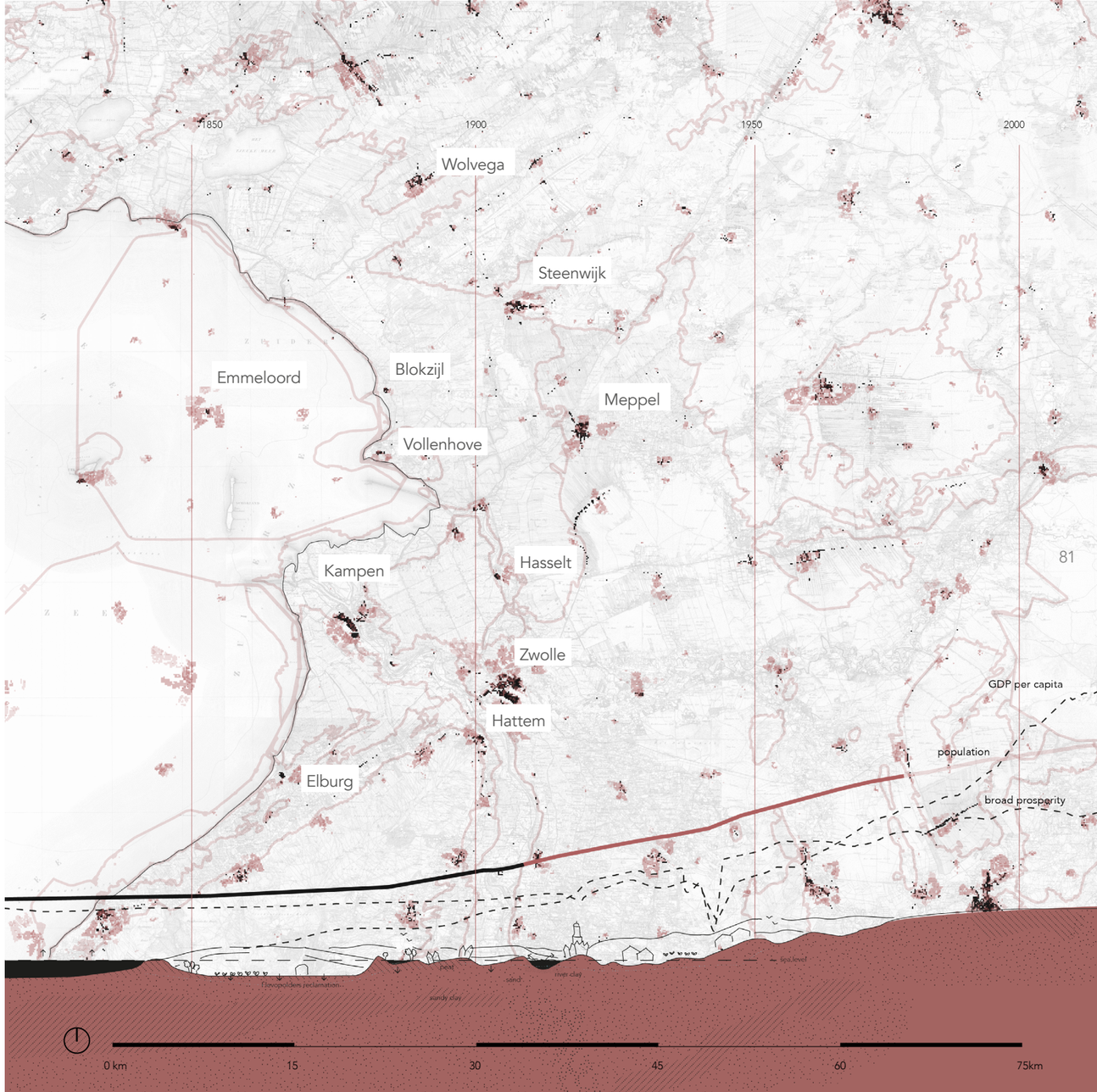


Image 48. History of the Zwolle region >

3.3 diachronic analysis

From sea to province | A major change for the Zwolle region was the construction of the Flevopolders. As early as the 17th century, there were plans to dam up the Zuiderzee, after centuries of devastating floods. The advantage of being able to reclaim more land was also seen at that time. When there was a need for fertile clay soil due to population growth, at the end of the 19th century, Cornelis Lely drew up a design. The plan, also known as the Zuiderzee Works, was adopted in 1918 (image 56).

A large part was implemented. The northeast polder was officially reclaimed in 1942 in the middle of the war. East Flevoland, now the middle part, where Dronten and Lelystad are located, was reclaimed in 1957 and South Flevoland in 1967 with Almere as largest city. For a long time, the plan was also to reclaim the current Markermeer, west of the first Flevopolders. This is why the coastline is straight; it was meant to be a bank of a canal to Amsterdam. Due to technological improvements in agriculture, no need for space for urban expansions, and action groups protesting further destruction of the Ijsselmeer, the last part was never reclaimed. The straightness of the coastline now makes the coast of Flevoland very vulnerable. In less than a century, the Zwolle region has gone from a coastal region to an inland region.



1918



1933 (Afsluitdijk realised, rest planned)



1967 (realised)



2024

Image 48. Development of the coastline (based on Palmboom, 2018)

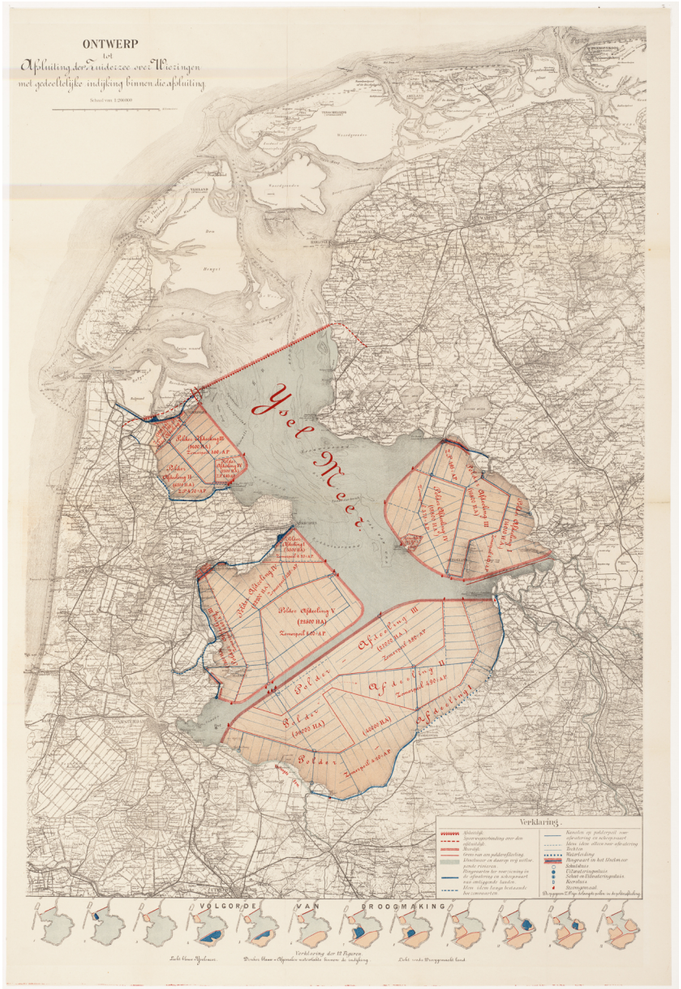


Image 49. Zuiderzeewerken by Cornelis Lely (1891). Zuiderzeecollectie



Image 50. Spatial structure outline for the Netherlands in 2000, in the Second Nota Spatial Planning (1966). New Town Institute

3.3 diachronic analysis | conclusion

In conclusion, the same shift from the landscape forming the economy to the economy forming the landscape as in the rest of the country also happened in the Zwolle region. The first cities were located at strategic locations on steady ground next to the sea or rivers. But when other transport modes than water became more prominent, slowly, people took the landscape layout into their own hands. Roads and train lines were constructed to enhance efficiency in the economy and later even a whole new province was made to have more useful land for agriculture.

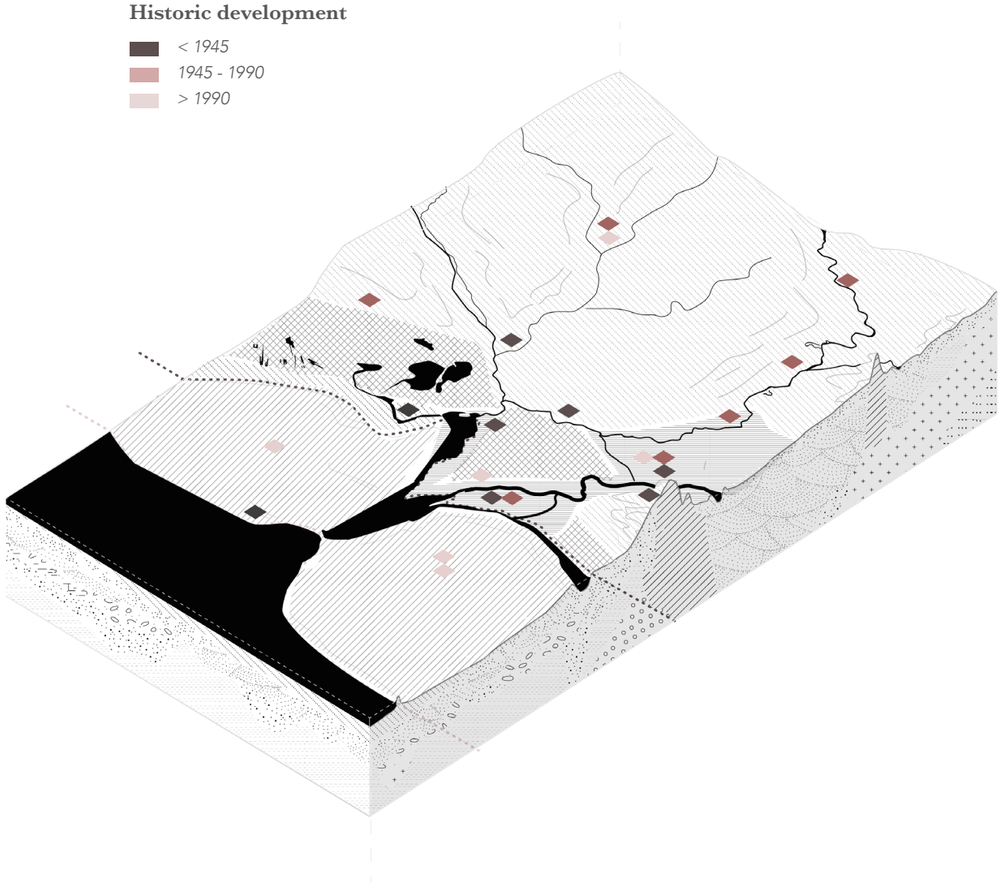


Image 51. Diachronic analysis on spatial analysis shows disconnection between the natural and urban system

3.4 systemic analysis

The spatial analysis showed how much the current situation is underscoring or overshooting the boundaries. In this part, the habitat system will be analysed, investigating why it is problematic and how it is contributing to underscoring and overshooting the boundaries. The term "habitat system" refers to the planning of the living environment, the process in which the components of the habitat doughnut are developed. The spatial planning of the region is investigated with housing as the entry point.

Urban growth machine | Urban development is the driver of economic growth, as well as the other way around (Savini, 2021). The process of urban expansion is contributing to economic growth, and the way the urban expansion is planned is also still promoting the same, polluting lifestyle. It creates a dependency on the market, focuses on high-value activities, stimulates agglomeration trickle-down thinking, and leads to private land speculation.

Rydin (2014) defines growth-dependent planning as a way of planning that assumes an ongoing demand for new development, which is needed to improve an area in social and environmental terms and, therefore is dependent on market-led developments for those benefits. This system aims at stakeholders that can pay an investment and therefore also fails to meet the needs of lower-income groups. This is the weakness of the trickle-down effect, where there is an assumption that by increasing the wealth of the rich, they will spend more money, which would trickle down throughout society, leading to more wealth for all. The real consequence is already wealthy groups gain more wealth in despite of less wealthy groups.

Savini (2021) identifies three main problems that make urban development an engine of growth. The first has to do with the ideology of land scarcity. In current economics, scarcity is seen as a driver of growth. If there is little of something, it becomes worth more, and so one can make more money from it. The real estate sector is seen as a smart investment area as a municipality, but also as a person (Woningmarkt NL, 2019). Land zoning provides the conditions under which scarcity and productivity are spatialised. It gives the local government a regulatory tool. Savini calls the current way of zoning 'Euclidian', referring to its rational and geometrical flat character (Savini, 2023). Parcelling of land stabilises market expectations regarding land property. It means that to be able for the system to work, more and more land needs to be bought and converted from other functions.

The second problem has to do with the land use organisations and the rights of properties. Zoning stabilises the property values, establishing a degree of certainty regarding future land values. Buying a piece of land locks the value in. After commercial property developers have driven up the land price and affected the affordability of housing and development costs, it also results in trade-offs between building quality, sustainability, and flexibility (Needham, 2016)

The third problem concerns the economic competition within regions. Urban areas compete with each other to attract human capital, jobs and green spaces and want to prevent negative functions like waste facilities, resulting in a perpetual growth machine. Specialising in functional qualities helps to boost this competition. This creates interdependencies and traps a city in permanent dependence on the overall region's economic performance and resource import. The whole region is therefore then dependent on expansion and other regions. This resulted in the Netherlands in the government investing in its 'winner regions' like Schiphol or the Port of Rotterdam, again wrongly promoting trickle-down economics.

These three problems are linkable to the four planetary boundaries we have already exceeded. Land conversion and biodiversity loss are a consequence of spatial expansion, concerning land scarcity and property rights. The ever-increasing construction industry and dependence on other cities and regions increases the problem of nitrogen and phosphorus emissions, and of course, that of climate change, most driven by CO2 emissions. In this system, it is not profitable to let room for nature if there is no profit model.

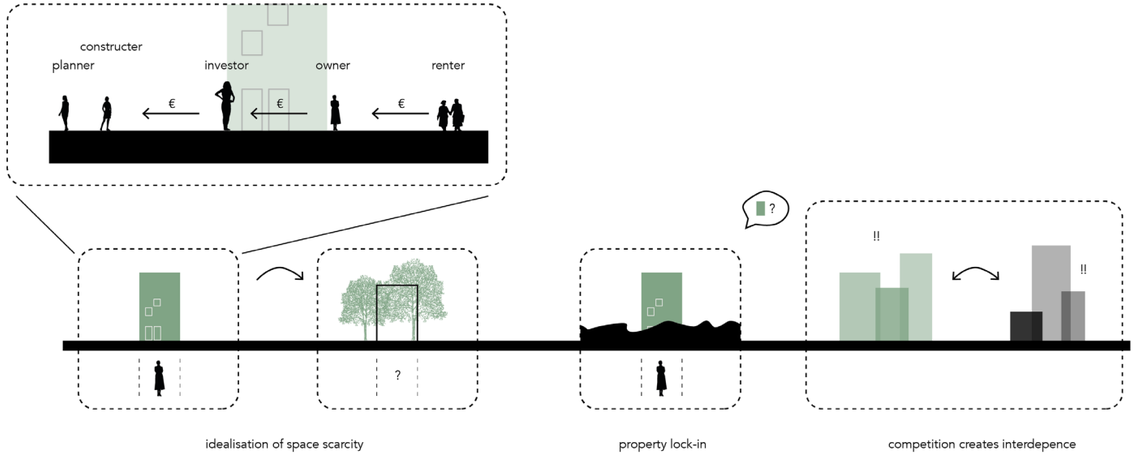


Image 52. Problems concerning urban development in the economic growth paradigm. Based on Savini (2021)

3.4 systemic analysis

Housing crisis | A large part of the problem in the housing crisis lies in the fact that there is not enough affordable housing. This could be called ironic, as the Netherlands has a long history in social housing. Around 1850, the first housing association was founded; individuals joined forces to build working-class housing. In 1901, the Woningwet (housing law) gave a boost to the development of more housing associations. A third of all housing in the Netherlands is social housing. Unfortunately, after the economic crisis in 2008, the right-wing government implemented actions to gain more government money and to stimulate privately owned housing (Witteman, 2021). The consensus was that it is better to have most of your population owning a house. One of those actions is the 'landlord levy' ('verhuurdersheffing' in Dutch). This required housing associations to pay a tax on the homes they rented out. The tax caused a significant financial burden on housing associations leading to a decade of financial constraints (van Maanen, 2023). The tight financial situation resulted in fewer new social housing being built. The landlord levy was abolished in 2023, but housing associations are still struggling to recover from the financial strain and get back to building new social housing at the same rate as before. The associations have very little power to bring about change, as they are relatively small players in the market with little financial capital.

Flooding and foundation damage due to subsidence are becoming more frequent, causing significant problems for homeowners in high-risk areas. They may struggle to sell their house or suffer huge financial losses. In such cases, a housing association system can be more flexible and responsive to changing circumstances, as the revenue generated from rent is reinvested into improving the housing stock.

An extremely important realisation is that there is not a lack of houses but of living space. The current housing supply does not fulfil the needs of the changing demography. Because of smaller households, more houses are needed, while changing the current housing stock could also supply (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022; van Maanen et al, 2023).

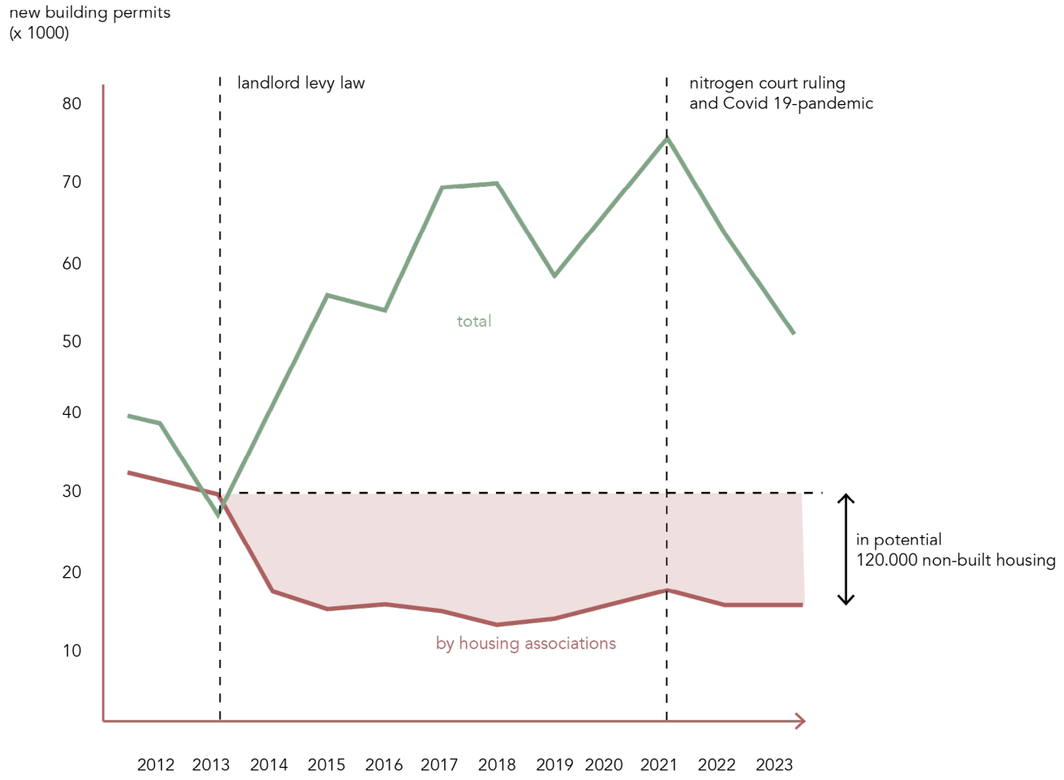


Image 53. Housing stock in the Netherlands. Modified from Van Manen (2023)

Stakeholder analysis | The housing crisis and systemic analysis are illustrated by a stakeholder analysis. The stakeholders are set out per category and on spatial scale in image 54. This creates four groups of stakeholders: players who make up the playing field, context setters who could have more power but are not using it, the crowd who stands by and watches, and subjects who make up the largest group but have little power. The crux is that to stay within social and ecological boundaries, we need to step away from a market-led system. Most of the subject group means well but relies on the players group to act on their wishes. The new law 'affordable rent' by the minister to ensure that rents go down, for example, will only cause more landlords to sell their properties because it is no longer profitable for them to rent out (Klumpenaar & König, 2024).

Intentions per stakeholder get visible when the type of interest, value, problem perception and capital is set out. The 'matter of concern' table (image XX) displays the interests, values, and problem perceptions of different stakeholders. Broadly speaking, stakeholders can be divided into three groups: those who want basic needs (blue), those who aim to develop within the current system (yellow) and those who seek to change the current situation (green). While there are some areas of overlap between these groups, there are also noticeable differences in values. Because of their different values, these groups perceive the problems in different ways as seen in the table. In the power-interest matrix, the power was analysed.

Bourdieu (1977) defined a difference in the forms of capital that form these powers. Economic capital refers to the possession of money. Social capital relates to having a network and knowing who to reach out to. Cultural capital means possessing knowledge and expertise in a specific field. Lastly, symbolic capital is all about prestige. For example, when a university or museum expresses an opinion on a topic, it carries more weight than that of a random organization. This is analysed in the last column of the table (image XX). The EU and Staatsbosbeheer have four forms of capital, so they could be a very powerful stakeholder. Real estate developers only have economic capital which in the current system creates a lot of power. Housing co-operatives only have social capital right now, while housing associations, that have been around longer, also have cultural power in the form of knowledge and experience.

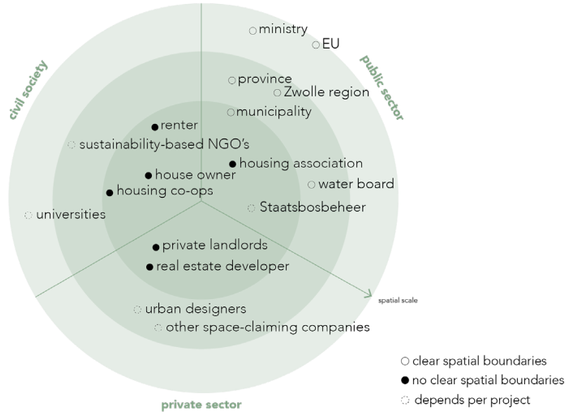


Image 54. Stakeholders

	stakeholder	interest	value	problem perception	capital: economic	capital: cultural	capital: symbolic	capital: social
public sector	European Union	protect ecosystem (climate neutrality, biodiversity, circular economy, clean energy)	sustainability, development	biodiversity loss, global warming	■	■	■	■
	Dutch government	"build, build, build", economic growth	growth, development	build in scarce space	■	■		
	province	spatial (sustainable) development, protection of certain areas	development	manage scarce space	■			
	regio	"green growth", balance between urban and rural, climate crisis	development	develop broad prosperity	■	■		
	municipality	competition	growth, development	manage scarce space	■			
	waterboard	protect watersystem	safety, responsibility	floods, too much or too little water, bad quality of water	■	■		■
	Staatsbosbeheer	protect certain nature areas	sustainability, responsibility	biodiversity loss	■	■	■	■
	housing associations	build and renovate (affordable) housing	being of service	contained by government		■		■
private sector	real estate developer	financial profit	financial growth	competing with others bc building in scarce space	■			
	private landlords	fiancial profit	financial growth	insurance problems because of flooding, subsidence etc	■			
	urban designers	spatial quality, financial profit	sustainability, development	design in scarce space		■	■	■
	other space-claiming companies	claim space for energy transition, circular economy, etc	sustainability, development	build in scarce space	■	■		■
civil society	renters	basic needs	security	unsafe because of flooding, subsidence, unsustainability				■
	house owners	basic needs	security	unsafe because of flooding and subsidence	■			■
	new inhabitants	build housing	security	unable to find a home	■			■
	housing co-operatives	build (affordable) housing	security, community	no affordable housing				■
	sustainability-based NGO's	protect and develop sustainabla areas	sustainability, development	biodiversity loss, global warming		■	■	■
	universities	develop evidence-based solutions	sustainability, responsibility	biodiversity loss, global warming, social problems		■	■	■

Image 55. Stakeholder interests, values, problem perceptions and capital forms

Zwolle city | The city of Zwolle has a few important roles in the region, but also in the broader national context. The city lies at the thinnest piece of land in the Ijssel-Vecht delta, is part of the city ring around the Randstad, is the main regional city in the region, and lastly also forms the connection between the Randstad in the west and the north-eastern part of the country. This all resulted in the government choosing the region as a growth region, meaning it has to build 50.000 houses before 2040 (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023): "The focus is on accommodating the development task (housing and business), with greenery growing with it, preserving the current spatial quality based on a climate-adaptive urbanisation strategy."

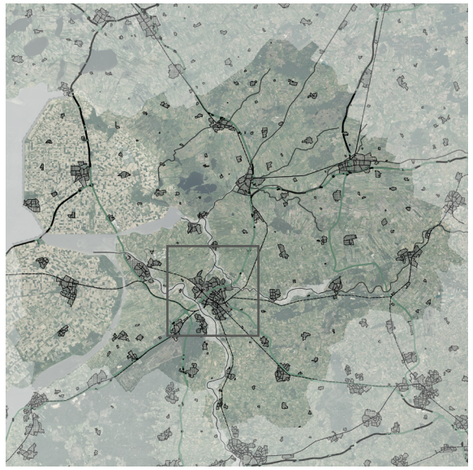


Image 56. The city of Zwolle in the region

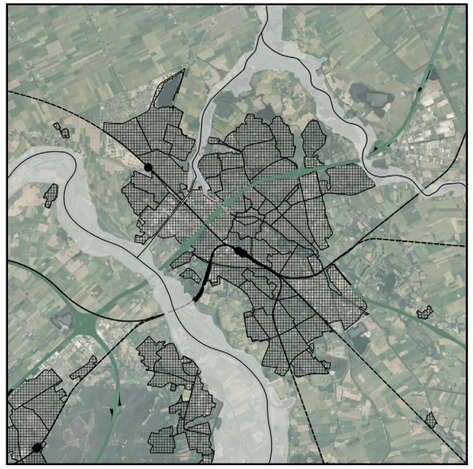
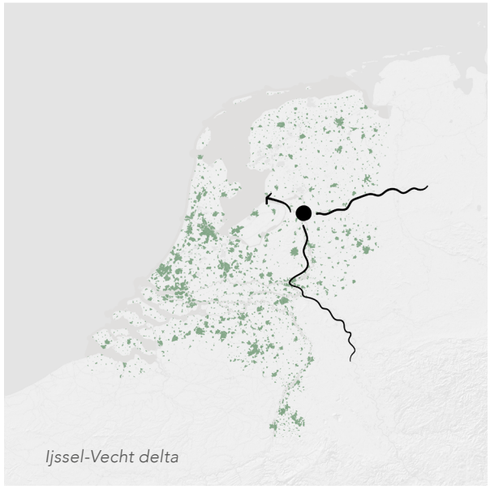
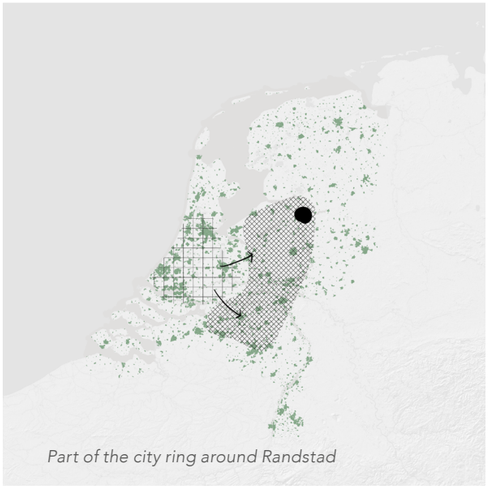
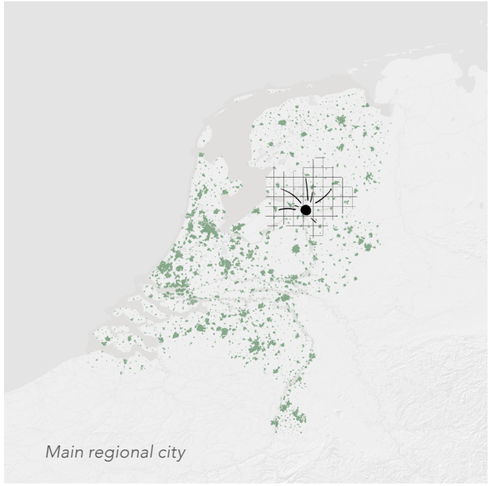


Image 57. Zwolle and Kampen







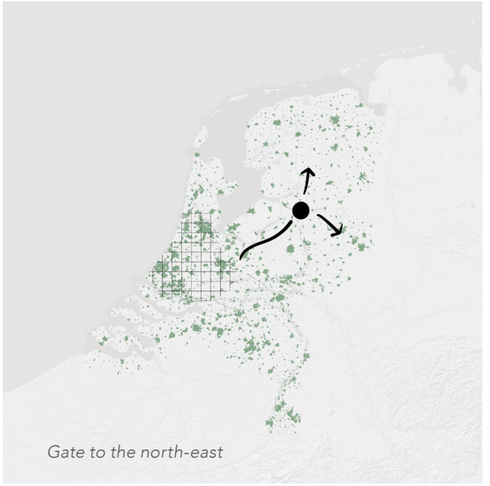


Image 58. Zwolle city has different roles (Snel, 2024)

3.4 systemic analysis | conclusion

The systemic analysis delved into the problematic nature of the urban growth machine, its players, and the relationships between stakeholders. The examination of the urban growth machine illuminated its role in driving economic growth and perpetuating a polluting lifestyle. Growth-dependent planning, as described by Rydin (2014), is revealed to be market-dependent, failing to address the needs of lower-income groups and resulting in wealth concentration among already wealthy groups of society. Besides social boundaries, it was identified that growth-dependent planning can be linked to exceeding ecological boundaries. Savini (2021) identified three main problems: the ideology of land scarcity, stabilisation of property values through zoning, and economic competition between regions, leading to a perpetual growth machine.

The connection to the Zwolle region highlights the challenges posed by the increasing competition with the Randstad. The housing crisis is also discussed, emphasising the adverse impact of policy changes, such as the landlord levy, on the ability of housing associations to address the shortage of affordable housing. The consequences of these policies are felt, particularly in the flexibility and responsiveness of the housing system.

Moving to the players in the urban growth machine, the power dynamics in spatial planning become apparent through an analysis of stakeholders. The shift towards market-driven housing development, especially since the 1980s, has marginalised the role of the government. The power dynamic reveals that despite the growing influence of civil society, the market largely dictates the direction of housing development.

The market holds the power in determining where people can find safe and adequate homes. The government's strategy is dependent on the market, and safety cannot be guaranteed as much as it used to be. This will affect affordability and eventually result in only wealthy individuals being able to find a secure place to live. As a result, ecological issues will be left for someone else to fix. It is crucial to realise that the natural system connects the inner and outer circles of the framework, and it cannot be ignored any longer.

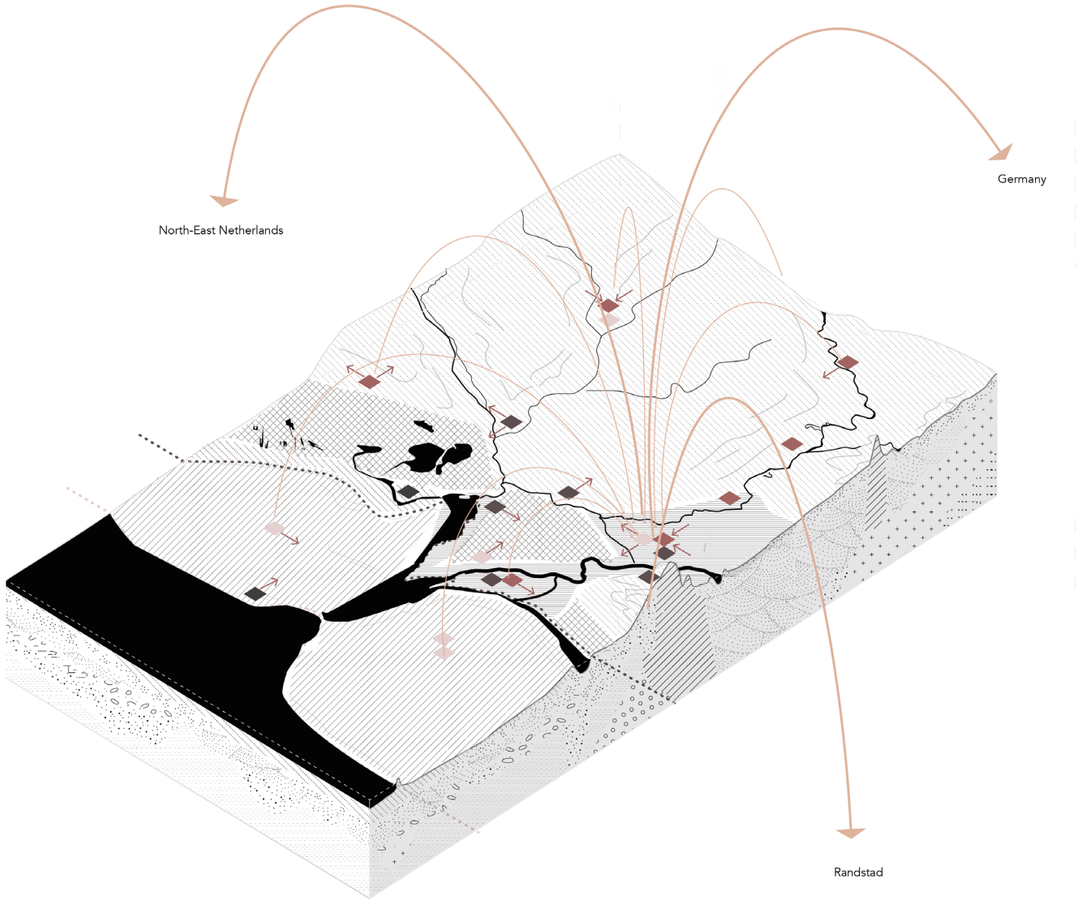


Image 59. System analysis shows dependencies within and outside the region

3.5 chapter conclusion

The leading sub-question in this chapter was: What are the social and ecological boundaries in which the housing system should lie and how does the Zwolle region align?

In conclusion, the Zwolle region has a good situation in terms of social foundations, particularly in affordability and functional network accessibility. However, challenges arise in the boundaries of cultural adequacy, particularly concerning housing demands for larger households. Safety emerges as a critical factor influencing more than half of the region, with some aspects improvable through relatively easy interventions, such as addressing drought, while others, like flood risk, pose more formidable challenges.

The discussion about safety leads to ecological boundaries, unveiling the interplay between safety concerns and biodiversity. The land conversion practices in the region are not in line with the boundaries, as only a small portion of the land meets the natural land criteria. The dominance of agriculture is the main factor to this problem. Therefore, it is necessary to re-evaluate land use practices, also to ensure they align to maintain the integrity of the biosphere. The region faces a dilemma in reconciling agricultural practices with ecological sustainability. Climate change, while not as severe as anticipated, remains a concern, mainly when there are 50.000 new houses built with new inhabitants.

Beyond quantitative metrics, the underlying issue lies in a fundamental shift in mindset. Addressing these nuanced challenges demands a holistic approach, not just in numbers but in reshaping perspectives towards a more sustainable and harmonious coexistence with the environment.

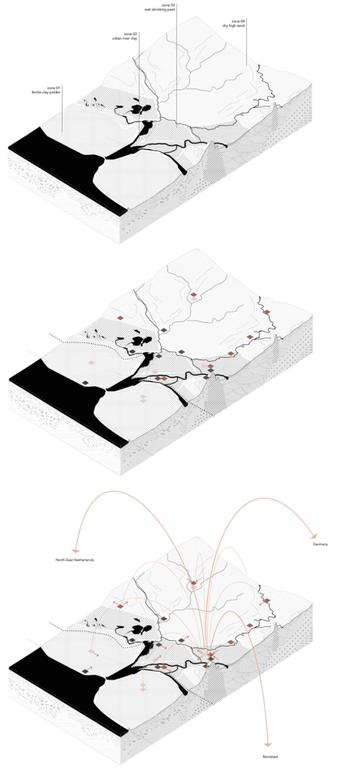


Image 60. Concluding diagrams

Image 61. Extremely high water levels after heavy rainfall in December 2023. Photo by Anita Pantus >

04
the alternative

What leading trends and values need to form alternative growth-based futures in the Zwolle region?

Height map of the Vecht valley (AHN, 2024)

Click here to go back to the table of contents.

4.1 values

The context of the understood problem is explained in chapter one. In chapter two, the project challenge is described: finding a convincing (spatial) narrative towards a future within social and ecological boundaries and using design to communicate and evaluate those. In chapter three the current ecological and social situation is explained using the habitat doughnut framework and several spatial tools. In this chapter, alternatives are researched and in the next chapter, the imagination will be set out.

To research an alternative implies transitioning. To transition, it is necessary to focus on frontrunners: elements within a current system that are already indicating a new paradigm (Rotmans & Loorbach, 2009). Current and planned actions can be researched to find these, while also understanding the sentiments of local inhabitants and policymakers. This simplifies the adaptation of the transition. It is crucial to find shared values in those sentiments to ensure the coevolution of different developments across multiple domains and scales (Rotmans et al., 2001).

In Limits to Growth (1972), Donella Meadows and her colleagues state that there are different levels of human concerns, represented in a space-time dimension (see image 62). Most people's worries lie in the lower left-hand corner of the graph: problems close to them in space and time (Meadows et al., 1972). The further away, the less people are concerned. The problems our society is facing, however, lie in the upper right corner. The ecological ceiling parameters of the habitat doughnut, established in the previous chapter, are also located there. The social foundation parameters lie closer to the lower left corner. A vision based on shared values can be used to connect concerns of different space and time dimensions, ensuring it represents a solution direction for all concerns. Matching the end of the world to the end of the week.

Values are defined as "the beliefs people have, especially about what is right and wrong and what is most important in life, that control their behaviour" (Cambridge University Press, 2024). They can be found in policies, news articles, and design visions and are always consciously or unconsciously present (Rocco et al., 2022).

A **trend** is defined as "a general development or change in a situation or in the way that people are behaving" (Cambridge University Press, 2024). Trends are often more explicit than values – but can be value-driven – and are comparable to what Rotmans and Loorbach (2009) call frontrunners. A trend is, for example, collective forms of housing developments.

In this chapter, the values are discussed using policy documents and news articles. Conversations with local inhabitants and policymakers reveal a deeper understanding of the values. In the second part of the chapter, the ongoing translation of the values is investigated; the frontrunners, or trends. The third and last part will conclude this value research into the base for four alternative growths.

The sub-question leading this chapter is "What trends and values need to form an alternative growth in the Zwolle region?"

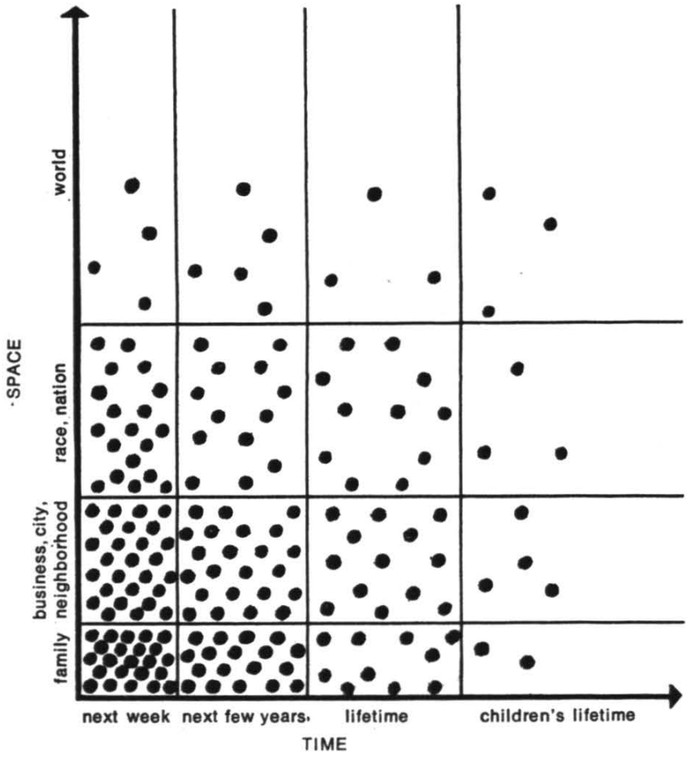


Image 62. People's concerns in a space-time graph (Meadows et al., 1972)

4.1 values | policies

The highest spatial planning document in spatial and legal terms in the Netherlands is the NOVI (national environment vision). All provinces and municipalities must make their own vision in which they draw upon the NOVI. The NOVI consists of two main programs; the program Beautiful Netherlands, to maintain quality in the spatial layout of the country and the NOVEX, with regional-specific programs like Zwolle region. In image XX, the relationship between the policy documents is illustrated. What prevails is that there is a large number of documents, some of which also overlap. These are not all policies, but rather the most important policies related to how people want to live.

Program 'Beautiful Netherlands' looks thirty years ahead and has spatial quality at its core. There are four urgencies and three principles. The urgencies are sustainable economic growth, space for climate change and energy transition, resilient cities and regions and future-proof development of rural regions. The main principles 'combined instead of singular land use', 'identity central', and 'prevent aversion' (to other regions or generations), are based on Vitrivius' three pillars: experience value, functional value, and future value (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2023a).

Main values: pride, responsibility.

Under the NOVI also falls the national dwelling and construction agenda, which has three goals: enough housing, affordable housing, and qualitative housing. This is set out in six sub-programs with separate goals for, for example, sustainable built environment, or social safety.

Main values: safety, pride.

Most provincial visions revolve around the values of connection, development, sustainability, and 'noaberschap' (caring about your neighbours). The safety values are more central in the programs about water and nature. They are fully covered in the 'National Delta program. The main principles of the Delta program are protection against floods, enough sweet water, and climate-proof spatial arrangement. Advice the Delta commissioner gives in the program is to involve citizens or to connect water challenges to other challenges, for example.

Main values: safety, responsibility.

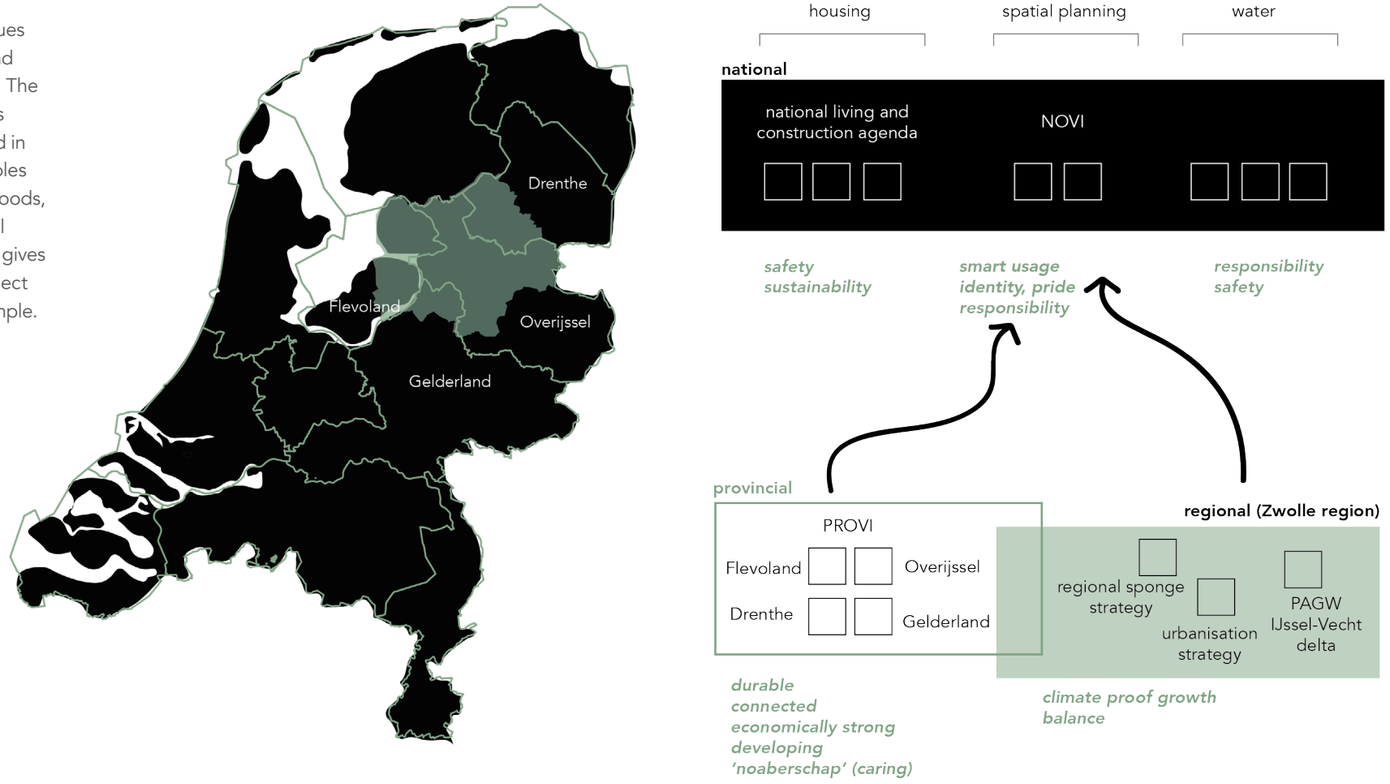


Image 63. Policy framework with the most common values in green italics.

4.1 values | public debate

There is a growing tendency in the public debate to link security to responsibility. Three main banks in the Netherlands published a report about the financial consequences of climate change for housing (Phlippen et al., 2023). In newspapers, the floodings of December 2023 sparked debates about stricter policies and legislation for the water and soil system (Kleinhans et al, 2023; Havermans, 2024a). The National Advisor on the Living Environment and the Delta Commissioner, both key independent advisers to the government, suggest new ways of living with the natural system (Havermans, 2024b; van Noort, 2024). The similarity between all these statements is the proposition that a change is needed because the current way of doing things is a threat to all values; safety, responsibility, and the Dutch 'spatial division' pride.

Several seminars about looking at the future of our space and our cities have an alternative lens as their main theme. Urbanists have come to realise that their profession is becoming increasingly vital as multiple challenges are emerging in the spatial context. The urban question is becoming an ecological question. The ecological side is also realising it cannot reach its goals without behavioural change. Therefore, the ecological problem is also turning into an urban one. We need to manage our space in a way that addresses both issues.

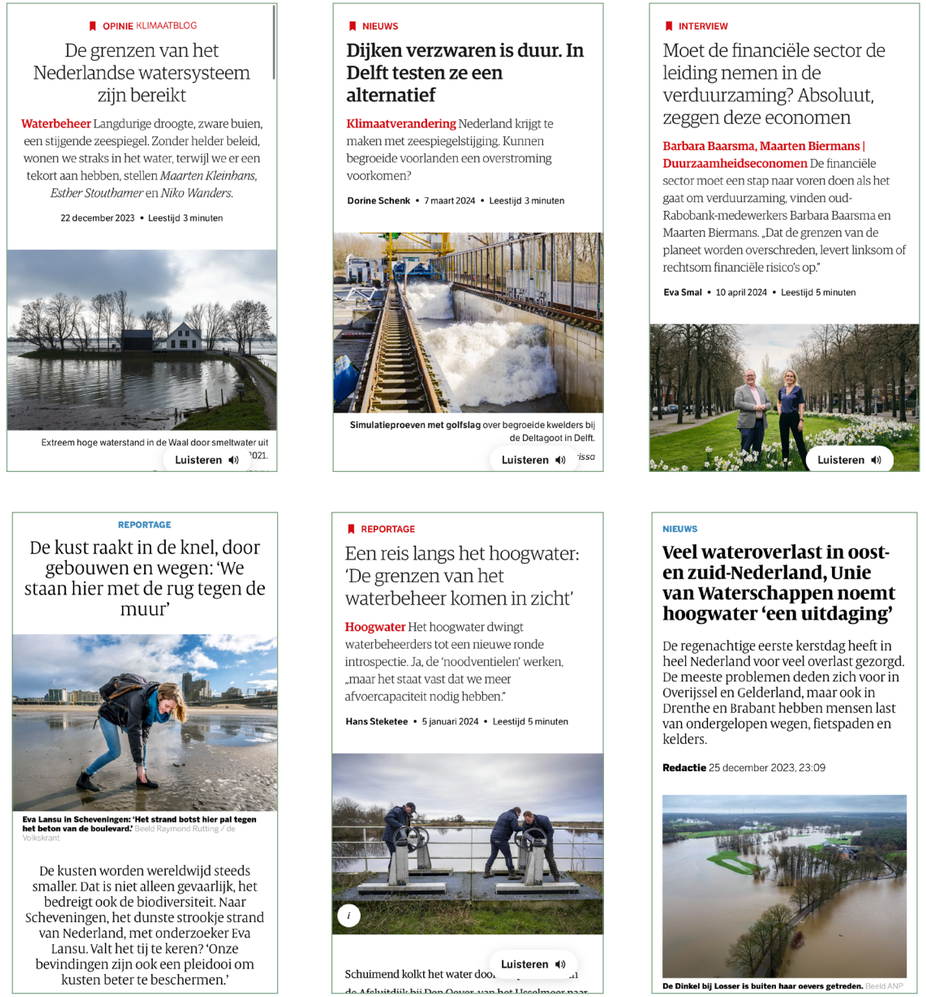


Image 64. News and opinion articles in Dutch newspapers about the limits of the water system and the threats it brings



Image 65. 'Het oog op de toekomst'-seminar in 2023 (TU Delft)



Image 66. Housing protest in 2023 (ANP)

4.1 values | soft stories

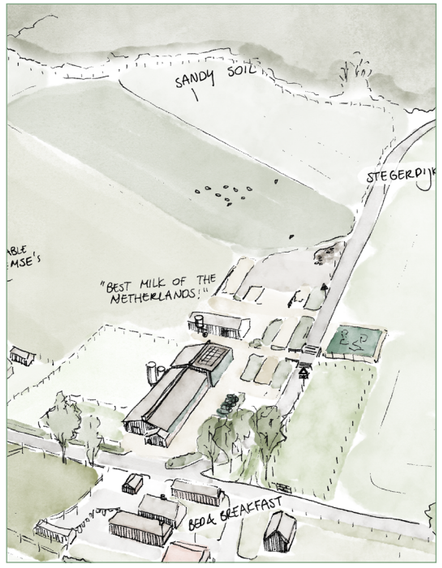
Soft stories are introduced to illustrate the previously established values. These are the outcomes of qualitative research in the region. Several interviews were done where inhabitants were asked about their living situation. They were asked about their daily urban system and their reasons to choose to live in this place. There were three deep interviews and several street interviews. Three main values are concluded: safety, pride, and responsibility. They are described with soft stories. A comprehensive atlas of the soft stories can be found in the appendix.

Johanna and Cor (64 and 65), sand



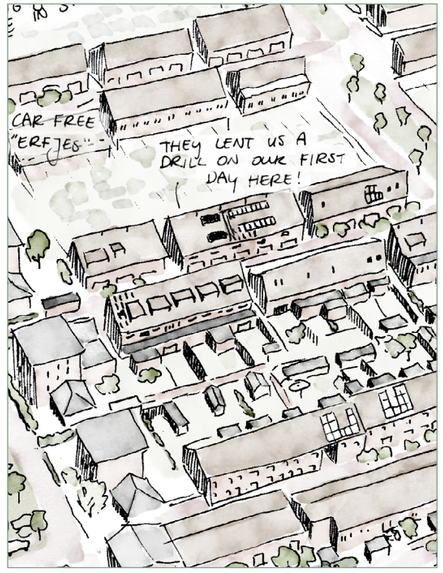
A little guiltily, Johanna explains that they indeed live way too big. "But it is like that in the whole street! We know all our neighbours; we have an active group chat. [...] There is a lot of additional construction in the city, Stadshagen is being expanded and in the city centre, for example, old warehouses are being converted. "I hope to continue living here for as long as possible. I know there are old people's homes, but of course, because of the government cuts, they have all been cut back too, so I don't want to move into those either if it's not necessary yet." Main values: pride, responsibility.

Pieter (51), clay and sand



Pieter sighs. "I just don't get how we get forced to do all these things, change our lives completely, sell our family heritage business, but all these people buying our harvest and products in the supermarket don't." Main values: pride, safety

Thomas and Meike (both 29), peat and clay



"At one point we were negotiating with our own real estate agent. He declared us crazy that we wanted to overbid that much. In the end, we didn't get the house because someone overbid us..." Main values: safety.

4.2 trends

The previous part illustrated that there are shared values present in the region. This is often the case in society, but the perception can differ per person, states the Vision Team Wonen of the TU Delft (van Bortel et al., 2024). The term 'collectivity', for example, embeds both 'community' and 'diversity', and these terms could be used by a politician from every party, left to right. 'Safety' can mean heightening dikes or moving away from flood-prone regions. It illustrates that finding shared values is not enough. In his book about the concept of truth, Wijnberg (2023) talks about truth as being a constant but flexible concept that we all share. The stories we tell each other are the output of implicitly shared truth. Trends can be seen as apparent commonly accepted outputs of shared values.

That is where designers can play a vital role. Illustrating outputs of shared values and making the differences explicit. Designers can turn the question of 'what do people want' into 'how do we make people want this', as Fransje Hooimeier (2024) stated. The most prevailing shared values that were found were safety, pride, and responsibility. Per value, a few trends are shown.

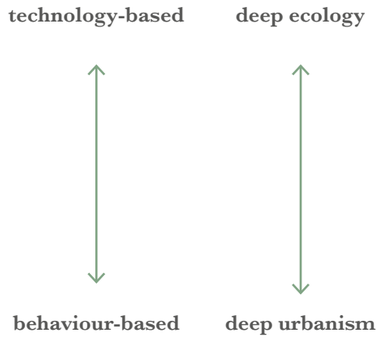
Responsibility | A trend in finding solutions for the ecological crisis in the Netherlands is for example the transition from a linear to a circular economy. More efficient and longer use of raw materials is one of the main ways for the government to reduce greenhouse gas emissions. This trend forms an output of the responsibility value. In "Region Deals", the government gives financial aid to regions to incentivise qualitative development (Rijksoverheid, n.d.). The Zwolle Region got 30 million euros and invested most of it in circular economy projects (image XX). Another trend to execute responsibility, is to choose to live smaller or in a more collective form, so that there is more space for other urgencies. A trend of housing co-operations is happening. This explains a responsibility to other people but also to the natural system.

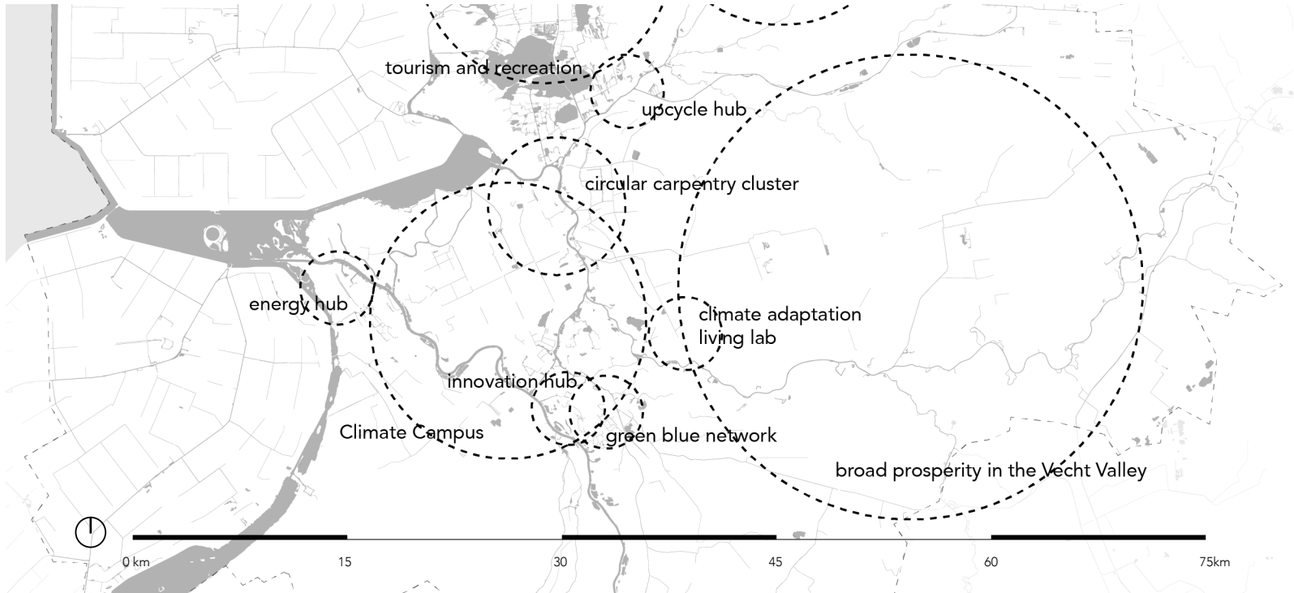
Pride | The value pride could be explained through being proud of the Dutch culture of living with water. The possibilities are explored of living with water, like floating cities or building in low polders. Design offices like PosadMaxwan and MVRDV see it as a challenge to find solutions and feel encouraged by the Dutch culture of the malleability of the landscape. Another way of being proud is through local identity and cultural-historical values. In a recent article by the State Department of Cultural Heritage (RCE), Knegtel (2024) writes about using old dike structures for future flood management and how this can thereby count on more support from local people.

Safety | Safety can be perceived in various ways. For centuries, water boards have been managing the water in the Netherlands by consistently strengthening dikes to keep the country safe. However, a trend of questioning the system of forever strengthening dikes is evolving as it will cost billions more in the future, according to Hoogstad (2023). A new approach could be implemented in which more water is allowed in.

Image 67. Existing regio deal projects; state investments in circular economy because of the NOVEX-status. Mostly around the Ijssel-Vecht delta (Regio Zwolle, 2024) >

Safety can also be perceived in economic terms as the fear of major economic problems due to the climate crisis is growing (article Papa, 2024).
All values have trends that explain the value differently. There is often even a duality. Do you go for a large or small scale of security? Do you choose technology, or do you let it depend on behavioural change? Are you responsible for the generations after you, or for the people and animals around you right now? Are you proud of your city, or of the landscape around it? These dualities are summarised into two parameters to define the different futures based on values and trends. The first parameter is the thing to rely on: technology-based or behaviour-based. The second parameter is the interpretation of the problem: urban crisis or ecological crisis?





4.3 alternative futures

The goal of this chapter is to find how the previously found values and trends can be used to steer an alternative growth-based future. A conscious decision is made not to call these futures scenarios. The word future illustrates an outlook, or prospect, based on determinations. Dirk Sijmons distinguishes between empirical and normative scenarios, during a seminar on spatial cohesion in transition challenges organised by the PBL (personal communication, March 27, 2024). This could also be seen as a process of coming to normative scenarios: an analysis **monitors** the current situation, trends **forecast** the future if nothing changes, problems are integrated to **experiment** with wishes of all stakeholders, and these phases are combined in **scenarios** (see the red arrow in image 68).

A similar process is done in this project. The distinction between the 'now' and the 'future', however, is more ambiguous. First, boundaries were set to set a goal on what we should want. Then the situation was analysed to monitor how the current situation is doing on those boundaries. The values and trends forecasted what would happen, but through imagination, the finish is now to change the wishes, only to start the process all over again (see the green arrow in image 60). This is why the four alternative growth-based futures are called futures; a mixed product of monitoring, forecasting, researching and scenario building.

The four futures presented on page 113 represent an alternative to an economic growth- and Anthropocene-based worldview. The parameters are explained on the previous page. The horizontal axis forms the problem perception, ranging from deep ecology to deep urbanism, comparable to the upper right and the lower left corners of the space-time graph of the Club of Rome on page 101. Being on one side of the axis does not mean that the other problems do not matter but it means that the common value is sought from that side. In Innovative Growth, for example, the scarcity of sufficient housing is seen as the main problem, but to also make space for water, solutions like floating streets are found. The vertical axis forms the solution perception, ranging from technology to behaviour. In practice, there will again be no question of either-or. We will continue to depend on technological innovations as well as behaviour change, as Delta Commissioner Co Verdaas also notes (Havermans, 2024b).

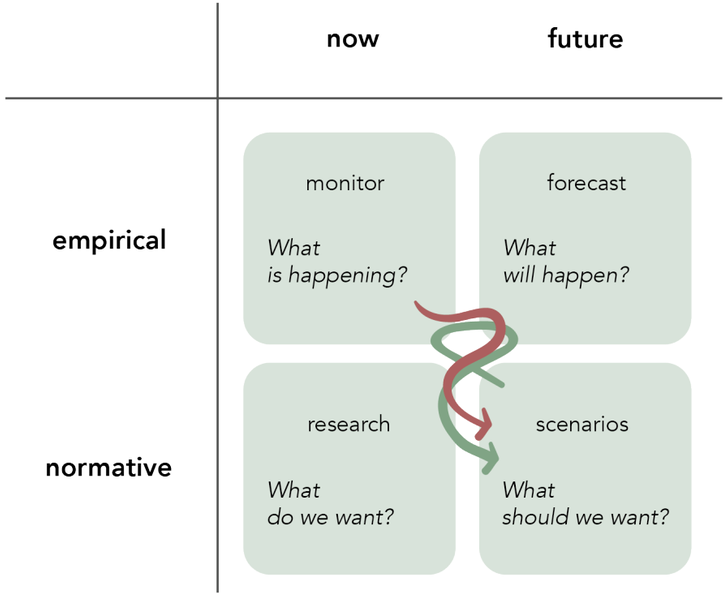


Image 68. Actions in a (scenario) design process. Based on Sijmons (personal communication, March 27, 2024)

4.3 alternative futures

The four different futures are all based on an alternative growth: circular growth, innovative growth, ecological growth, and societal growth.

In **circular growth**, responsibility and pride form the main values. A tendency of always finding a way - but now finding it in a new way - is central. The initiatives of the Region Deal illustrate this: the government invests millions of euros in the region to incentivise the circular economy in the region. In **innovative growth**, this tendency is expanded, but the responsibility fades towards the short-term instead of the long-term. Space scarcity does not exist, because technological advances ensure we can still live everywhere. Posad Maxwan and MVRDV designed good examples of living with water. Space scarcity in **societal growth** is tackled by rethinking the way we use our urban space; sharing and stacking are the main trends and housing co-operatives thrive, like De Warren or De Meent in Amsterdam. Responsibility and safety are central values. In **ecological growth**, the rethinking is taken to an extreme. Safety does not only apply to people and their children but to all living things surrounding them. The trend of giving more rights to nature, like the Whanganui River in New Zealand, which now has equal rights to human persons, could hugely responsibility-based future.

Trend examples of each future can be found in the appendix.



Image 69. The four futures based on essential values and trends to live within social and ecological boundaries >

4.4 chapter conclusion

The sub-question leading this chapter was: "What trends and values need to form an alternative growth in the Zwolle region?"

The chapter began by examining the underlying values that shape understanding of the problem and guide aspirations for the future. Through a review of national and regional policy documents, news articles, and conversations with local inhabitants and policymakers, shared values of pride, responsibility and safety were identified.

Leading trends within the current system can indicate potential pathways towards a new paradigm. These frontrunners, such as the transition to a circular economy and the emergence of collective housing developments, form the explication of values in different ways. Soft stories, collected from qualitative research, provided insight into how these values and trends manifest in the experience of inhabitants. The stories highlighted the interconnectedness and unconsciousness of all values, as well as the duality in the explanation of values.

Building upon these duality in values and trends, four alternative growth-based futures for the Zwolle region were established. It leads to four different types of growth: circular, innovative, societal, and ecological. These are all different explications of shared values found earlier in the chapter. In circular growth, a commitment to finding new technological solutions while maintaining a sence of responsibility towards the environment is made. Innovative growth pushes the boundaries of technological advancement to battle space scarcity and environmental challenges in the short term. Societal growth recognises the importance of rethinking urban space through behavioural changes. In ecological growth the well-being of all living beings and advocating for the rights of nature alongside those of humans is prioritised.



Image 70. The 'Kraanbolwerk' project, on the edge of Zwolle's historic centre, is built on a floodable semi-underground garage. Photo by Dieuwertje Bravenboer, via König (2024).

05
the imagination

How are the alternative growth futures imagined and evaluated?



Height map of the old coastline, now east-Flevoland (AHN, 2024)

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5.1 alternative futures through scales

In the previous chapter, four alternative growth-based futures were identified that are based on shared values in society. These futures offer an alternative to the current economic growth-based future that disregards social and ecological boundaries. The values of safety, pride, and responsibility form the foundation of these futures. Since the Zwolle region – like all regions – is not uniform in terms of its social and environmental issues, an actual strategy would be location-specific. This chapter investigates each of the alternative growth futures at different scales and illustrates them using regional maps, systemic diagrams, and soft stories. It will show how strategies, certain concepts that follow existing trends, work on different scales.

The second part of the chapter evaluates the four futures using various methods. The habitat doughnut as established in Chapter 3 is used, as well as a systemic comparison, a zoom-in design, and a qualitative reflection, followed by a positioning of the futures to policy documents.

This evaluation will form the basis for the transition recommendations, detailed in the chapter's last part. The sub-question for this chapter is as follows: "How are the different futures imagined and evaluated?"

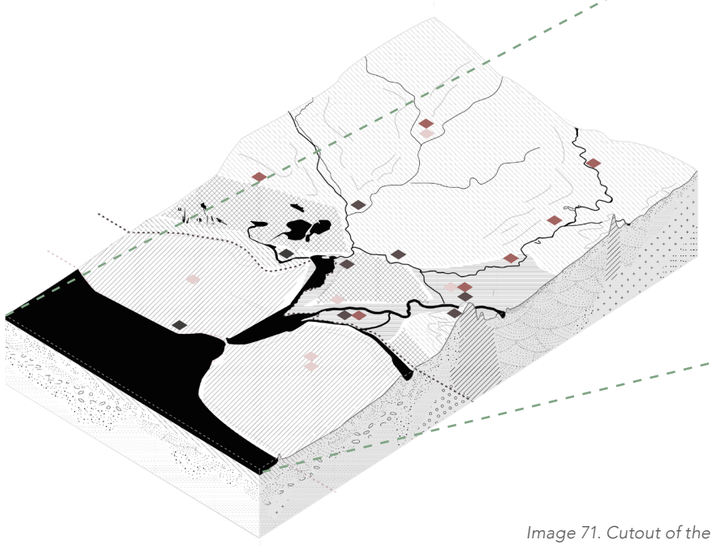


Image 71. Cutout of the region

Image 72. The region with the cutout and location of the three soft stories >



5.1 alternative futures through scales

One of the soft stories takes place near the city centre of Zwolle. Johanna and Cor have been living in the Westerstraat for over 20 years. The neighbourhood, in between the station and the city centre, is a socially wealthy neighbourhood with large houses from the 30s. The imaginations will show changes in the everyday surroundings of Johanna and Cor.

What also will be shown is what gets broken down and what gets built up. In a transition, there is always a pattern of breakdown and a pattern of build-up, together forming the X-curve (see image 73) (DRIFT, 2022). The breakdown is the system that has been functioning for a long time, but is now causing problems, like the property-based housing system. The build-up is an alternative way, often already showing itself in small experiments. This transition will be elaborated on in the last part of this chapter.

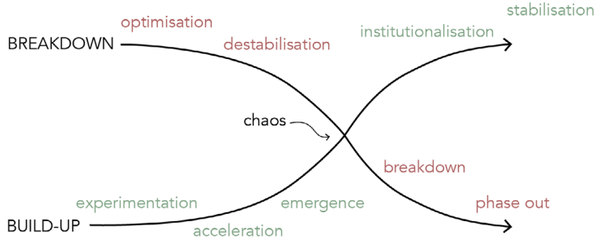


Image 73. The X-curve.

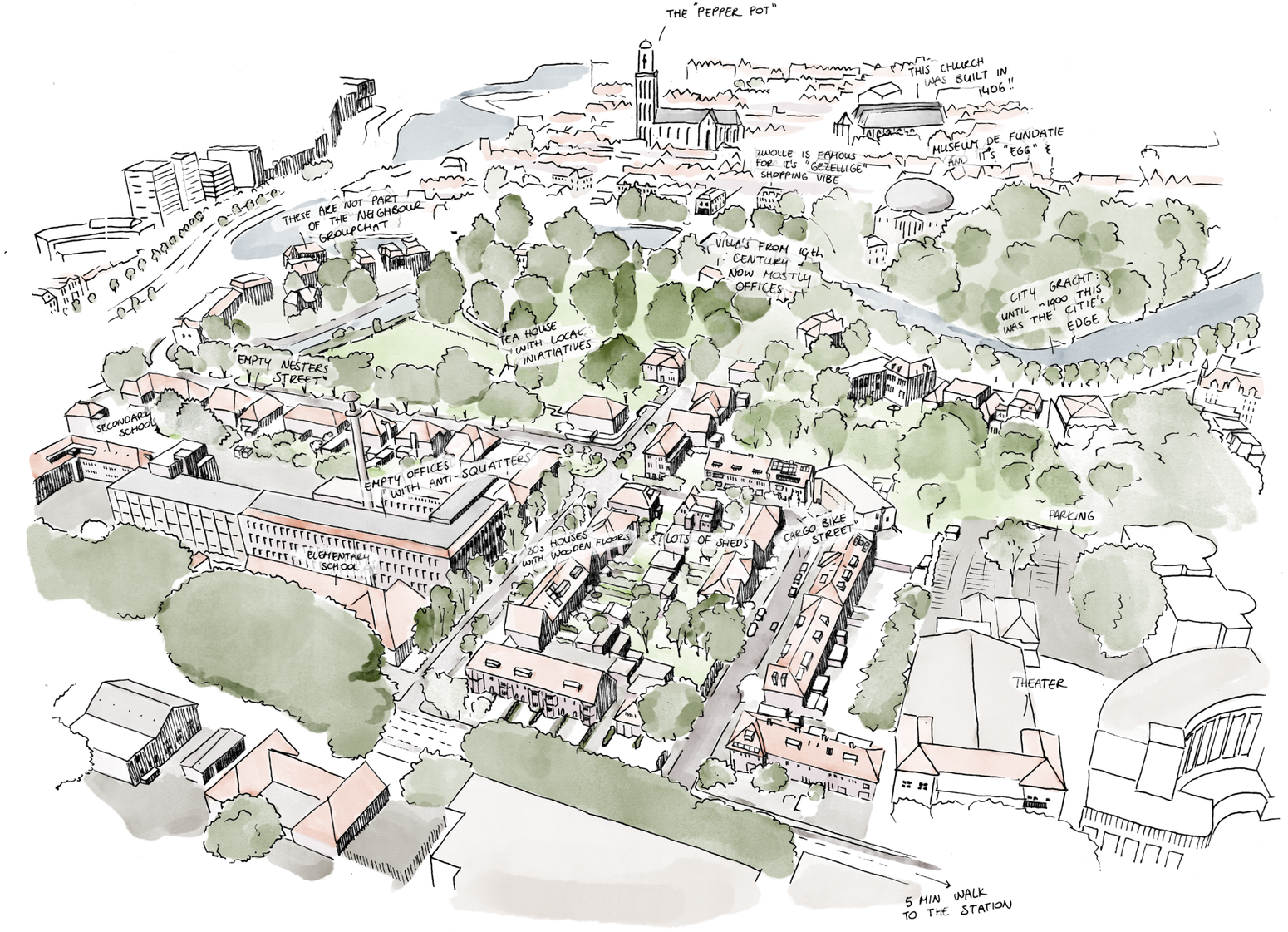


Image 74. Soft story of Johanna and Cor

5.1.1 circular growth

What if… the natural system is a system we can define, calculate, and profit from?

In circular growth, responsibility and pride form the main values. The ecological crisis is seen as the most important crisis and there is a reliance on technology to solve it. Nature is a system of which society can profit from using technology. In this future, the concept of ecosystem services can be taken to an extreme. This is a concept that categorises the services that ecosystems provide into four categories: provisioning, regulating, supporting and cultural (Odum & Odum, 2000). For every part of a non-urban area, the amount of ecosystem service is measured and valued. The more an area provides, the higher its value, and thus the less attractive to transform into an urban area. This would mean that current protected natural areas will be expanded, but also used to grow materials such as wood or flax, depending on the local ecoystem. The urban crisis will be addressed by increasing density in existing urban areas, using modular and biobased approaches.



Image 75. Circular growth postcard >

5.1.1 circular growth

There is a cohesion between agricultural areas, industrial areas, and urban areas. The region is divided into five arenas within which the existing ecosystem is used as much as possible. Each arena has a main circular hub, located in existing industrial areas along large waterways. These hubs, and the smaller industrial areas in every city, are popular to live close to, as they become an important part of the daily urban system. Housing associations dive into this popularity and build again more than 30.000 houses a year, all modular and biobased. Consumption patterns centre around these industrial areas and agricultural hubs. There is an industry-oriented development.

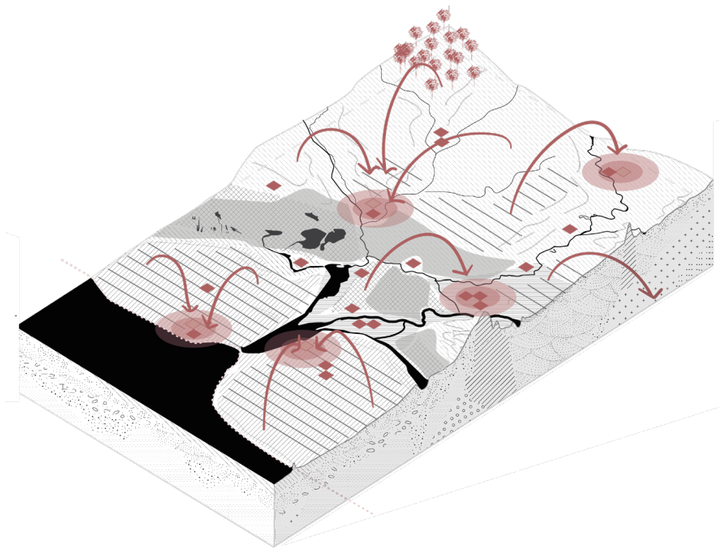


Image 76. Circular growth diagram

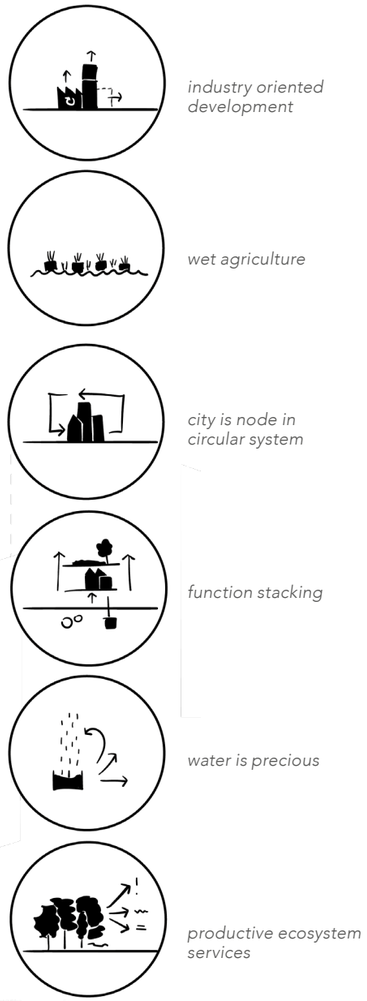
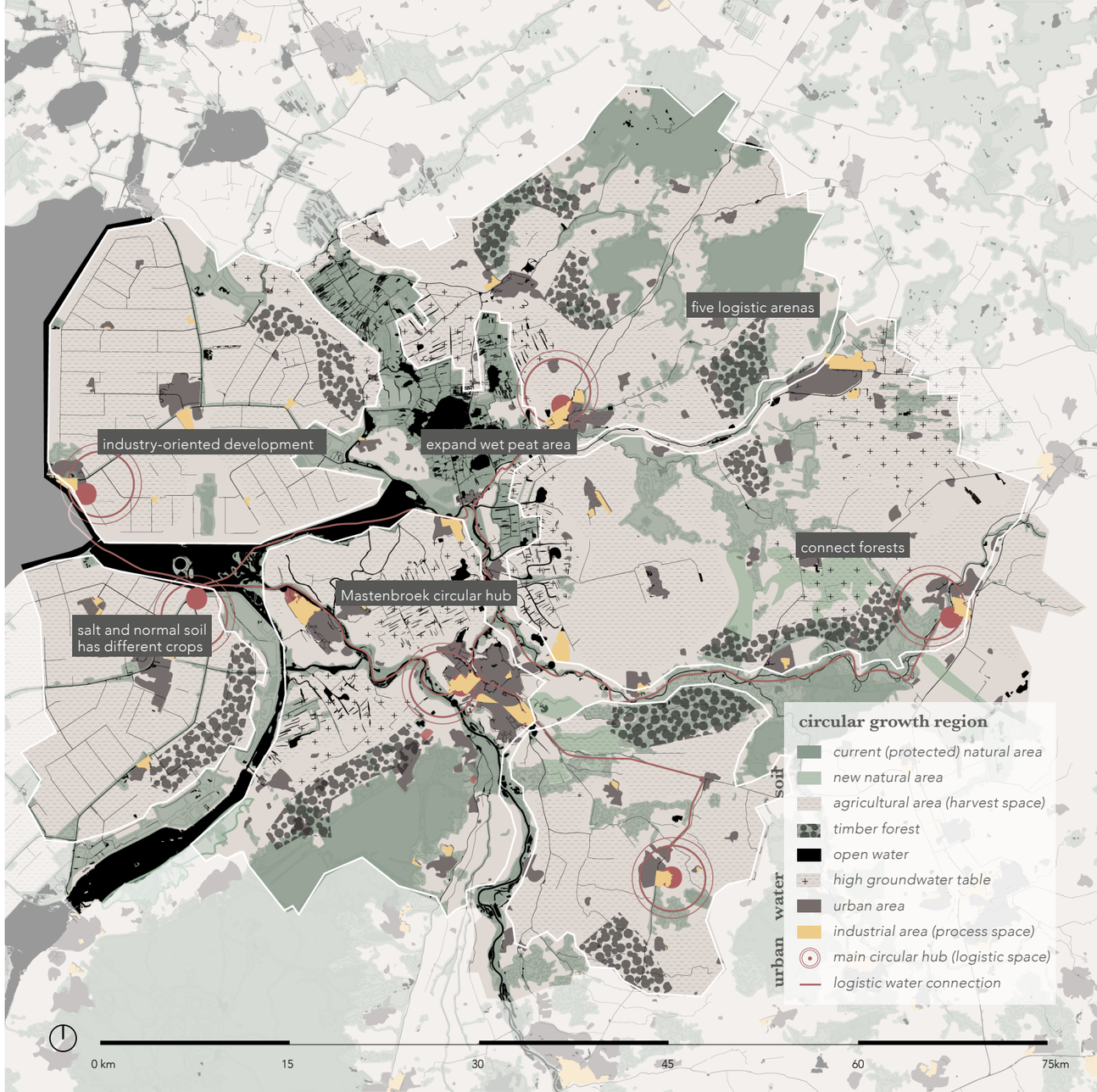


Image 77. Circular growth strategies

Image 78. Circular growth regional design >



5.1.1 circular growth

Movement patterns also change within cities. On the one hand, there is a smaller spatial area where products come from. A similar measurement like the ecosystem services is realised for products, making greener and circular products automatically cheaper, which helps the breakdown part of the transition. The famous 'shopping centre' of Zwolle changes into a slowed-down living area, with many re-use hubs. People go to circular parks more often to change, swap, or remanufacture a product, which is sometimes further away than now going to the shop around the corner to buy a new product. This takes a little bit more effort but is cheaper, as the whole economy is base

reference projects

- Circular economy spatial links – BVR adviseurs & Ecorys (2022)
- Community supported agriculture (CSA) – Julia Spanier in Postgrowth City Podcast (2024) For example, Stadsgroenteboer Amsterdam
- Ecosystem services – Odum & Odum (2000)
- 30.000 houses a year - Hochstenbach (2022)
- Adaptive agriculture – Feddes / Olthof (2019)
- Timber forests – Marco Vermeulen (2019)

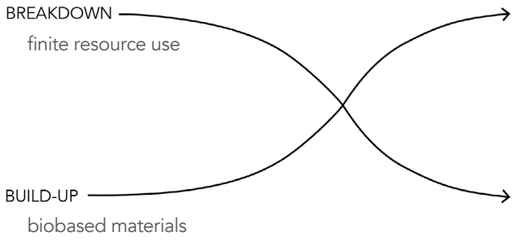


Image 79. Circular growth transition

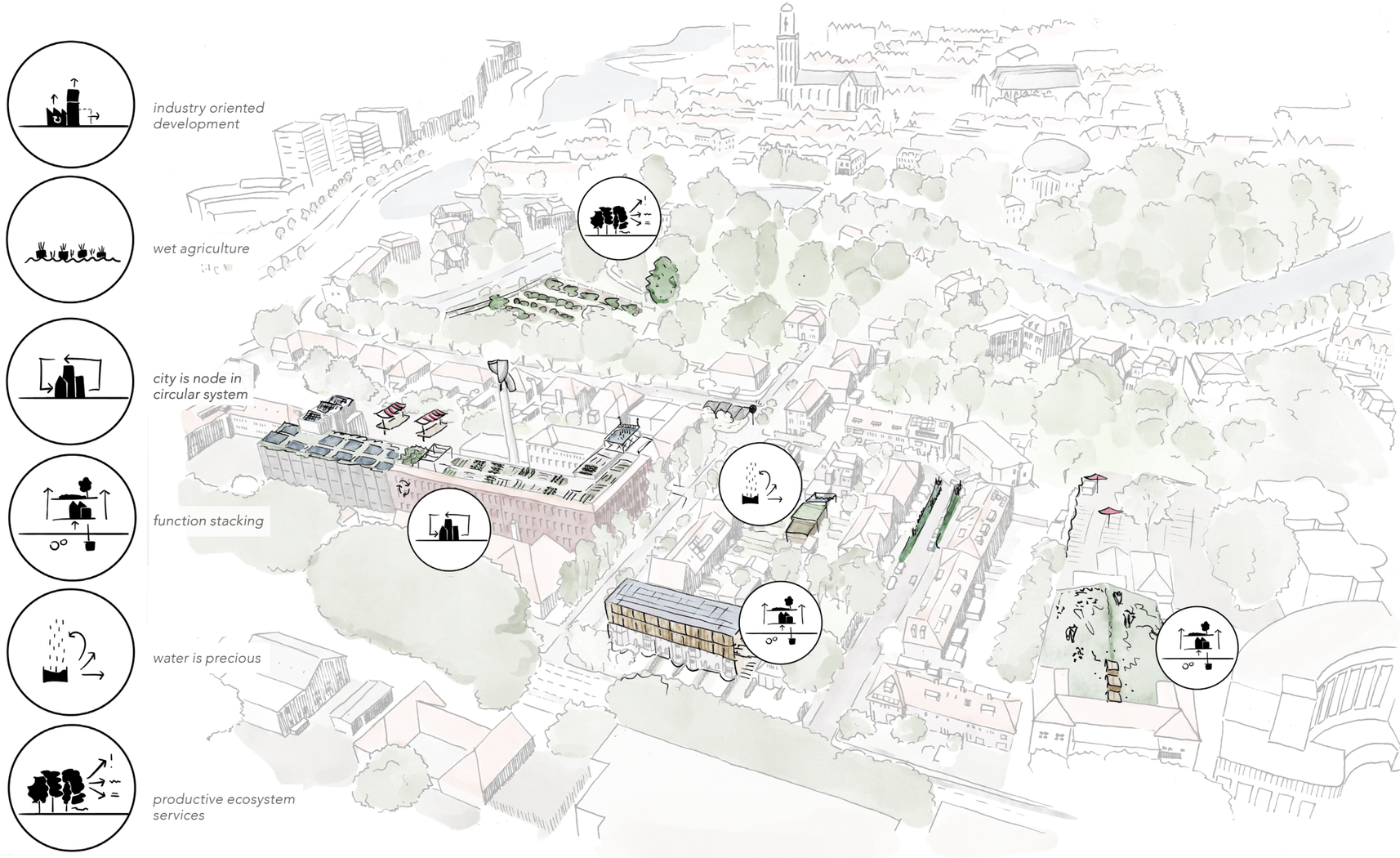


Image 80. Circular growth imagination in the soft story of Johanna and Cor

5.1.2 innovative growth

What if… technology is used to live with water, instead to fight against it?

In innovative growth, the 'woondeals' of 2023 are realised but combined with the 'spatial assessment framework' which takes into account the water- and soil system (Kolen et al, 2023). Categories range from little to a lot of technological adjustments to the urban plans and housing blocks. Especially in Zwolle, there is a large challenge concerning flood safety and foundation damage, demanding a large Deltaworks program where the flood-proofing of housing is combined with the renovation of millions of foundations. Strategies per neighbourhood and risk amount are put out. Water is a scarce but renewable resource which is hugely appreciated in this future.

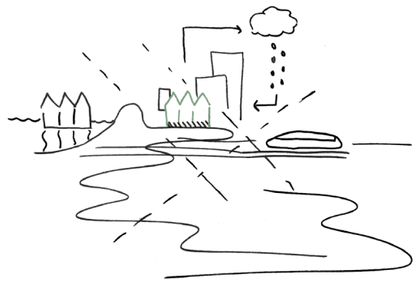


Image 81. Innovative growth postcard >

5.1.2 innovative growth

Zwolle becomes a central city in the "Middenstad" (Middle city), the expansion of the Randstad. Together with also high located cities like Apeldoorn, Arnhem, and Eindhoven, this Middenstad forms the new core of the country. The role of the region as a gate to the rest of the Netherlands and Europe grows. Investments in international mobility – the travel time to Hamburg and Berlin is a few hours – and national mobility – the Lelylijn from Lelystad to Groningen is constructed – made transit-oriented development even more popular. More space is made for water, and people learn to live with it due to technological innovations. Consumption patterns change due to true pricing, in which the societal costs are calculated.

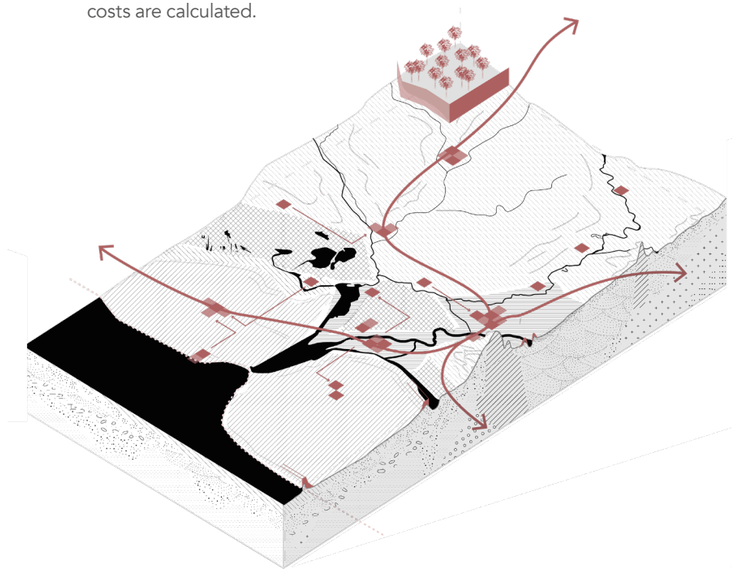


Image 82. Innovative growth diagram

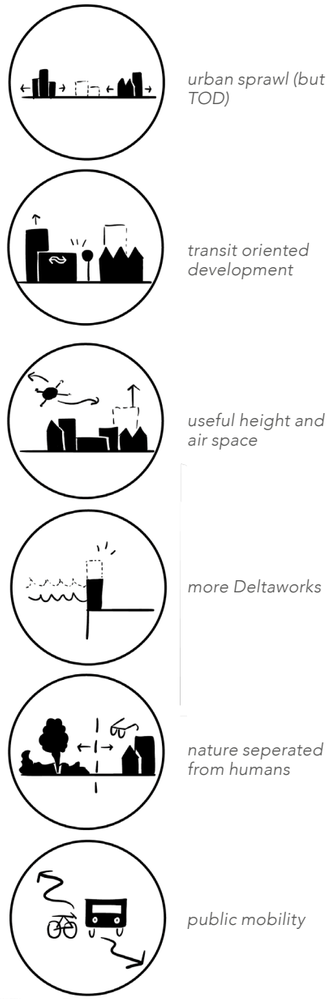
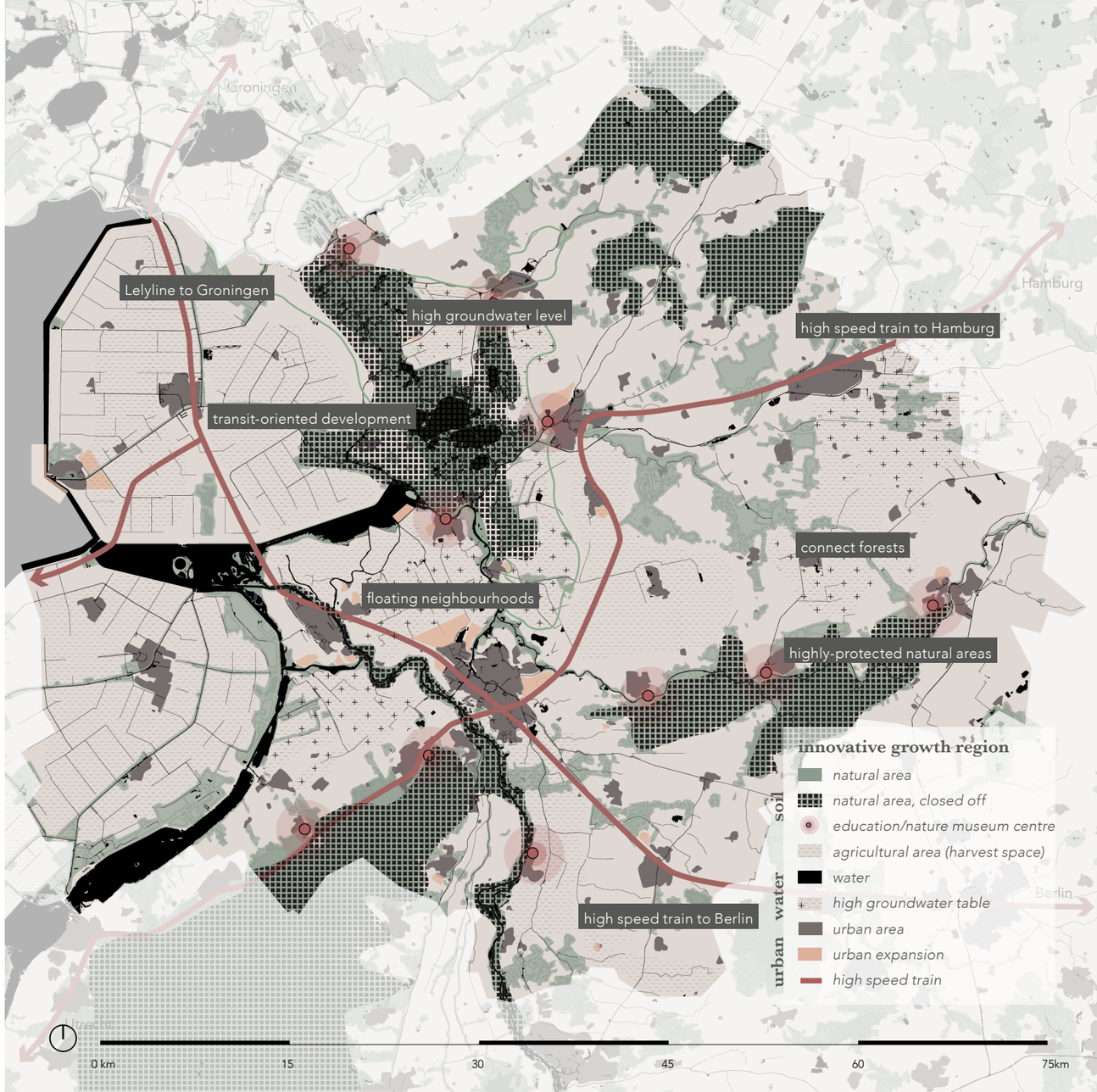


Image 83. Innovative growth strategies

Image 84. Innovative growth regional design >



5.1.2 innovative growth

High-rise buildings and Urban Air Mobility tackle space scarcity in this future. The plinths of buildings sometimes flood, so all public life can take place above the ground floor. Many of the existing buildings are topped up, sometimes with towers with more than ten floors. That was possible because all the weak wooden foundations were reinforced during a national program. In these renovations, the mental shift of breaking down the fight against water towards a more acceptive attitude was realised.

reference projects

- Middenstad – Rotmans (2021)
- Nature museum – Studio Marco Vermeulen (2019)
- Living in wet peat areas – Fabrications and Buro Sant en co (2022); Gemeente Woerden (2019)

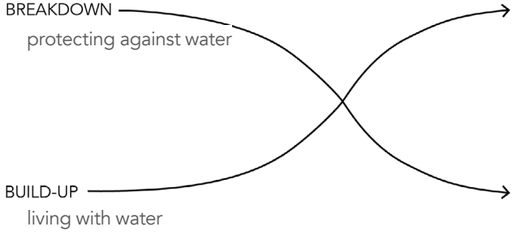


Image 85. Innovative growth transition

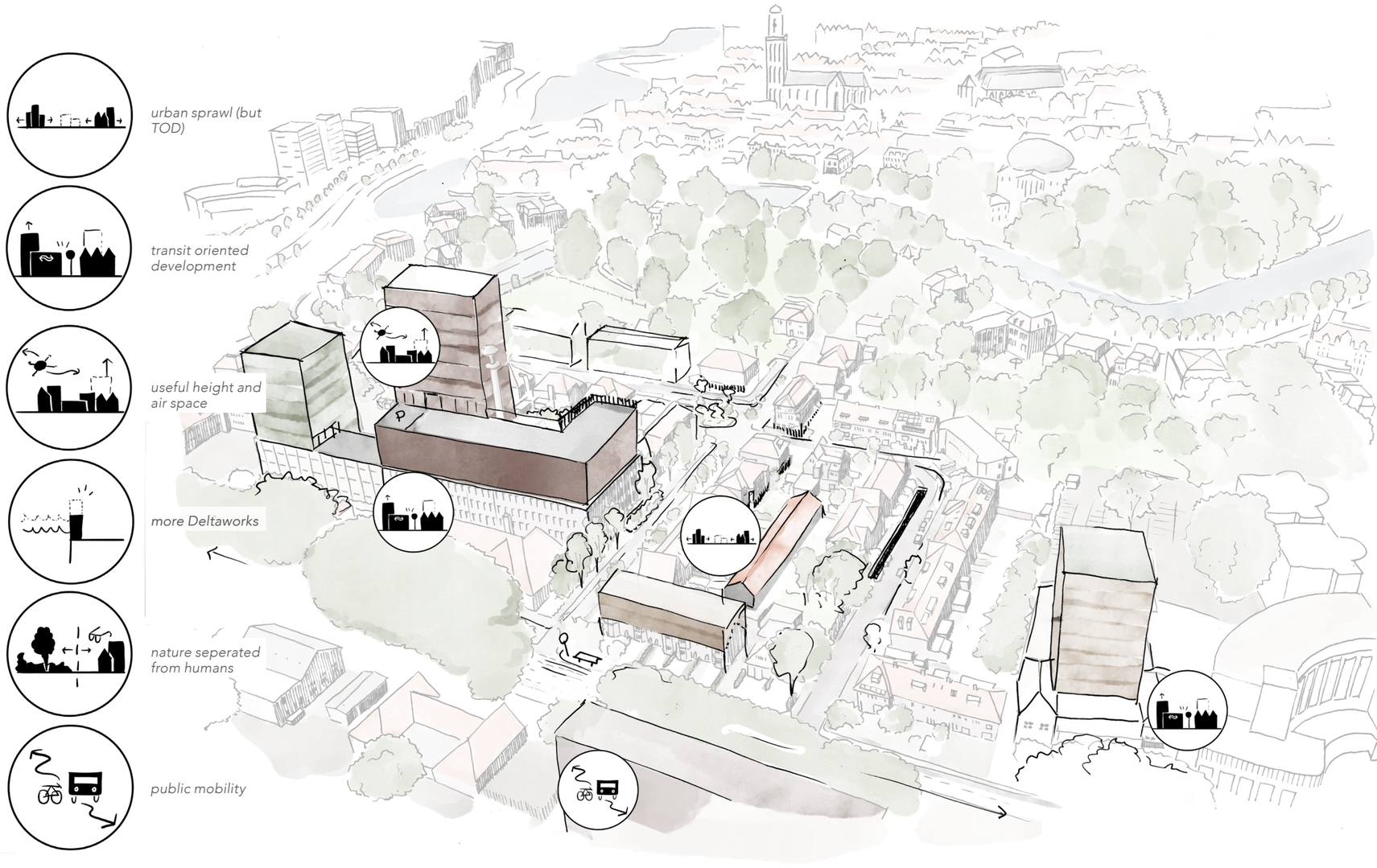


Image 86. Innovative growth imagination in the soft story of Johanna and Cor

5.1.3 societal growth

What if… the urban system is based on use instead of property?

The location of the 'woondeals' is reconsidered in societal growth. According to Platform Woonopgave, more than a million living spaces can be found in existing buildings: large houses can be split up, and old offices and real estate from the police and military can be refurbished into living spaces (van Manen et al, 2023). This realisation emerges a new view on urban life, which centres around local communities. Municipalities realise giving out space to housing co-operatives to encourage people to build together, is profitable for everyone. Because most of the daily life is based on sharing, a great sense of responsibility about the people and ecosystem arises. The use-based housing system slowly takes over the property-based housing. Space scarcity is tackled by rethinking the way we use our urban space; sharing and stacking are the main trends and housing co-operatives thrive, like De Warren or De Meent in Amsterdam.

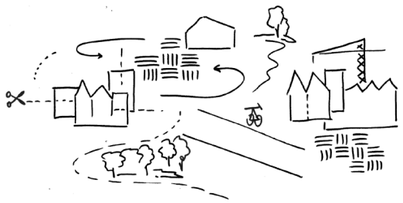


Image 87. Societal growth postcard >

5.1.3 societal growth

The user-based mentality also spreads out to agriculture. Community-supported agriculture around village centres is a system in which residents have a subscription to a farmer, sharing the benefits and burdens of ecological food production. All agricultural land within a half-hour bike ride – or around eight kilometres – can be part of this system, as it is reachable for inhabitants so they can visit and help. This system will change the dynamic in the region; the smaller cores will have stronger communities and more economic importance than Zwolle city.

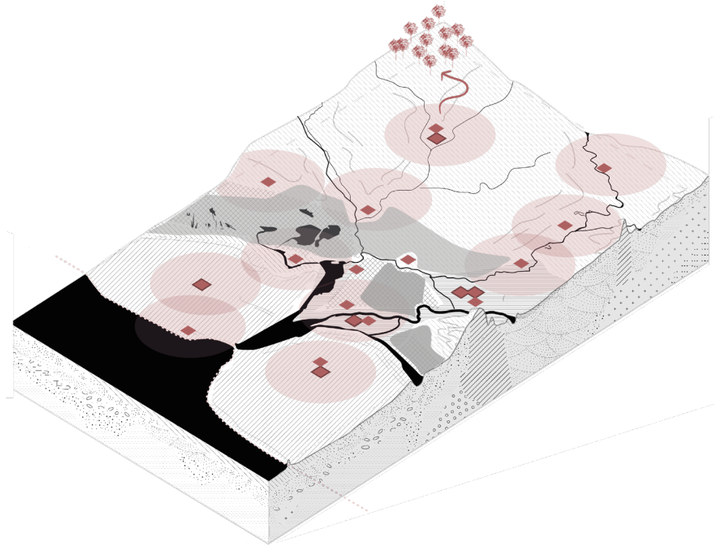
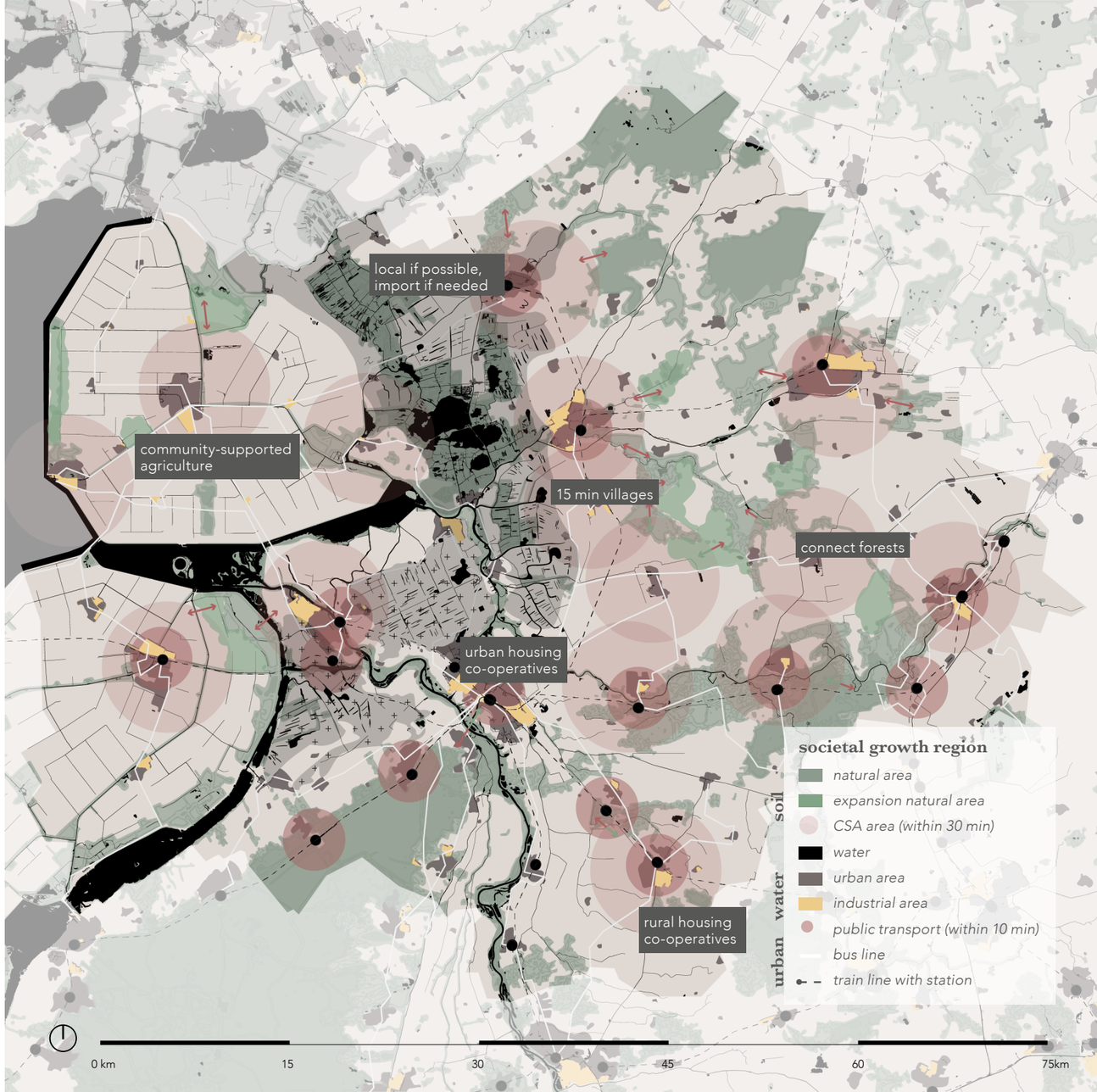


Image 88. Societal growth diagram



Image 89. Societal growth strategies

Image 90. Societal growth regional design >



5.1.3 societal growth

Local communities also thrive within Zwolle. Due to the large amount of land owned by the municipality, there is a huge boom of housing co-operatives in the city. Young people build their dream houses with friends and neighbours. As the housing crisis worsens in the 2020s, splitting and sharing houses becomes a solution. These necessary measures ultimately ensure larger community feeling and also provide a solution to the healthcare crisis. Urban farming and communal gardens let the broad prosperity flourish.

reference projects

- Agricultural housing co-operatives – Stadsboerderij Almere; Lenteland
- Urban housing co-operatives – De Warren (2019); De Nieuwe Meent (2019)
- 15 minute city concept – Moreno (2021)

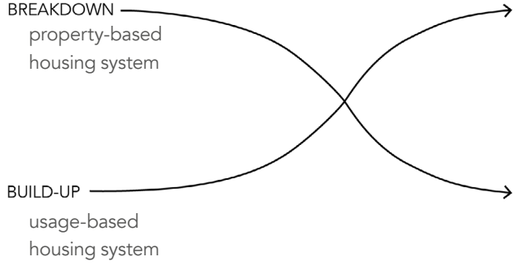


Image 91. Societal growth transition

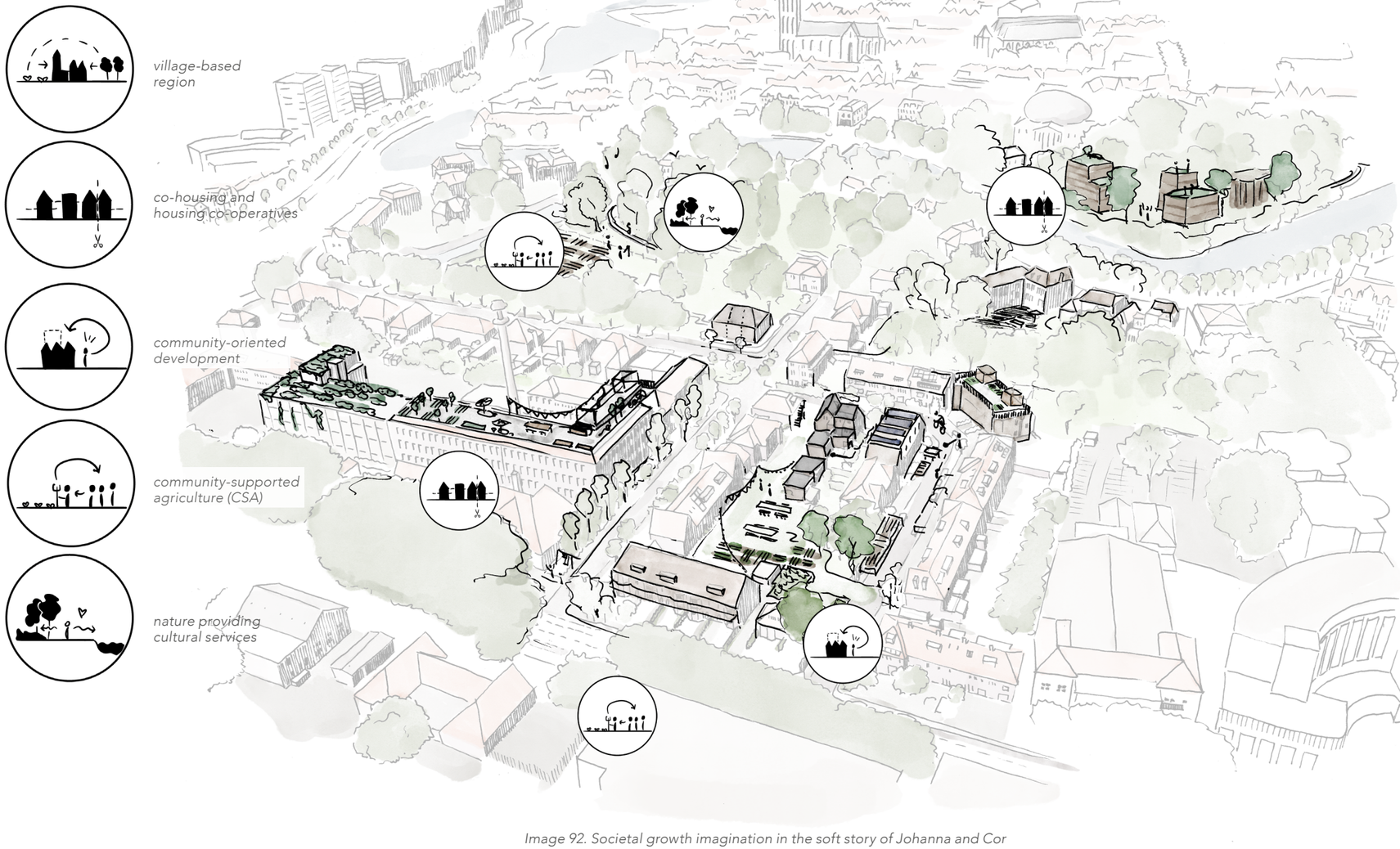


Image 92. Societal growth imagination in the soft story of Johanna and Cor

5.1.4 ecological growth

What if… the sense of human-nature symbiosis creates space?

The idea that humans are just one species in the Earth's ecosystem is at the forefront of this vision for the future. A vegan diet, which is promoted by imposing high taxes on meat and dairy products, ensures that we only require about 59% of the current agricultural land (as stated by Lammers et al, 2024). A lot of the rest of the land can then be returned to the water system, allowing rivers and creeks to flow more freely, peat areas to retain moisture, and sand areas to preserve water. Additionally, some cities are also returned to the natural system, enabling urbanisation to phase out and society to withdraw to safer areas. A real "Parliament of Things" is established, with representatives providing a voice to non-human actors, and allowing them to participate in decision-making processes.



Image 93. Ecological growth postcard >

5.1.4 ecological growth

The connection between local ecosystems is leading the spatial layout of the region, to let biodiversity flourish again. The Nature Network Netherlands, originating from the 90s, is finally realised and expanded. Many water areas are helped to grow back to more original forms, inspired by the work of George Descombes, for example in the Vecht and the Ketelmeer. By re-meandering the creeks, the water is slowed down, gets more time to infiltrate into the soil, and the diversity created is good for natural vegetation. Between the creeks, on the sand soil, ecological corridors are constructed through (agro)forestry. The economy is mostly based on sharing, reusing and repairing.

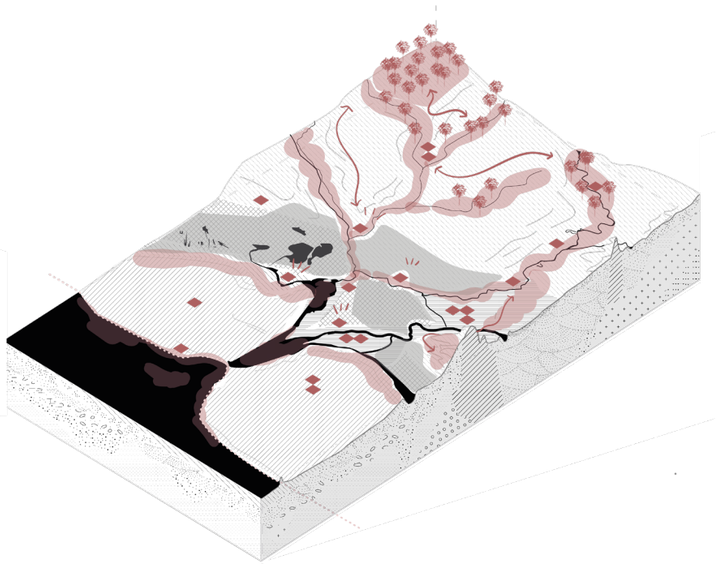


Image 94. Ecological growth diagram

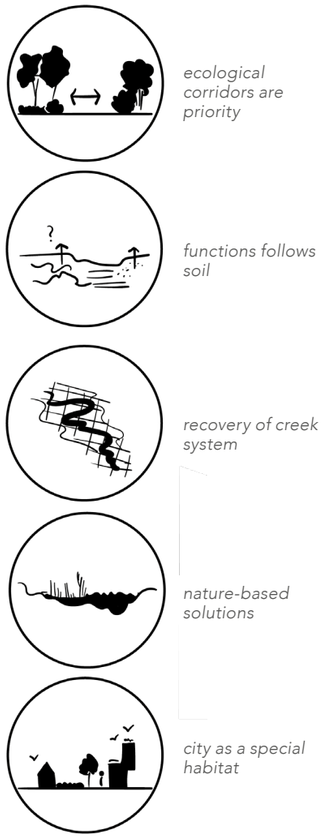
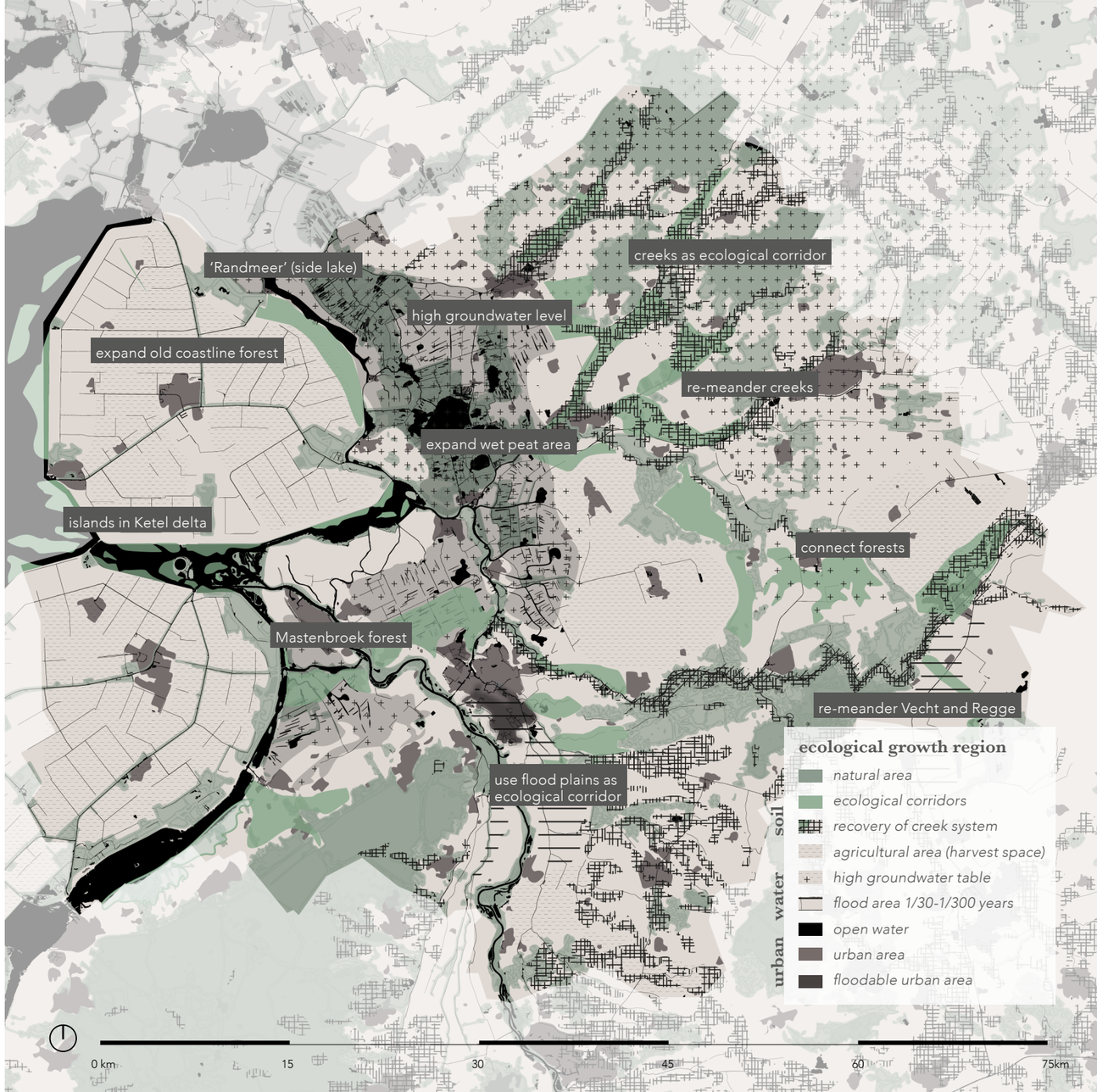


Image 95. Ecological growth strategies

Image 96. Ecological growth regional design >



5.1.4 ecological growth

In the city, there is a delicate balance between increasing population density and preserving green spaces. More lawsuits are won by sustainability-based NGO's, ensuring the breakdown on the sense of human dominance over nature. On a regional level, there is pressure to increase density in inner-city areas to reserve and create space for natural areas. However, at the city and neighbourhood levels, there is a need to prioritise greening and depaving efforts to counteract the negative impacts of densification, such as urban heat and the exclusion of non-human species.

reference projects

- Ketelmeer – Eikelboom (2023)
- River renaturation – Descombes (2015)
- Creek recovery – STOWA (2020)
- Agroforestry - Agroforestry Netwerk Nederland
- Ecological corridors – Natuurnetwerk Nederland (NNN, former EHS)
- Forgotten Randmeer – Wageningen University & Research (2019)

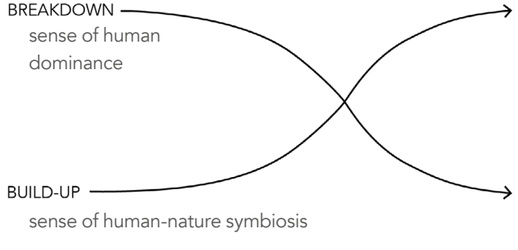


Image 97. Ecological growth transition

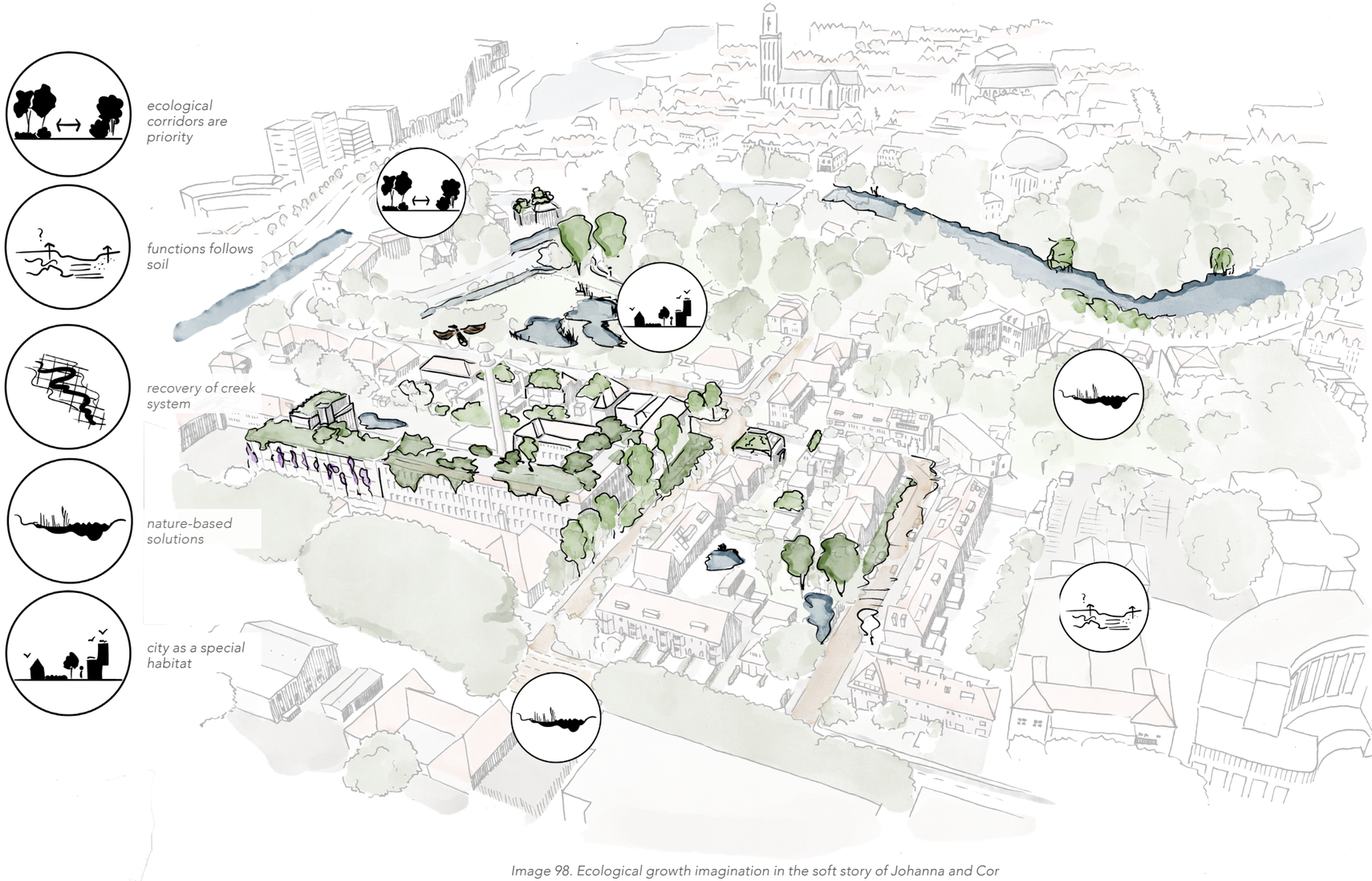


Image 98. Ecological growth imagination in the soft story of Johanna and Cor

5.2 evaluation through scales

An important part of the imagination is the evaluation through scales. In this part of the chapter, a multi-scalar spatial and policy evaluation takes place.

- Macro: regional scale. The habitat doughnut framework will be applied to see the performance concerning social and ecological boundaries. The regional visions are overlapped to see the conflicts and synergies in space.
- Meso: a part of the region will be worked out to test the different strategies that occur in the futures. An area that overlaps three of the four main zones is chosen.
- Micro: continuing the soft story imagination, some individual evaluations of the different futures are put out.
- Meta: reflect and compare to existing national and regional policy documents.





Image 99. The Netherlands is the meta scale

Image 100. The region with the different scales >

5.2 evaluation | macro scale

In Chapter 3, the habitat doughnut was introduced. This framework, based on the doughnut economy framework by Kate Raworth (2017), has four parameters forming the ecological ceiling of the housing system, and four parameters forming the social foundation. It was used as an analytic tool for the region, but, as Savini stated (2022), it can be also used as a tool for creating and identifying strategies.

The evaluation of the four futures using the habitat doughnut is set out in image 101. Because of time and data restrictions, the evaluation is done with a point system, in which a parameter can score extremely over the line, medium over the line, or a little over the line. The dotted line is the current doughnut of the region, so the transition gets visible. The doughnuts are for comparison with the current evaluation of the region and with each other.

Something that becomes visible is that none of the futures score completely within all boundaries. This underlines the need for a mixed and location-specific strategy. There are big differences between the scenarios. Not surprisingly, the innovative growth, with a technological focus on the urban crisis, scores very well in the social boundaries but fails to make a difference in the ecological boundaries. Conversely, ecological growth prioritises ecological boundaries over social ones. The circular and societal growth futues are more nuanced. In circular growth, the ecological boundaries are almost no longer crossed except for biodiversity loss. Preserving biodiversity may be challenging if nature is considered a technological system. In societal growth, a lot of space is created, but priority is given to urban areas, which is seen in the social boundaries.

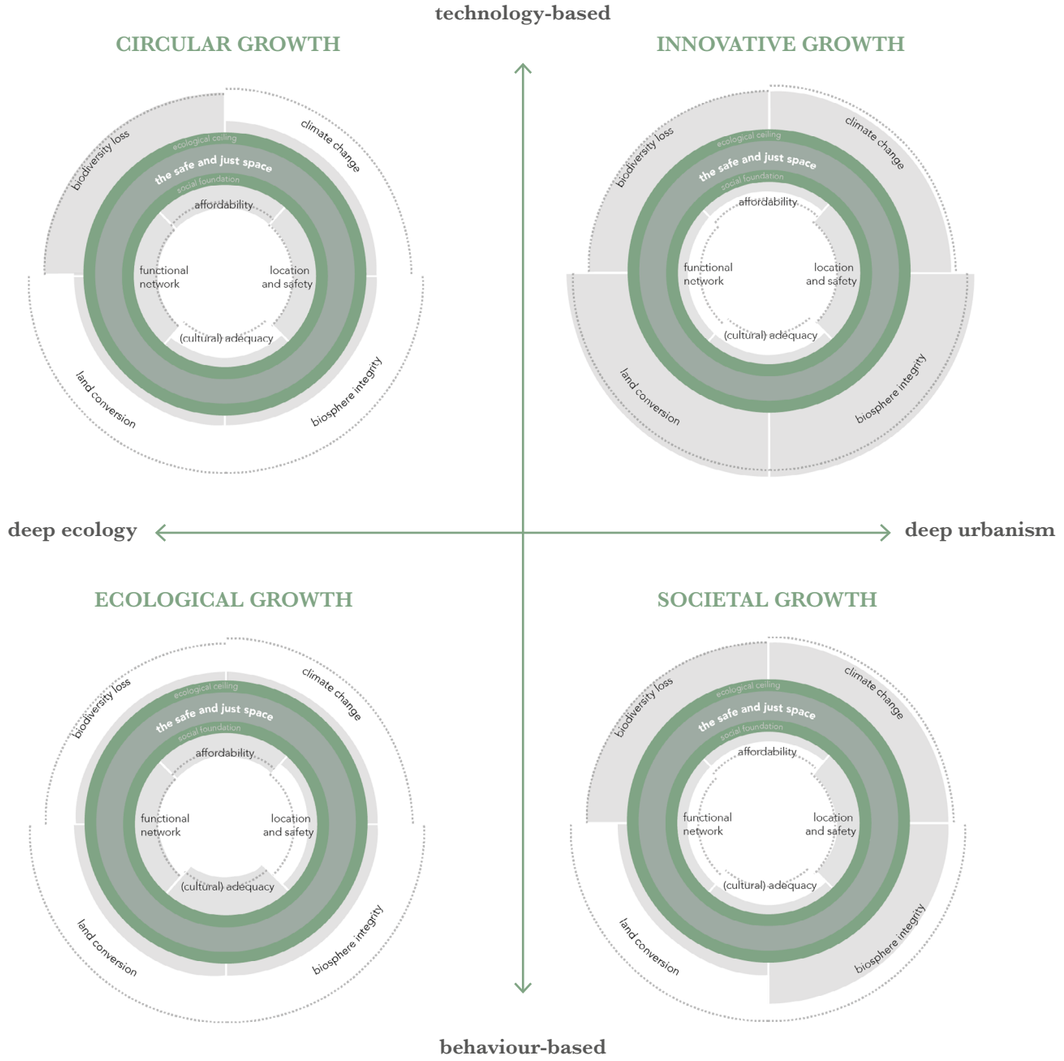


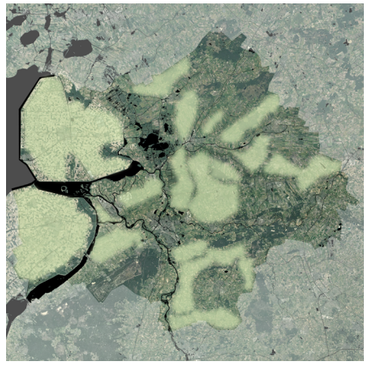
Image 101. The futures evaluated with the habitat doughnut >

5.2 evaluation | macro scale

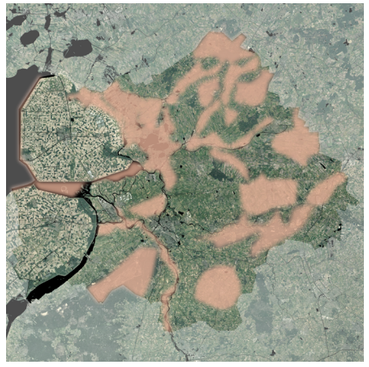
Inspired by the maximisation method (Aalbers, AR3U110 lecture, February 29, 2024), the four spatial maps are overlapped to find synergies or conflicts. Synergies are no-regret actions; they are favourable in every future. Conflicts show the choices that need to be made. This is also supported by policymakers often working with scenarios; it usually shows quite clearly what the first steps are.

In the Zwolle region, some things are quite clear. In all scenarios, there is a form of changing the way we deal with water. In the dryer sand areas and the low peat areas this means heightening the ground water table. The conflicts mostly lie in the densest urban area around the delta and Zwolle and Kampen.

Heightening the groundwater level by stopping to pump out is a good idea in every case. The high sandy areas ask for an ecological growth-based future with quick wins for biodiversity and biosphere integrity. In the peat areas, this strategy also improves some social boundaries like safety. In the Flevopolders, enhancing the network and facilities is also a quick win.



No-regret actions



Strategic choices

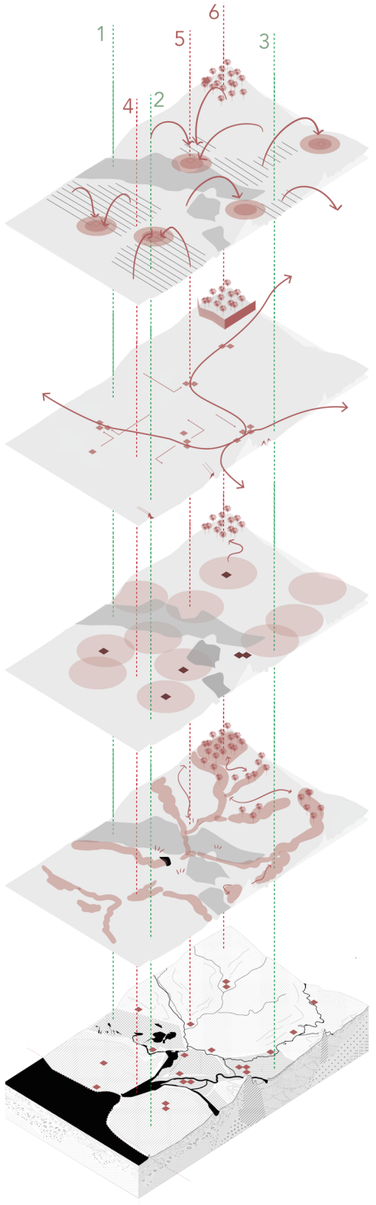


Image 102. Synergies and conflicts in the diagram >

A few things are fundamentally different in the futures, but synergies also appear.

Synergies:
1. High groundwater level in the peat landscapes.
2. Agricultural functions in the Flevopolders.
3. Ecological corridors between large forests.

Conflicts:
4. The layout of the Ketelmeer and the Ijsselmeer: ecological habitat or mobility area.
5. The focus of urban development: around transit nodes, around existing small cores, around industrial areas or everywhere.
6. Dealing with (fragile) natural areas like forests or wetlands: expanding, cultural functions, strict protection from humans, or functional like wood or food production.

5.2 evaluation | meso scale

A design evaluation takes place in an area that overlaps three of the four analytic zones from Chapter 3; north-east of Zwolle city, in between the Mastenbroekerpolder and the village Staphorst and Dalfsen (see image 104). The Mastenbroekerpolder is one of the olders polders in the Netherlands, originating from the 14th century. The Zwarte Water connects the Vecht river to the Ketelmeer and later the Ijsselmeer.

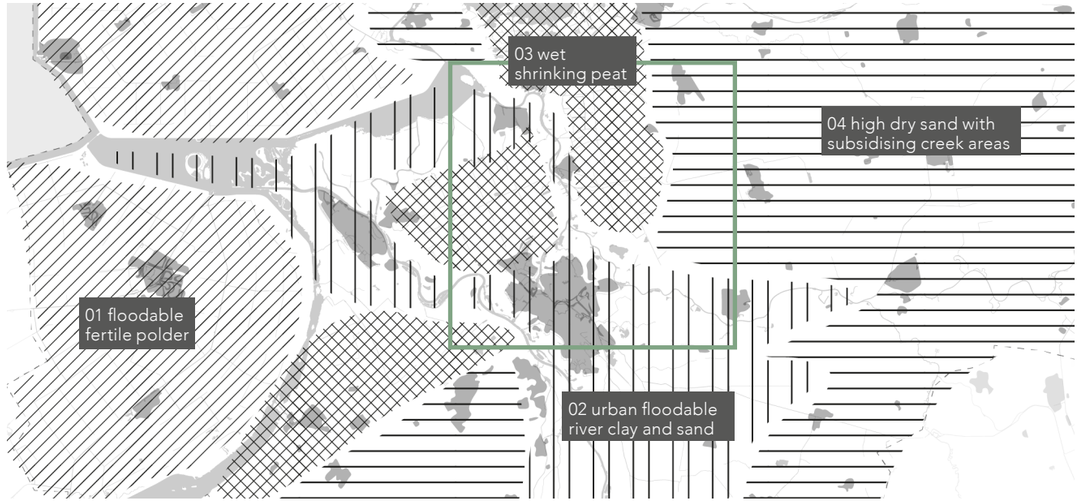


Image 103. The zone-map with the zoom in location



Image 104. Areal picture of the zoom in location >



Image 105. Staphorsterveld with the stroke landscape, narrow strips of of land interspersed with strips of forest. Photo by Staphosterveld.nl



Image 106. High water at the IJssel.



Image 107. The landscape around the flood plains of the Vecht, north of Zwolle.



Image 108. The Zwarte Water. Photo by Ton Valk



Image 109. In the Mastenbroekpolder are no intersections, just t-splits. Photo by Freddy Schinkel.



Image 110. Hessenpoort industrial area wants to be the greenest industrial area of the Netherlands. Photo by Zwolle.nl

5.2 evaluation | meso scale

According to the analysis, there are three parts to focus on in this area. The peat area, the sand in the east, and the area around Zwolle and the Vecht. The habitat doughnut framework provides concrete targets for what to work on per region. The analysis conclusion can be found on page 76. The peat area scores particularly bad on both sides of the doughnut, as the current use of the soil is causing problems like carbon emissions and subsidence. For the sand area the focus should lie mostly on the social boundaries, and for the clay area around Zwolle and the Vecht, the ecological boundaries demand the most attentions.

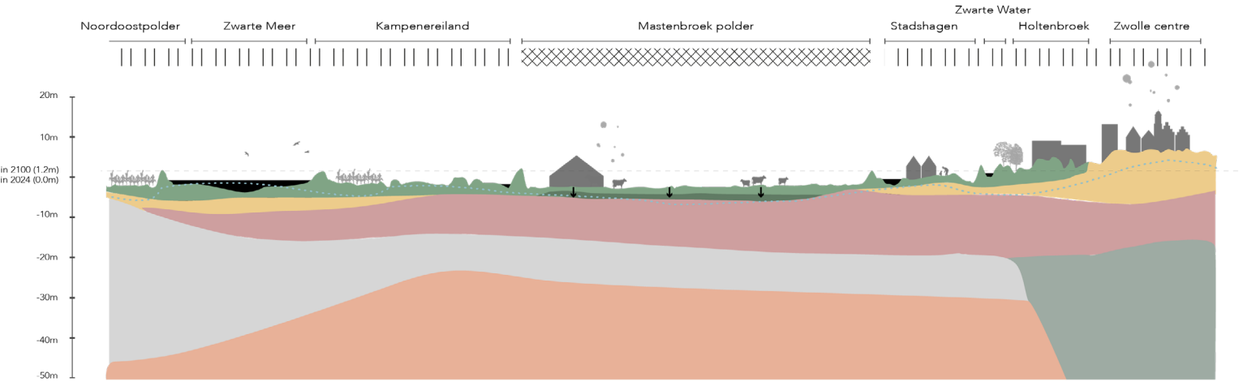
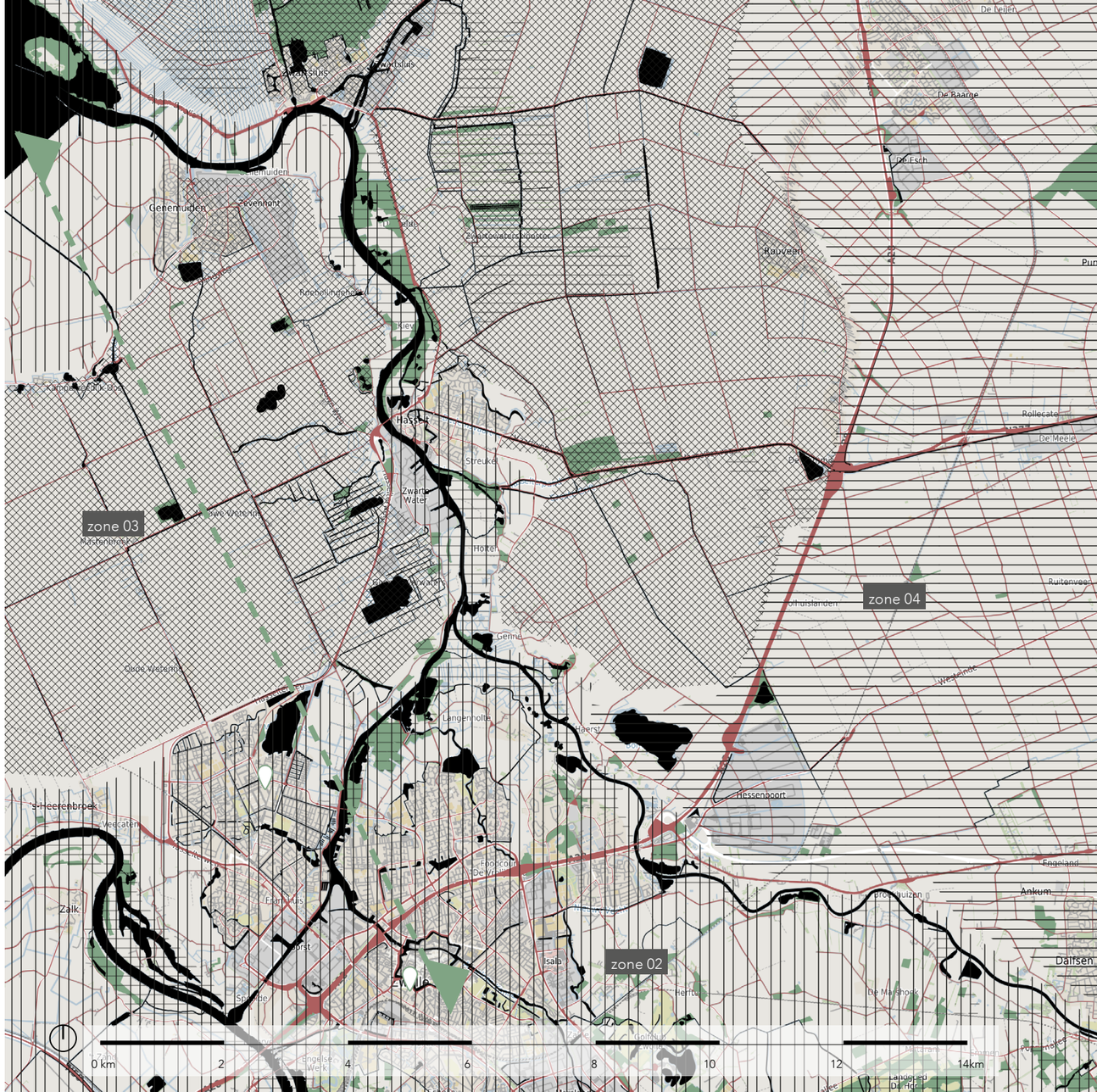


Image 111. Section, current situation

Image 112. Meso scale map, current situation >



5.2 evaluation | meso scale

Interestingly, using the doughnut – thus looking at both ecological and social problems at the same time – shows that the peat area, while performing the worst concerning ecological problems, does not get ecological growth as the main strategy. The area scores extremely bad in the social parameters as well, according to the analysis. This means it would be unable to handle the 'ecological growth', because it asks too much socially (which is seen in the doughnut evaluation of the future types). Therefore, in this area, the strategies of the circular growth are put out. The same is done for the other two areas; in the sandy area, the societal growth would work best, as the social problems are scoring badly, but not as bad that they should go at cost of the ecological ones. The societal growth gives a good midway. In the Zwolle Vecht area, the ecological growth would work best, as it already scores well in social terms.

The strategies are translated into a design in image XX. In the peat area, agriculture has become centred around cultivating wet products. The industrial areas close to the cities function as processing hub. A new industrial area is added at the north-western tip of Zwolle, which functions as a larger logistic hub for the area within 20km of reach. The design shows that not all industrial areas lie in the peat soil, but existing ones in other ones are used. This underlines the importance of location-specific design explorations.

The sandy area in the east is formed by clusters of community-supported agricultural land with villages in the middle. Forests have a social function, as a buffer around the A28 road and as A enjoyable space close to villages. Around Zwolle city and the Vecht en Zwarte Water rivers, the creek system is restored and nature-based solutions like soft green river banks are realised.

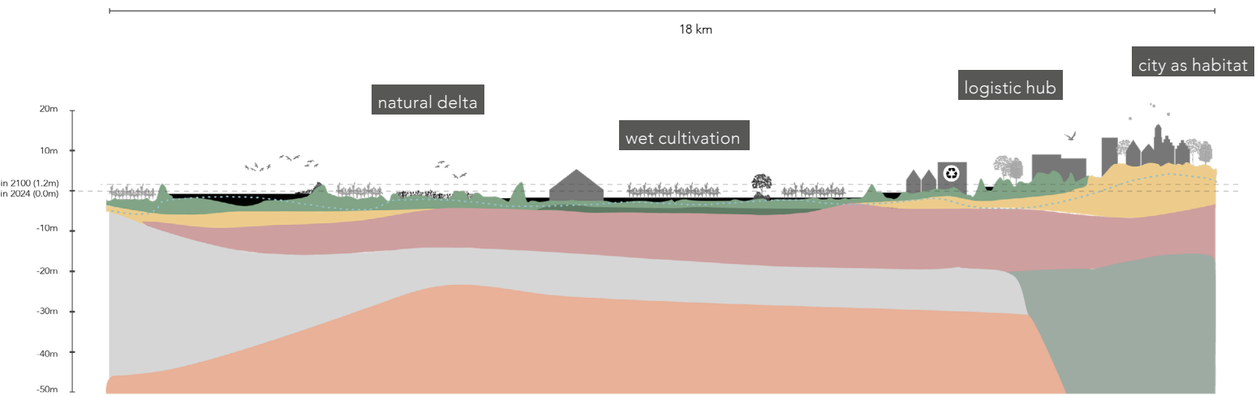


Image 113. Section, future vision

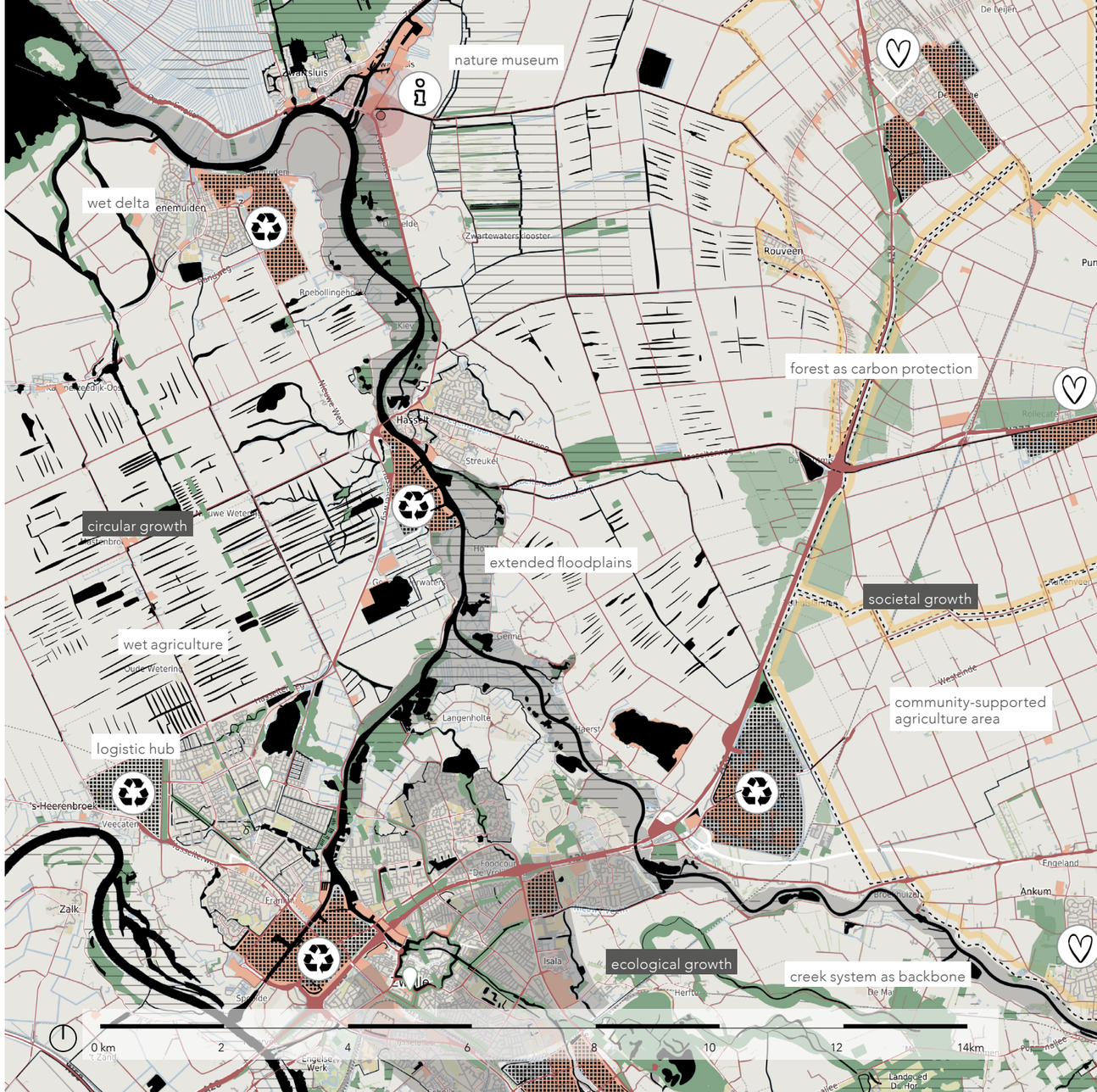


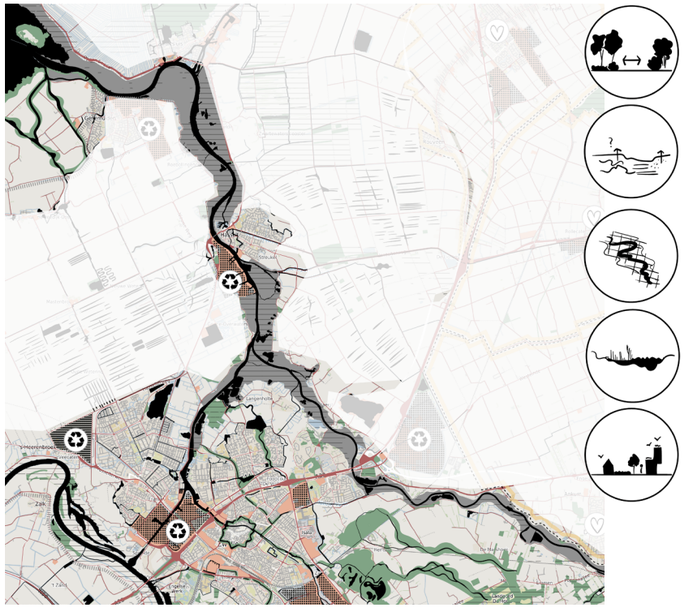
Image 114. Meso scale map, future vision



circular growth

2 km

The strategies create a cultivating wet agricultural area in the peat landscape. The industrial areas are extremely important, as they form the connecting node between the agricultural land and the cities. New housing developments are also done in these areas. There is no agricultural function in the protected Staphorsterveld, but the cultural services are exploited more, through ecotourism around Zwartsluis.



ecological growth

2 km

The important ecological corridor between the Veluwe forests and the Vecht floodplain forests is made, using a golf court and the old creek system southeast of Zwolle. This creek system restoration also helps with better water management on the sand. The clay parts of the ecological zone do not need as many hydrological interventions. Along the Vecht, the river encouragement tactic of Descombes is applied. Green corridors through the city allow a safe habitat route for all species.



societal growth

2 km

Small villages east of Zwolle become important societal nodes. Around the villages, all agricultural land, now mostly grassland and cattle farms, is transformed into community-supported agriculture. This creates strong small village-based communities. Within villages, houses are split up to allow more young adults to live in the area, or to form social elderly homes. The Vecht floodplains and the Staphorsterveld form important natural areas which people enjoy in the weekends.

5.2 evaluation | micro scale

Conversations with stakeholders highlight a nuanced perspective on the different futures with varying preferences and concerns among stakeholders. As part of the evaluation, there were four semi-structured interviews in which the different futures were shown, on the 9th and the 24th of April 2024.

Two of the conversations were done with the people from the soft stories. They saw their living area drawn in a way that corresponded to their values, the soft story. Then the four futures were discussed with postcards and the future projections for their living area. There was a significant difference in the depth of conversation between the postcards and the drawings of their living environment. It was clear to see how much better the interviewees could imagine the futures through the drawings. They then came up with suggestions themselves, for example about the public transport.

"I think rules will help, for example about separating waste or rainwater drainage."

They expressed a mix of acceptance and resistance towards different growth scenarios. Interviewee B was, while embracing innovation and localised initiatives, sceptic towards radical ecological changes and preferred shorter-term planning horizons. Interviewee A highlighted the allure of the circular and societal growth models, as they already see these things happening around them. There was also an acknowledgement of the challenges of scaling up initiatives, like balancing privacy with communal living. They emphasised the role of behavioural change over technological fixes and noted the significant contributions of older generations to local initiatives. Both inhabitants struggled to balance what they feel is needed and what they want for their families and daily lives. This corresponds with the concern graph of the Club of Rome on page 101. Interestingly, all four growth types should connect nearby and distant concerns, but apparently do so in an unconscious manner.

"I am sceptical about relying on technology to fix our problems. It messes with the responsibility."

An important takeaway is that people see the most in the futures they already feel are happening around them at this moment. It underlines the importance of focusing on existing trends in planning the future. This will be elaborated on in paragraph 5.3.

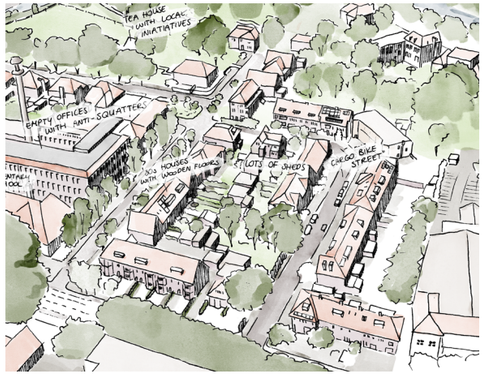


Image 115. Soft story of Johanna and Cor









Image 116. Future postcards



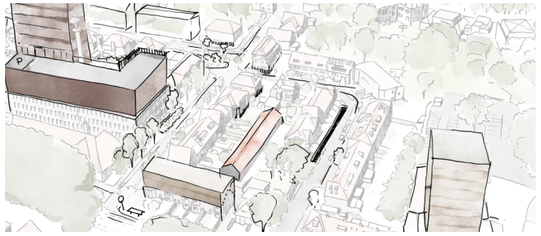






Image 117. Soft story with future projections

5.2 evaluation | micro scale

Two other interviews focussed on the role of design and scenario-making in transitions. Interviews with a design professional at the university and a design professional at the municipality of Zwolle emphasised the importance of balancing technological advancements with behavioural changes, recognising the need for location-specific solutions based on housing types and neighbourhood dynamics. When asked what the most promising growth type is for the Zwolle region, they both pointed out that a combination of circular and societal growth would be best, but that innovative growth is more probable, as it is the safest version. Innovative growth echoes the most the current strategy, in which there is a reliance on technology to fix all problems.

"Long-term thinking is safe because the abstractness of it means it does not kick on any interests. Always make sure to backtrack to the short term."

Policy documents echo this sentiment, advocating for flexibility and equal attention to every neighbourhood and resident. More on the evaluation of policy documents can be found in the meta-evaluation on the next page.

Christian Salewski, in his book about scenario-making in Dutch spatial planning (2012), points out the role of scenarios as communication tool. He states, however, that the scenarios should never be the end product that is communicated, as it often can only scare people off. Another function of scenario making is what Salewski (2012) calls the 'romantic tool', in which scenarios can help make improbable futures easier to imagine. The ambivalent character of scenarios – in between the rational and the imaginary – makes it often hard to communicate with people outside of the makers. Misinterpretations are lurking. The interviews with stakeholders indicate that overcoming this is possible with value- and trend-based scenarios; by using what is there already, people recognise themselves in a timespan that is far away.

The micro-evaluation – in the form of interviews – reveals the interplay between technological innovation, behavioural change, and community engagement in imagining an alternative growth. What mostly stood out was that all interviewees imagined the future that they think looks the most like the current one, to be the most probable one. That was not always the case; all futures are based on shared values and ongoing trends, so everyone could see another projection as most comparable to their situation. So, by choosing a certain future, interviewees exposed their preferred outcome of the same values.

"Designing is making the implications of certain choices explicit."

To illustrate this, the image of different motives towards the future of De Jong (1999) is used (see image 118). De Jong argues that not all possible futures are probable, which is why those have to be designed. The main challenges lie in the probable futures that are not desirable (A). Design tasks lie in the non-probable desirable futures (B). Design, in his view, collects the conditions to make a certain probable future also possible (De Jong, 1999). The micro-evaluation of this project shows that design can also function to not only make a probable future possible, but to also make it desirable (see the arrows in the image). It is important, however, to clarify for whom a particular future is made desirable. Design can make a probable future desirable for certain stakeholders.

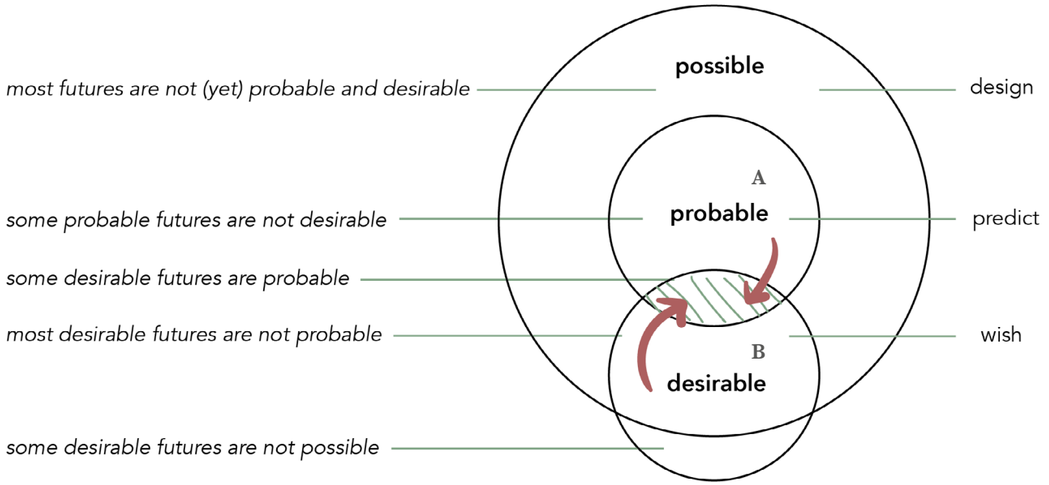


Image 118. Types of scenarios, adjusted from De Jong (1992). The red arrows show the power of design.

5.2 evaluation | meta scale

In this section, the four alternative growth-based futures will be positioned in the field of policy documents and design scenarios. Government documents will be discussed, as well as independent designs for the Zwolle region and the country.

Scenarios | Three scenario reports are examined: the 'Nederland Nu als Ontwerp' (NNAO, Netherlands Now as Design), recent PBL scenarios, and recent Delta scenarios. The NNAO, founded in 1987, aimed to address the lack of long-term vision in Dutch planning (Zomerplaag, 1987). It presented four scenarios for the future of the Netherlands in the 21st century, emphasising governmental attitude and societal behaviour. The urbanist Dirk Frieling, one of the initiators of the foundation, described this project as the Dutch answer to the Limits to Growth report (Hemel, 2013). The outcome was (translated from Dutch) a critical scenario (democratic, region-focused, bottom-up), a diligent scenario (technocratic, anti-Randstad, urban sprawl), a dynamic scenario (liberal, free market, high-tech Randstad), and a restful scenario (a guiding government and accepting society and the other way around, concentrated Randstad so space for natural system) (see image 119).

More recently, the Planbureau voor de Leefomgeving (PBL, Environmental Assessment Agency) published four scenarios for the Netherlands' spatial layout in 2050, based on normative previously published societal images (PBL, 2023). These scenarios are named (translated from Dutch): regionally rooted, fast world, globally entrepreneurial, and green country. Despite a 40-year gap between the NNAO and PBL reports, both aim for the year 2050. Although the country is less easy to categorise into political movements like in 1987, there are similarities in values when comparing the NNAO and the PBL reports, like in the dynamics between government, society and technology, and the urban-nature balance. The most comparable scenarios are put next to each other in image 119.

The Delta scenarios explore potential futures based on climate change, efforts to reduce greenhouse gas emissions, and socio-economic developments (van der Brugge & de Winter, 2024). These scenarios focus more on ecological forces, influenced by societal factors, and would therefore in the spatial planning world better be called forecasts. They are called warm, quick, steam, and wide. When comparing the scenarios with the previous reports, there is again a similarity in dynamics, as seen in image 119. The Delta forecasts are what the different scenarios could lead to when trends are continued.

In conclusion, these scenario reports provide insight into various approaches to governance, societal dynamics, and their interactions with natural forces. The three reports, as well as this thesis, all had a different methodology to come to these four scenarios. The similarities could be telling that in the Netherlands, since the 1980s, there have been roughly four ideas to think about the future, all four of which are simultaneously alive in population groups and political systems.

NNAO, 1987	PBL, 2023	te Velde, 2024		Deltares, 2024	
critical	regionally rooted	societal growth	democratic, bottom-up, focus on the region →	Warm'24	high climate change low growth
diligent	fast world	circular growth	technocratic, strong government, urban sprawl →	Quick'24	low climate change high growth
dynamic	globally entrepreneurial	innovative growth	liberal, free market. Randstad is high tech, rest is logistic →	Steam'24	high climate change high growth
restful	green country	ecological growth	symbiosis government and society in what is desirable. Randstad concentration so rest can be natural →	Wide'24	low climate change low growth









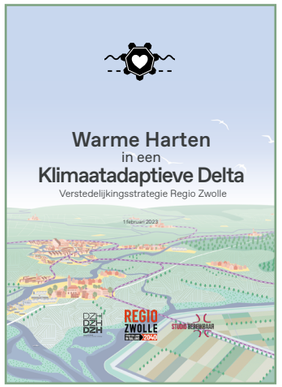
Image 119. Comparison of different future scenarios for the country.

Governmental visions | Policy documents often acknowledge all spatial problems, and they contain steps towards addressing these issues, such as promoting nature-inclusive agriculture, creating buffer zones around creeks, and building new forests. The problem, however, is that these steps remain words or images without an active cabinet that can implement them within the various ministries. The government's current actions fail to create opportunities for good initiatives that can steer the transition towards a society that thrives within social and planetary boundaries.

In the most recent publications of the Mooi Nederland program, the recommendations for the new cabinet have a slightly different tone. For example, there are notes on the demarcation between private and public grounds and there is a call for financial-legal unbundling to create smart win-win situations (Urhahn & programma Mooi Nederland, 2024). Design professionals and policymakers stress the importance of setting targets rather than specific solutions, allowing for local adaptation and engagement. They emphasise the value of foresight without rigidity and encourage continuous dialogue and storytelling to navigate uncertainties.

Design visions | The urbanisation strategy of the Zwolle region by De Zwarte Hond (2023) is called "Warm Hearts in a Climate Adaptive Delta". It focuses on densification in or along existing urban areas in the region, to get go from quantity of space towards quality of space (De Zwarte Hond, 2023). It aims to invest in compact cities, nature-based solutions, the regional economy and region-specific characteristics, to improve the broad prosperity of the region. The urbanisation strategy focuses on both sides of the habitat doughnut. However, to improve the ecological parameters, first the social parameters are tackled. It does not look at the problems spatially, but per sector: climate, mobility, economy, and housing. This is the main difference between the urbanisation strategy and this project.

Wageningen University & Research (2019) published a vision for a natural future for the Netherlands in 2120. They start with five leading principles that form the base of the vision: natural system as a base, optimisation of water use, nature-inclusive society, circular economy, and adaptive spatial planning. In a more recent publication, Bos et al. (2023) identified six dilemmas that have a large influence on the spatial layout of the country, and that could lie in the way of achieving the 'natural future' they proposed in 2019. These dilemmas concern the contribution to global food supply, animal farming, the moral position of animals in the food supply, the amount of climate- and nature goals to achieve within the Netherlands, the relationship between agriculture and nature, and the steering of consumer behaviour. An analysis of where the futures lie on these dilemma scales can be found in the appendix. One significant similarity is the intricate relationship between all choices and the sometimes severe consequences of actions.



De Zwarte Hond, Regio Zwolle, Studio Bereikbaar, February 2023



Wageningen University & Research, December 2019



Rijksoverheid, September 2022

5.3 transition

This part of the chapter dives into transition management and the strategy, following literature and examples which are then applied to the region. It combines the imagination and evaluation of the futures (chapter 5.1 and 5.2) to the analysis (chapter 3.2, 3.3 and 3.4).

Transition management | The four futures all focus on a different transition within the transition towards a society in between social and ecological boundaries. Different parts of the region demand different growth types, depending on the framework assessment. This is seen in the evaluation part. This would require several transitions happening at the same time. It will demand different steps, taken by different stakeholders, in different timeframes. The feeling of chaos and complexity is normal; it means we are in the middle of a transition (Rotmans, 2021). Transition management theory can help to imagine this better.

Transition management often talks about transitions consisting of three elements: the regime (the existing system), the niches (innovative initiatives that already act in new ways) and the landscape (the broader context in which transitions occur) (Tielbeke, 2022). Transitions happen within a certain landscape when the regime is being put under pressure, often stimulated by niches. The regime of this project is established in the analysis of the space and system, as established in Chapter 3. The niches are the trends found in Chapter 4. The landscape in this case is not the spatial landscape, but the context where these changes are being put out; in the minds of all people related to spatial planning. The transitions ask for a new view of their existing values. How this is communicated, is through the values that are being made explicit in images.

Embrace the chaos | During transitions, there is often a period of chaos where reflection and imagination are crucial for moving forward (Drift, 2022). This involves letting go of old systems and envisioning new possibilities, highlighting the importance of creativity and vision in shaping future trajectories. In each imagined future, there are significant transitions in various aspects of daily life, such as consumption patterns, housing, and the daily urban system. This reinforces the idea that societal transitions are multifaceted and interconnected. Damaris Matthijsen, who writes about transition management as well, argues that at the base of all transitions is the way we value land, labour, and capital (Matthijsen, 2022). There is a need for a transformation of our understanding of property and the control of land, labour, and capital. We need to 'unlearn' the idea of property and relearn to think about use.

Savini (2024) states there is a need for a new story that speaks to the masses. He recognises the problem of academic language and sees the need for clarity and boldness so that everyone knows what we are talking about. A left-populist politician, several activist movements joining together, designers designing for this worldview, and municipalities daring to give space to this, together form a movement.

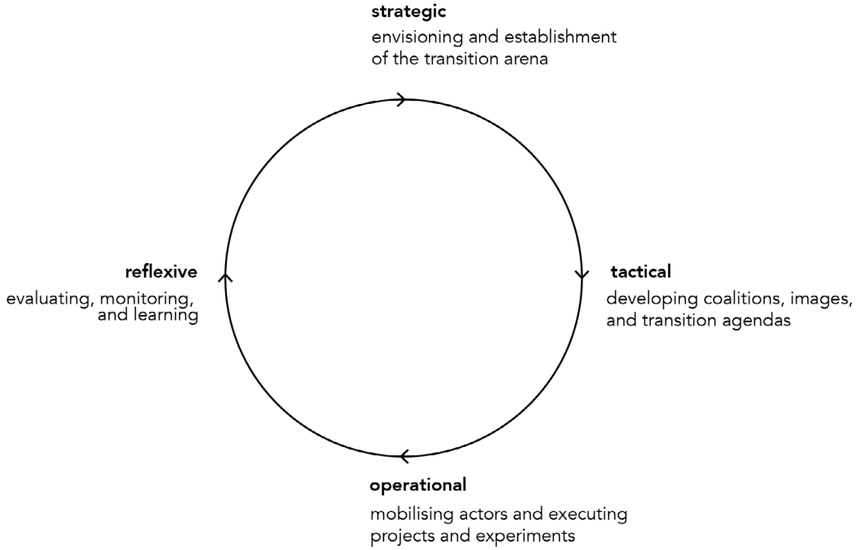


Image 120. The transition management cycle (Loorbach, 2010)

5.3 transition

Apply to space | There are different ways to apply this theory to space. BVR Adviseurs (2022), a spatial consultancy and design studio, applied it to a plan for the circular economy in the province of South-Holland. They established three elements: a main structure of the soil, water, and energy system, spatial links like building hubs, and cooperation in region-specific areas, comparable to the regime, niches, and landscape. This was used in the circular growth future (page 124).

The management loop can also be applied to space. Casting back from the long-term strategic actions of more than 30 years ahead, there are two main action steps: the niche stimulation in the next 5 years and the tactical roads for the next 15 years. This is applied to the design case.

The first steps are experimental. The focus lies on small initiatives and niches that are already initiated by inhabitants or companies. In circular growth, so the peat areas, this means giving more space to re-use initiatives and wet-cultivating experiments. In ecological growth, an experiment is planned in which social housing is being renovated and fortified to withstand foundation damage and a 20cm flood. Community-supported agriculture gains popularity as an alternative to cattle farming, and the municipality of Zwolle gives out space for housing co-operations to develop. In all growth types, different stakeholders are taking the lead.

In the next phase, the experiments are analysed and strategic choices towards the future are made. National and local laws about product-, habitat- and property use change the way people think. They allow niches to grow into the status quo. A 'Counsellor of Things' represents all other-than-human stakeholders in the municipality, also changing the way people think about their cities and landscape. Forests are planted to provide a variety of ecosystem services, including recreational opportunities as well as raw materials. This is also the phase where the different strategies come together. The forests are part of every growth type, for example, by supplying materials, being a part of a corridor and being a recreational area.

In the last phase, we see the strategic changes happening. The golf court is being redeveloped into a natural area, for example, as people realise the responsibility for the ecological system. Renting has gained momentum and forms a majority of all housing, and cattle farms are slowly phased out, because of tactical actions that gave niches more space to develop.

Extremely important to realise is the fact that these phases and goal setting will not happen so strictly apart from each other. They occur at the same time, which makes it crucial to learn from insights gained over time. This theory is also called evolutionary governance and is vital in transition management (van Assche et al., 2013).

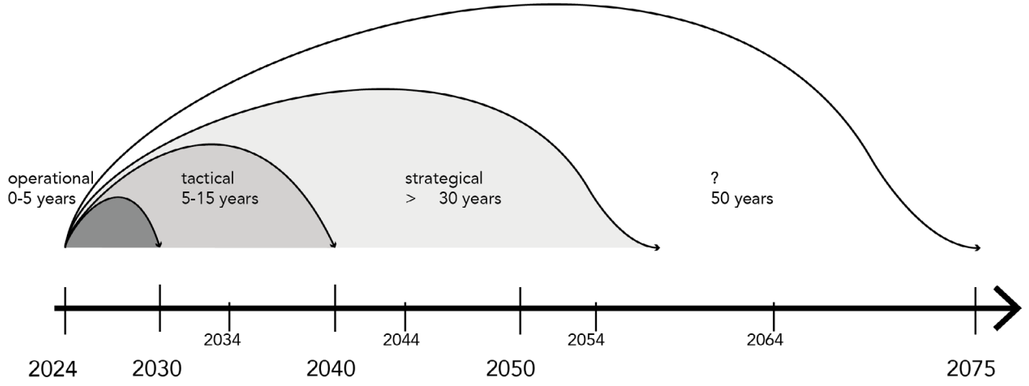
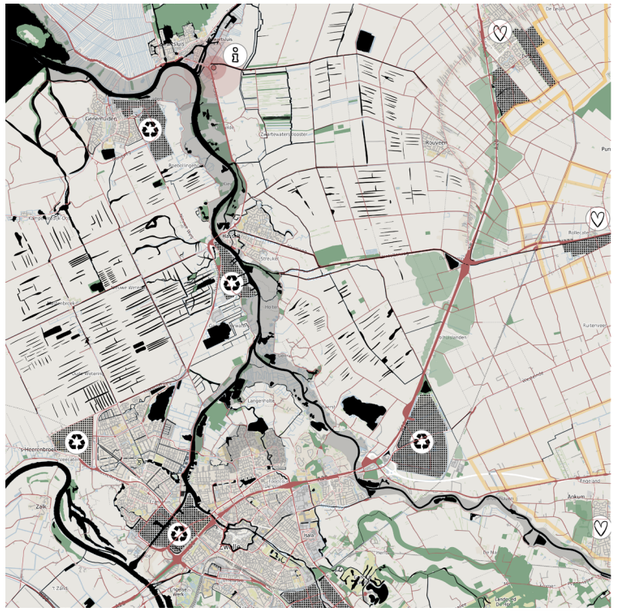


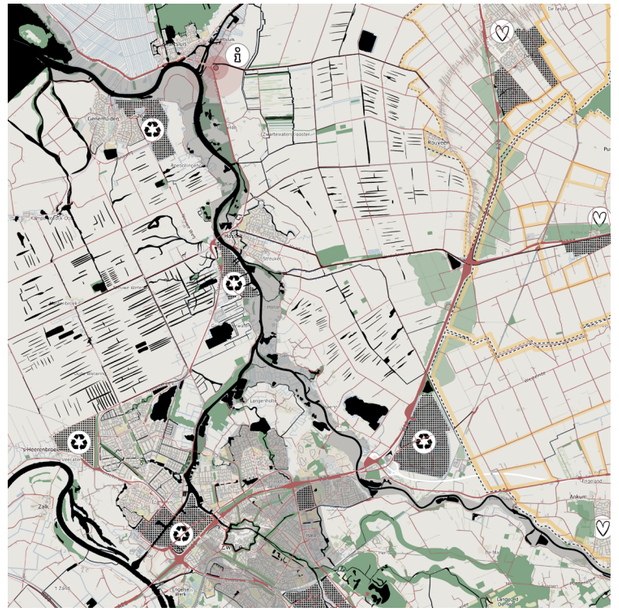
Image 121. The transition management cycle (Loorbach, 2010)



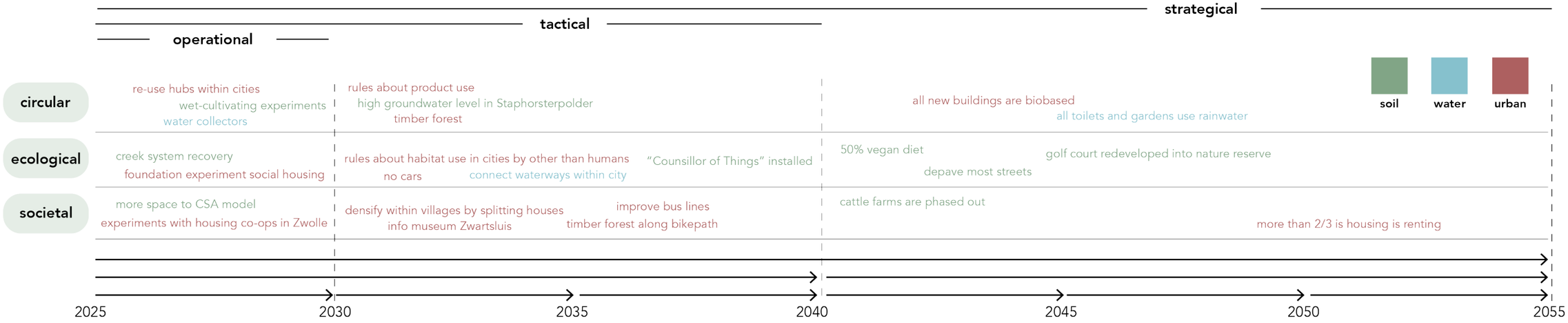
2030



2040



2055



5.4 chapter conclusion

The sub-question leading this chapter was, "How are the alternative growth futures imagined and evaluated?" It is the last question before going to the conclusion of this thesis, where the main question, "How can a renewed-value-based spatial design stimulate an alternative growth in the Zwolle region in which the housing system can thrive within social and ecological boundaries?", will be answered.

In this chapter, the important imaginative step is taken. The futures developed in the previous chapter are made explicit using drawings, stories, and images, which facilitate conversations. These conversations lay out the groundwork for the steps towards achieving such a future. After this, the evaluation took place at different scales. The last part delved into transition management and more concrete steps towards achieving a transition towards an alternative growth-based society. There are three main takeaways from this chapter.

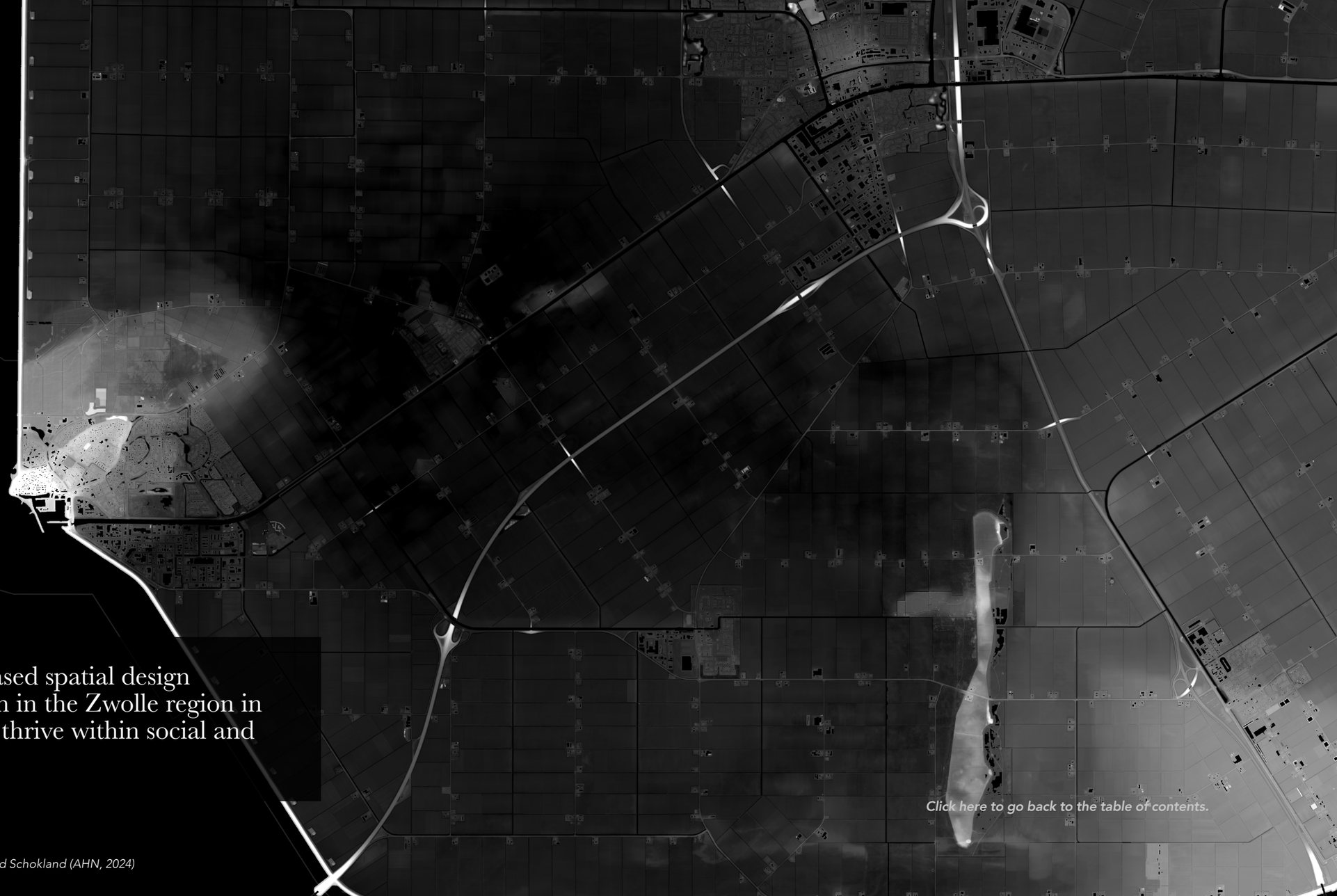
The first is about design as a negotiation tool. Through drawing and zooming in and out, conflict becomes explicit, initiating negotiation, and allowing for a more nuanced approach to decision-making. The second takeaway is the meaning of renewed values in the narrative of future visions. It is crucial to have a narrative that connects both social and ecological boundaries, addressing the disconnect between short-term and long-term perspectives. The third takeaway emphasises the importance of creating desirable scenarios, as people attach their own meanings to different visions. Hence, it is crucial to ensure that all scenarios are desirable to prevent any misuse of such scenarios.



Image 122. Erve Kiekebos is the first 'Lenteland' farm, a Dutch version of the community supported agriculture. Photo by Lenteland >

06
ending

How can a renewed valued-based spatial design stimulate an alternative growth in the Zwolle region in which the housing system can thrive within social and ecological boundaries?



Height map of the Noordoostpolder with old islands Urk and Schokland (AHN, 2024)

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6.1 conclusion

Aim | This project aimed to imagine an alternative growth-based future, in which the housing system thrives between social and ecological boundaries. The aim was to create a convincing depiction of such a future, as there is often a gap in the translation of transitions into space, making them less likely to take off. The main research question was, "How can a renewed valued-based spatial design stimulate an alternative growth in the Zwolle region in which the housing system can thrive within social and ecological boundaries?" The results are described in this conclusion.

Main result | The answer to the main question is two-sided. Firstly, translating the values of alternative growths into spatial contexts explicates targets and strategies, marking an initial step in guiding a transition in the desired direction. It creates clarity in a time of chaos. This mostly became clear in Chapters 3 and 4, when the characteristics of the different futures were established. It is especially important that the values are already there, only they are now explained in a different way. Design thinking helps to get the problems and assignments clear and can relate long-term thinking to short-term actions. Secondly, spatial design emerges as a tool for stimulating alternative growth by facilitating communication and negotiation. This aspect is prominently showcased in the latter section of Chapter 5, during the evaluation phase. Through design imaginaries like soft story projections and collage postcards, concerns spanning from the next century to the upcoming week are seamlessly connected. In complex societal problems like the housing crisis or the climate crisis involving many stakeholders, spatial translations can help bring conversations further. Imaginaries can help people understand or trigger stakeholders. A crucial step to finding this result was going back to the interviewees of the beginning and taking them along in the imagination.

Sub-results | To answer the research question, the project was divided into three parts. The first part discussed the social and ecological boundaries, the second part investigated alternatives to economic growth, and the third part imagined and evaluated these alternative growths.

A habitat doughnut is established in the first part, inspired by the doughnut economy framework by Raworth (2017), to create an analytic tool for the region and the systems I would design. This framework is formed by social and ecological boundaries, in between which the housing system should thrive. The outside boundaries were the planetary boundaries that relate most to spatial interventions: biodiversity loss, climate change, biosphere integrity and land conversion. The inside boundaries were formed by different literature frameworks on adequate housing: affordability, location, safety, (cultural) adequacy and functional network. When assessing the Zwolle region using this framework, four zones come across, each emphasising other boundaries. They overlap strongly with the soil types, which is unsurprising as each requires other landscape characteristics. However, it also showed the correlation between social and ecological problems, which underlines the importance of simultaneous analysis of social and ecological performance.
The alternative growth was investigated in the second part of the project. Leading values in the region were researched using interviews, policy documents, and plans. An important finding was that to create credible futures, it is necessary to use existing values in society. Scenarios are sometimes categorised as desirable, probable, and/or possible. The power of designing these futures lies in making possible or probable scenarios desirable or vice versa. Using trends and categorising those under the shared values can help. Another way to do that is by using the soft story method. Soft story building is used to illustrate a household's living situation and related values. Long and short conversations with people are combined into reality-based personas, and their living environment is illustrated in drawings. This was useful in the evaluation.



Image 123. Still of video of interview with Paola Viganò (Holcim, 2021).

6.1 conclusion

In the third part of the project, the imagination and evaluation of the future occurred. This showed how spatial design works as a negotiation tool and helped shape the recommendations for policymakers and designers. Again, the key here was making things explicit. A key finding was that different futures ask for different transitions that should happen simultaneously. For example, the future of societal growth asks for a transition in the thinking about property in housing, and the future of circular growth demands a change in the economy and material use. This underlines the urgency for a multidisciplinary evaluation that researches social and ecological boundaries simultaneously. Through this, it becomes clear where the different transitions need more focus. Spatial overlap shows the spatial implications and synergies.

Another important finding was that the analysis method also influenced the decision-making in the later stages of the project. When an area performs extremely poorly in ecological terms, it also suffers socially. Therefore, strategies that prioritise the environment at the expense of social well-being should be avoided. This emphasises the importance of the aspect of time in such situations. In transition management, actions have different timeframes but do not particularly follow each other. Some short-term experiments in a circular economy transition can happen at the same time of longer-term policy changes in the social housing transition, for example.

The evaluation of stakeholders was also an important method in answering the research question. Can design actually stimulate a different way of thinking? When design goes together with conversation, this is the case. An interesting takeaway is that images help to connect a future vision to what is already happening in people's lives and interviews. A direct confrontation of a change of the backyard or neighbouring house helps to imagine a certain future.

Relations between findings | A renewed-value-based spatial design can, in conclusion, stimulate alternative growth through narratives that connect the social and ecological boundaries, or in other words, the next week to the next decade. These narratives can be found by talking to people and researching existing plans and can be communicated through design and images. Urban designers play an essential role as they can connect different needs. The narratives can be used to find the first steps in making a vision. Values mean nothing if they are not made explicit, though. The more abstract and the longer term, the easier it seems, but the more you are away from actual people's concerns. The switching between the extremely long and short term and the extremely large scale and small scale is key. The used methodology of setting speculative long-term goals and researching different ways of getting there through the small time and space scale was useful for this.



Image 124. Still of video of interview with Paola Viganò (Holcim, 2021).

6.2 discussion

In this discussion, some limitations of the project are discussed. The project is also positioned in a broader context of urban planning, scenario thinking, and the growth-based value system in the Netherlands.

Habitat doughnut | The habitat doughnut framework that was created set limits for what to focus on in this project. It considered four ecological parameters and four social parameters, meaning it set aside all other parameters that matter. For example, energy production and use are left out, as well as soil pollution. To take housing as a starting point, however, created a wide range of analysis as it considers a large part of people's daily lives. A downside to this what that it was hard to define and quantify boundaries. In further research, the focus could lie more on actually trying to quantify the parameters of the boundaries.

Behaviour change | This project deals with the changes required in all aspects of society. It aims to create a narrative that connects the concerns of the whole world to that of local families. Not everyone can find the mental or financial space to worry about the climate crisis, and it would be unethical to force them to do so. However, as one of the most polluting countries historically, the Netherlands has a responsibility. By not taking that responsibility, we choose to place the burden of the climate crisis on other parts of the world.

This behaviour change is a chicken-and-egg situation. The Netherlands Environmental Assessment Agency recently published research on how the Netherlands can achieve the Paris Agreement in 2050 (PBL, 2024), but they excluded behavioural changes. This project focuses on behaviour change, particularly on transitions in everyday life. While this is a lot, it is necessary to ensure a habitable planet in the coming decades. A suggestion for further research and design would be to take the iterative process a step further. In the environmental vision for the provinces for example, the same process could be followed, but the interviews with inhabitants could take form in larger groups, taking more lifestyles into account. The transition thinking could be taken into account in the next steps of the NOVEX plan.

Despite all these limitations, a significant result is realised. In this thesis, the role of space was recentred in a discussion where that is often overlooked.

Urban planning | Design helps force the territory into the conversation. This can heal the disconnection between people and the territory they inhabit. Long-term urban planning is safe as it does not conflict with current-day concerns, but therefore often stays too vague. The method of the Habitat Doughnut and value-based scenario building help in making the long-term necessary goals into concrete steps. Because the Zwolle region is characteristic for the whole country due to its water-, soil- and urban-related problems, this is transferable to other regions in the Netherlands.

Scenario-making | In scenario-making, there are three common mistakes: making scenarios when a vision is needed, not asking the right questions, and failing to communicate the outcomes (Salewski, 2012). As discussed in part 5.2 (evaluation), the latter is mostly overcome by returning to stakeholders and discussing the projections of earlier established living situations. This showed a great way of communication. The fear of misinterpretation was not applicable, as interpretation of the projections was the goal of the conversations, as part of the evaluation. Also, by using different communication methods – from regional maps to individual story drawings – different groups were addressed. These are two important insights in the field of scenario-thinking.

Post-growth literature field | Post-growth literature is a very system-based field. This thesis added the role of space to that. In further research, the middle scale of the city could be involved. What does a post-growth city look like? The transition to a post-growth society is extremely large, as this growth thinking is present in all parts of society and decision-making. It is therefore useful to apply it to smaller transitions, because then the larger values will change along. Housing is a logic entry point, as it is quite a long-term choice everyone has to make, and therefore intrinsically linked to long term values. Using renewed values is key. Safety, pride and responsibility can still be central in a country that is not aiming for economic growth. Maybe it can even overcome the polarisation in society. In the end we all share the same values.

6.3 reflection

How do you assess the value of your way of working (your approach, your used methods, used methodology)?

A balance between research and design… and human emotions | My approach and methodology are characterised by a theoretical foundation, drawing on existing research about planetary boundaries, post-growth, and alternative solutions to the housing crisis. The connection between this foundation and my project was challenging because the theory field is so substantial. This is shown in the size of the introduction chapter. A common pitfall in theoretical projects is to get lost in the literature review and fail to make the connection to the spatial case of the project. I tried to counter this by starting each sub-question (and thus chapter) with theory or concepts and linking it directly to space. An example is showing the values of inhabitants in the soft stories, such as the pride of owning your own house.

From the start, design in this thesis is not offered as a solution for a defined problem, but it is used to imagine the progress of a shift in organising society and space differently. Design thinking functions as a powerful communication tool, evaluating the practical application of post-growth concepts in space. It becomes a way to test and validate the conclusions drawn from the research. In the chaos of a transition, there is a time for reflecting and imagination, not for ready-made answers, according to transition professor Jan Rotmans (Tielbeke, 2020). Taking concepts of alternative growth as an obvious part of the method, however, also complicated the process in a way. I had the feeling that every design choice needed to be backed up by research, while the advantage of design is precisely the exploratory aspect. This became clearer through the book Maakkracht (Goudswaard & van Oosten, 2022), where they underline the strength of the designer in tackling complex societal problems. I recognise the emotional connection they describe; for a long amount of time, I felt I could not explain my project to people within or outside urbanism, as I was still only stating what was going wrong, and not proposing a strategy for an attractive alternative. This bothered my due to the starting point of the project which is the lack of an alternative. Goudswaard & van Oosten (2022) state that the quality of a 'maker' is characterised by an emotional connection to the issue. This is not a disadvantage, but a strength. My ambition and worldview formed a strong motivation for the thesis but also made it hard to specify the project and research approach.

What lagged in the process was defining and using the values and trends. Early in the process, I realised values – the concepts and world views that drive people in organising the future – are an extremely important part of my project. It is therefore surprising that research on the current values was lacking for a long time. A reason for this could be that it was not clearly defined in the methodological framework (image 1). Furthermore, I had the idea I needed to find the perfect interviewees to understand the values, which was

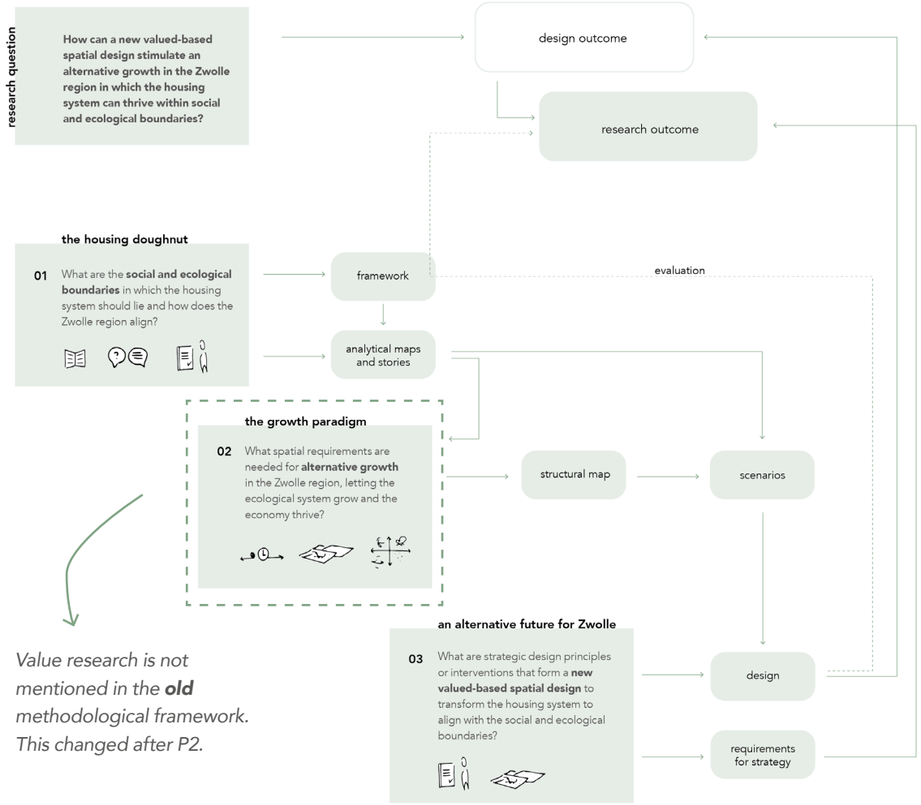


*Image 125. The old methodological framework filled with the draft outcomes. The 'value research' is not mentioned in the second sub question. In the later versions this is made more explicit. The updated version can be found on page 39 (**click here**).*

challenging. Soft stories proved to be a solution. This a method I developed, based on Vigano and Rothuizen (see chapter 2.3), where the stories are based on several interviews of different depths and lengths, are mixed with news articles or previous qualitative research, and then used to build personas to show a certain perspective. The plan was to use these values to build the scenarios, but this was not yet the case by the P2 presentation.

How did your research influence your design and how did the design influence your research?

Valued-based spatial design | That became clear during the P2 feedback, which centred around the 'value system'. The scenario building presented during P2 was not yet in line with the analysis and with each other. The scenarios should be based on research on the current values and trends. This connection was hard to make. To explain why, I am using the space-time-perception diagram from the Club of Rome (Meadows et al., 1972), in which they show people's concerns and how close they are in space and in time. The image shows that most concerns have to do with their family in the coming week. The further in time and the further in space, the less concerns. My thesis introduction starts in the upper right corner, concerning the world and our children's lifetime (> 100 years ahead). If we do not start to live within the planetary boundaries, all the children of the world will not even have a lifetime. When talking to people, often their concerns do not go further than the second to lowest and most left box, concerning people's urban daily system in the next few years (Meadows et al., 1972). The trick is therefore either to show why the upper right box also will influence people's families next week or to make sure a plan is proposed where the future that also concerns the upper right box, also is attractive enough for the lowest left box. Read more about this in chapter 4.1. Using the soft stories as a research method and converting them into values and scenarios helped with creating a believable story and an actual alternative. Defining pride as a central value helped a lot, for instance. Pride can be perceived in different ways: proud of your family house, your business, your good relationship with your neighbours, or the water system in your country. The fear of not having something to be proud of in the future can be strong and underscores the connection between now and the future through values.

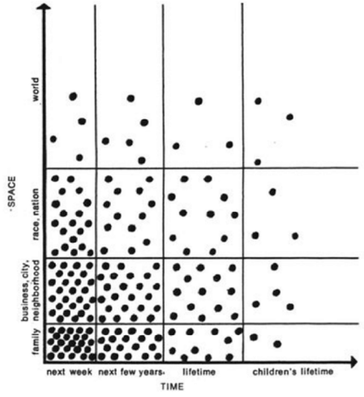


Image 126. People's concerns in a space-time graph (Meadows et al., 1972)

After P2, defining the values and trends became my focus point, which helped to quickly come to the different futures. The outcomes of those futures are something to design, while it should not be a blueprint. Here I used the transition thinking and its three main domains (regime, niches, landscape) and the breakdown and build-up. Interesting was also that during P2, I had no titles. Defining the titles of my work was a pivoting moment as it made the alternative growth types explicit. This is a good lesson for me as a designer; to not be afraid to define things and to make aspects explicit, as it often helps the process and brings up new questions.

What is the relation between your graduation project topic, your master track, and your master programme?

Position within the field of urbanism | The focal point of my graduation project centres around exploring values in spatiality and understanding how these values influence decision-making. This theme aligns with the studio's emphasis on the intersection between system and design thinking, specifically exploring how ecological and social structures influence one another. Within the urbanism track, the importance of spatial design is underscored, emphasising the narrative power of envisioning alternative futures. This also comes back to the core philosophy of the master's program, where thinking about the built environment encompasses design, science, and societal considerations. The focal point of my graduation project centres around exploring values in spatiality and understanding how these values influence decision-making. This theme aligns with the studio's emphasis on the intersection between system and design thinking, specifically exploring how ecological and social structures influence one another. Within the urbanism track, the importance of spatial design is underscored, emphasising the narrative power of envisioning alternative futures. This also comes back to the core philosophy of the master's program in which thinking about the built environment encompasses design, science, and societal considerations. Valued-based design contradicts the neutrality in science (Rocco et al., 2022). This makes our faculty such a special one in the University of Technology which identifies around science. This project shows that science and neutrality alone will not make a change in making the world a better place, but that more is needed.

How do you assess the academic and societal value, scope, and implications of your graduation project, including ethical aspects?

Position within a larger social framework This thesis delves into the spatiality of transitions, showcasing the crucial role of urbanists in bridging the gap between theories, governmental policies, and the needs of inhabitants. This involves the ability to perceive both short-term needs and long-term urgencies, thereby embracing the complexity of urban planning. Addressing the governmental taboo surrounding post-growth, my project not only tries to demonstrate desirability but also feasibility, contributing valuable insights for societal progress. I used personas to make it as understandable as possible. The personas

are more than one interviewee, which makes it a little more scientific. An ethical downside to this is that it can be too generalising. No person is the same and all concerns should be taken into consideration. The task of an urbanist is to balance all interests. Read more about the limitations of the project in the discussion (6.2).

How do you assess the value of the transferability of your project results?

The value of the transferability of this project is substantial, given the choice of a region often referred to as "a small Netherlands." It showcases how an alternative growth-based vision can be determined in a river delta area with clay, sand, and peat soil with a large housing demand. The project's applicability to similar climate- and housing-related challenges in the larger country makes it relatively transferable to other regions in the Netherlands. While a nationwide transfer is cautioned against due to complexity and scale, the governance aspects are transferable to regions with similar administrative structures, especially in smaller, interconnected areas. To let the ecological system be leading again in spatial planning asks for a location-specific approach. It is also noteworthy that the Zwolle region's relative self-sufficiency in economic terms may impact the transferability to certain contexts. Furthermore, there are of course things not taken into consideration, like pollution or agriculture. The value-based approach to spatial planning to connect social and ecological concerns is applicable anywhere, where there are people on this planet.

How did the defining of the problem statement and research questions influence the process?

Flexible research questions | A scientific approach is problem-oriented, while often a design approach is solution-oriented. This contradiction is something I noticed while working on the research questions. Their changeability changed throughout the process of the thesis. To illustrate this, the research questions' changeability is combined with the diverge-converge design thinking scheme (image X). In the first phase, problem is explored after defining the motivation. The changeability of the research questions is high, as it goes hand in hand with the problem definition. This exploration of questions slowly converged into my first two chapters. It took a while, as the topic of large socio-economic transitions makes it difficult to define a certain question. The definition of questions helped me in building the structure of the project, as all the sub-questions have their own chapter. In the second phase, when the problem is defined and the research and design process should diverge into different options, the research questions are some of the few things that are fixed. They give a strong backbone to guide the exploratory process. In the third phase, when the process converges again into the outcomes and conclusions, the questions can be redefined again into something that guides the reader into understanding the conclusions better. The changeability is high again. The ending of this phase differs per project, but hopefully, in this thesis, the story diverges again by communicating and evaluating the conclusions.

How did the process influence you as a researcher or designer?

In the personal reflection on the next page, I will dive into my changing values. What is important to mention to reflect on the project's influence on me as a professional, is that I started this project with a feeling of powerlessness concerning the climate crisis. It became a motivator for the project, as one of the actions against 'climate anxiety' is to focus on what you can control. It was sometimes difficult to that the project was so close to my worldview because I had a hard time letting go outside work hours and especially a hard time defining the problem. After all, the climate problem is enormous. This project made me realise the power of design thinking, especially in combination with literature. It can be a tool to communicate. I also realised that current plans are sometimes better than I think. The critical person at climate protests is not the same as the researcher or designer. I believe both are needed, but it is also good to realise when I am.

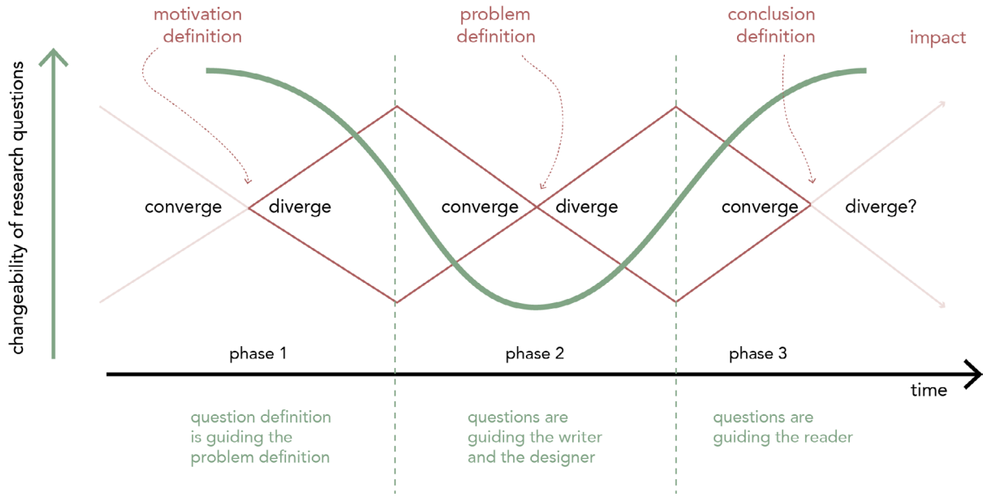


Image 127. The changeability of research questions in different phases of the graduation project. Based on Banathy (1996) and conversations with Remon Rooij

6.3 personal reflection

In a project that centres around values, I would like to take the opportunity to reflect on my personal values.

Understanding | This thesis changed the way I look at solving societal crises. Firstly, unfortunately, in the next coming years, there will be no complete solving. To actually change a whole society into behaving in a certain way, we are decades away. However, this should not be demotivating. Every step matters. In the words of Dirk Sijmons (2024, March 27, personal communication), we should "keep on stumbling forwards".

Secondly, I was once again surprised by the power of design. In all conversations about my thesis, I found it hard to describe what I was doing. But once I had the postcards of the four futures in my beloved Leuchtturm1917 notebook to show, I felt strengthened to tell my story. The same thing happened in the interviews. Because I had drawings of their living situation how they described it, I did not feel like I was imposing a certain design on them but taking them along in an imagination and trying to understand how that made them feel.

Hope | When thinking about the future, I used to feel fear. I worry about our society not being able to or even realising the need to live within the planetary boundaries. I read, I protest, I vote, I talk.

Through this thesis, I now also write, design, and imagine. I aspire to carry on doing this in my professional life as it gives me hope in a time of despair. And – in the words of Frederick Gibson, known as 'Fred again…' (2021) – hope is not a feeling, it is a strategy.



Image 128. Early spring in the forest nearby Stegeren

07
references and appendices

Click here to go back to the table of contents.

Height map of the IJssel (AHN, 2024)

7.1 references

Literature and news articles

van Assche, K., Beunen, R., & Duineveld, M. (2013). Evolutionary governance theory: An Introduction. Springer Science & Business Media.

Balz, V., Bracken, G., Cardoso, R., Chereni, S., Czischke, D., Dabrowski, M., Gonçalves, J., Höller, L., Lei, Q., Newton, C., Rocco, R., Rooij, R., & Yu, C. (2023). BIG SHIFTS in Spatial Planning in The Netherlands [Issuu]. TU Delft OPEN Publishing.

Banathy, B.H. (1996). Designing Social Systems in a Changing World. Springer New York

Beintema, N. (2023, 28 december). Hoogwater verrijkt én vervuilt de natuur. NRC. https://www.nrc.nl/nieuws/2023/12/28/hoogwater-verrijkt-en-vervuilt-de-natuur-a4185486

Bogosavac, N. (2021, september 12). Protest tegen woningnood: "Verbaasd dat dit niet eerder kwam". NOS. https://nos.nl/collectie/13877/artikel/2397477-protest-tegen-woningnood-verbaasd-dat-dit-niet-eerder-kwam

van der Boon, V. (2023, 27 december). Miljarden extra nodig tegen overstromingsrisico's Nederland. fd.nl. https://fd.nl/economie/1501609/miljarden-extra-nodig-tegen-overstromingsrisicos-nederland

Bourdieu, P. (1977). Outline of a theory of practice. Cambridge University Press. https://doi.org/10.1017/cbo9780511812507

Bos, A., Breman, B., De Wolf, P., Van Meijl, J., Geerling-Eiff, F., Jellema, A., De Jonge, E., Dekker, J., Fuchs, L., Puente-RodríGuez, D., Van Ree, M., Van Wassenaer, L., Wesselink, M., & Wigboldus, S. (2023). WUR-perspectieven op landbouw, voedsel en natuur. Wageningen University & Research. https://doi.org/10.18174/638953

van der Brugge, R., & de Winter, R. C. (2024). Deltascenario's 2024: Zicht op Water in Nederland. Deltares 11209219-000-ZKS-0004.

BVR adviseurs & Ecorys. (2022). Ruimtelijke Strategie Circulair Zuid-Holland: De Hoofdlijnen. Provincie Zuid-Holland.

Cambridge University Press. (2024. Cambridge English Dictionary: Meanings & Definitions. Retrieved April 3, 2024 from https://dictionary.cambridge.org/dictionary/english/.

CBS, PBL, RIVM, WUR. (2016). Verlies natuurlijkheid in Nederland, Europa en de wereld. Compendium voor de Leefomgeving. https://www.clo.nl/indicatoren/nl1440-ontwikkeling-biodiversiteit-msa

Compendium voor de Leefomgeving (2023). Rode Lijst Indicator, 1995-2022. https://www.clo.nl/indicatoren/nl152116-rode-lijst-indicator-1995-2022

Deltares, BoschSlabbers, & Sweco. (2021). Op waterbasis; grenzen aan de maakbaarheid van ons water- en bodemsysteem. Deltares.

Ecological Footprint©. (2023). Global Footprint Network. https://www.footprintnetwork.org/our-work/ecological-footprint/

Eikelboom, W. (2023, 5 december). Nieuwe natuur in Keteldelta beschermt Kampen en Zwolle tegen natte voeten. Trouw. https://www.trouw.nl/duurzaamheid-economie/nieuwe-natuur-in-keteldelta-beschermt-kampen-en-zwolle-tegen-natte-voeten~bec4e42e/

European Parliament. (2023, 24 mei). Circular Economy: Definition, importance and benefits. https://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-definition-importance-and-benefits#:~:text=The%20circular%20economy%20is%20a,cycle%20of%20products%20is%20extended.

Evers, D., & Tennekes, J. (2016). Europe exposed: mapping the impacts of EU policies on spatial planning in the Netherlands. European Planning Studies, 24(10), 1747–1765. https://doi.org/10.1080/09654313.2016.1183593

ten Have, N. (1690). Transisalania Provincia Vulgo Over-Yssel [paper map]. Zuiderzeecollectie.

Havermans, O. (2024, 2 februari). Blijft Nederland veilig als het water stijgt? Trouw. https://www.trouw.nl/duurzaamheid-economie/blijft-nederland-veilig-als-het-water-stijgt~b20ab465/

Havermans, O. (2024b, februari 23). Deltacommissaris Co Verdaas: 'Van alleen beschermen tegen water gaan we naar leven met het water'. Trouw. https://www.trouw.nl/duurzaamheid-economie/deltacommissaris-co-verdaas-van-alleen-beschermen-tegen-water-gaan-we-naar-leven-met-het-water~b52b24e6/?referrer=https://www.google.com/

Hekman, A. & ter Horst, R. (2022). Klimaatadaptief ruimtelijk ontwikkelen Regio Zwolle. Uitgangspunten voor de verstedelijkingsopgave vanuit het bodem- en watersysteem en klimaatadaptatie. Regio Zwolle, gemeente Zwolle, provincie Overijssel, waterschap Drents Overijsselse Delta, Ministerie van Infrastructuur en Waterstaat.

Hemel, Z. (2014). Nederland als ontwerp. Free State Of Groningen, Fryslân & Drenthe. https://zefhemel.nl/artikelenpapers/nederland-als-ontwerp/

Hickel, J. (2020). Less Is More: How degrowth will save the world. William Heineman.

Hochstenbach, C. (2022). Uitgewoond: Waarom het hoog tijd is voor een nieuwe woonpolitiek. Das Mag Uitgeverij.

Hooimeijer, F., Meyer, H., & Nienhuis, A. (2005). Atlas of Dutch Water Cities. Uitgeverij SUN.

Hoogstad, F. (2023). Meer geld nodig in strijd tegen het water: 'We zijn niet klaar voor de komende decennia'. BNR. https://www.bnr.nl/nieuws/binnenland/10536337/meer-geld-nodig-in-strijd-tegen-het-water-we-zijn-niet-klaar-voor-de-komende-decennia

Holcim. (2021, 24 augustus). Building conversations: Architects inspiring us_ Episode #4: Paola Viganò - Full Interview [Video]. YouTube. https://www.youtube.com/watch?v=ZGGiBzShTWs

Horst, M., van den Wittenboer, S., Venema, A. (2023). Gebiedsbiografie Novi-regio Zwolle. Strootman Landschapsarchitecten.

Jackson, T. (2019). The post-growth challenge: secular stagnation, inequality and the limits to growth. Ecological Economics, 156, 236–246. https://doi.org/10.1016/j.ecolecon.2018.10.010

Jackson, T. (2021). Post Growth - Life after Capitalism. Polity Press.

de Jong, T.M. (1992). Kleine methodologie voor ontwerpend onderzoek. Boom.

Kallis, G. (2015). Can we prosper without growth? 10 policy proposals. Green European Journal. https://www.greeneuropeanjournal.eu/can-we-prosper-without-growth-10-policy-proposals/

Kellij, S., & Hilhorst, E. (2023, 2 november). Negen op tien Nederlanders: sprake van "wooncrisis". I&O Research. https://www.ioresearch.nl/actueel/negen-op-tien-nederlanders-sprake-van-wooncrisis/

Kleinhans, M., Stouthamer, E., & Wanders, N. (2023, 22 december). De grenzen van het Nederlandse watersysteem zijn bereikt. NRC Handelsblad.

Klimaateffectatlas. (2023). https://www.klimaateffectatlas.nl/nl/gebruik-van-de-atlas

Klumpenaar, S., & König, E. (2024, 25 april). De Wet betaalbare huur van minister De Jonge komt er dan eindelijk. NRC

Handelsblad. https://www.nrc.nl/nieuws/2024/04/25/de-wet-betaalbare-huur-van-minister-de-jonge-komt-er-dan-eindelijk-a4197237
Knegtel, J. (2024). Veilig achter de Waaldijken. Tijdschrift van de Rijksdienst Voor het Cultureel Erfgoed, 2, 20–21.
KNMI. (2023). KNMI'23-klimaatscenario's voor Nederland. https://www.knmi.nl/klimaatscenarios
König, E. (2024, 26 maart). Hoe kunnen we droog wonen in een natter Nederland? NRC. https://www.nrc.nl/nieuws/2024/01/01/hoe-kunnen-we-droog-wonen-in-een-natter-nederland-a4185705
König, E. (2023, 7 oktober). Hugo de Jonge: 'We gaan de bevolkingsgroei niet over alle 342 gemeenten van Nederland uitsmeren'. NRC. https://www.nrc.nl/nieuws/2023/10/06/hugo-de-jonge-we-gaan-de-bevolkingsgroei-niet-over-alle-342-gemeenten-van-nederland-uitsmeren-a4176444
Krätke, S. (2014). Cities in contemporary capitalism. International Journal of Urban and Regional Research, 38(5), 1660–1677. https://doi.org/10.1111/1468-2427.12165
Lammers, J., Strootman, B., Embregts, L., Peters, L., Minn, J., & Erisman, J. W. (2024). Nederland Veganland?: Minder vlees en zuivel = meer ruimte voor natuur, ontspanning, klimaat, biodiversiteit en meer rechtvaardigheid. https://nederlandveganland.nl/
Lengkeek, A., & Kuenzli, P. (2022). Operatie wooncoöperatie: uit de wooncrisis door gemeenschappelijk bezit. Valiz.
Liebrand, H. (2022, 7 november). Post-growth, Degrowth, The Doughnut and Circular Economy: A Short guide. ontgroei. https://ontgroei.degrowth.net/post-growth-degrowth-the-doughnut-and-circular-economy-a-short-guide/
Lörzing, H. (2021). Een land waarover is nagedacht: Hoe de planners Nederland vormgaven. De Geus.
Loorbach, D., Frantzeskaki, N., & Huffenreuter, R. L. (2015). Transition Management: Taking Stock from Governance Experimentation. The Journal of Corporate Citizenship, 58, 48–66. http://www.jstor.org/stable/jcorpciti.58.48
Lucas, P., & Wilting, H. (2018). Towards a Safe Operating Space for the Netherlands: Using planetary boundaries to support national implementation of environment-related SDGs. PBL Netherlands Environmental Assessment Agency.
van Manen, S., Luns, B., Mans, M. & Minkjan, M. (2023). Analyse Woonopgave (edition 230528). Platfrom Woonopgave (CC).
Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.). (2022). Summary for Policymakers. Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, 1–24. https://doi.org/10.1017/9781009157940.001
Matthijsen, D. (2022). Vrij, Gelijk & Samenleven: Wegwijzer naar een mens- en Aardewaardige samenleving. Santasado.
Meadows, D. H., Meadows, D. H., Randers, J., & Behrens, W. W. (1972). The limits to growth. Potomac Associates.
Meynen, N., & Martinez Alier, J. (2019, 29 juli). Never-Ending growth?: The fatal flaw in the plan to end poverty and save the planet. Common Dreams. https://www.commondreams.org/views/2019/07/29/never-ending-growth
Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2020). Nationale Omgevingsvisie: Duurzaam perspectief voor onze leefomgeving. Ministerie van Binnenlandse Zaken en Koninkrijksrelaties.

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2022). Nationale Woon- en Bouwagenda. Volkshuisvesting en Ruimtelijke Ordening.
Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2023a). Programma Mooi Nederland. Ministerie van Binnenlandse Zaken en Koninkrijksrelaties; Volkshuisvesting en Ruimtelijke Ordening.
Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2023b). Contourennotitie Nota Ruimte 2023. Ministerie van Binnenlandse Zaken en Koninkrijksrelaties; Volkshuisvesting en Ruimtelijke Ordening.
Mommers, J. (2019). Hoe gaan we dit uitleggen: Onze toekomst op een steeds warmere aarde. De Correspondent.
MUST. (2019). Regio Atlas Zwolle. Regio Zwolle, in collaboration with municipalities and provinces in Zwolle region and students from the CIBAP.
Needham, B. (2016). Dutch Land-use Planning: The Principles and the Practice. Routledge. https://doi.org/10.4324/9781315578262
van Noort, W. (2024, februari 9). Rijksadviseur: 'We moeten op zoek naar een nieuwe symbiose tussen het landschap en gemeenschappen'. NRC. https://www.nrc.nl/nieuws/2024/02/09/rijksadviseur-we-moeten-op-zoek-naar-een-nieuwe-symbiose-tussen-het-landschap-en-gemeenschappen-a4189729?t=1712051640
NOS. (2023, november 7). Toezichthouder: Neem klimaatrisico's mee in huizenprijzen. NOS. https://nos.nl/artikel/2496981-toezichthouder-neem-klimaatrisico-s-mee-in-huizenprijzen
Odum, H. T., & Odum, E. P. (2000). The Energetic Basis for Valuation of Ecosystem Services. Ecosystems, 3(1), 21–23. https://doi.org/10.1007/s100210000005
PBL. (2024). Trajectverkenning Klimaatneutraal 2050. Trajecten naar een klimaatneutrale samenleving voor Nederland in 2050, Den Haag: Planbureau voor de Leefomgeving.
Philips, R., van Bavel, B., Rijpma, A., & Luiten van Zanden, J. (2021). Welvaartsgroei blijft sinds 1950 achter bij de economische groei. ESB, 106(4800S), 19–23.
Phlippen, S., Schreuder, C., Vendel, B. (2023). Stapeling klimaatrisico's and financiële draagkracht op de woningmarkt. ABN Amro.
van der Ploeg, S. (2024). Ineens ontdekken vastgoedinvesteerders dat Nederland onder zeespiegel ligt. Vastgoedmarkt. https://www.vastgoedmarkt.nl/191093/klimaatverandering-dwingt-nederlands-vastgoed-zich-opnieuw-te-bewijzen
Poelen, J. (2023, 23 november). Wat zegt het partijprogramma van de PVV over klimaat? - Klimaatweb. Klimaatweb. https://klimaatweb.nl/nieuws/wat-zegt-het-partijprogramma-van-de-pvv-over-klimaat/#:~:text=Het%20standpunt%20van%20de%20PVV,eigenlijk%20van%20alle%20klimaatmaatregelen%20af.
Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S., Donges, J. F., Drüke, M., Fetzer, I., Bala, G., Von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., Bravo, D., Rockström, J. (2023). Earth beyond six of nine planetary boundaries. Science Advances, 9(37). https://doi.org/10.1126/sciadv.adh2458
Rijksoverheid (2021). Housing associations. Housing | Government.nl. https://www.government.nl/topics/housing/housing-associations
Rijksoverheid. (n.d.). Regio Deals. Rijksoverheid.nl. https://www.rijksoverheid.nl/onderwerpen/regio-deals
Rocco, R., Thomas, A., & Novas-Ferradás, M. (2022). Teaching Design For Values: Concepts, Tools & Practices. TU

Delft OPEN. https://books.open.tudelft.nl/home/catalog/book/54
Rocco, R. (2023). What's Spatial Justice. Centre for the Just City. Available from https://just-city.org/about/spatial-justice/
Rothuizen, J. (2023). The soft atlas of Amsterdam. Nieuw Amsterdam.
Rotmans, J., R. Kemp, M. van Asselt (2001). More evolution than revolution: Transition management in public policy. Foresight 3(1): 15–31.
Rotmans, J., & Loorbach, D. (2009). Complexity and Transition Management. Journal Of Industrial Ecology, 13(2), 184–196. https://doi.org/10.1111/j.1530-9290.2009.00116.x
Rotmans, J. (2021). Omarm de chaos. Singel Uitgeverijen.
Rutte, R., & Korthals Altes, E. (2023). Historische atlas van Nederland: Hoe ons land in 2000 jaar is ingericht. Thoth.
Rutte, R., & Abrahamse, J. E. (2013). Atlas van de verstedelijking in Nederland: 1000 jaar ruimtelijke ontwikkeling. Thoth Uitgeverij.
Rydin, Y. (2013). The future of planning: Beyond growth dependence. Bristol University Press. https://doi.org/10.2307/j.ctt9qgwg6
Salewski, C. (2012). Dutch New Worlds: Scenarios in Physical Planning and Design in the Netherlands, 1970-2000. Nai010 Publishers.
Savini, F. (2021). Towards an urban degrowth: habitability, finity and polycentric autonomism. EPA: Economy and Space, 53(5), 1076–1095. https://doi.org/10.1177/0308518x20981391
Savini, F., Ferreira, A., & von Schönfeld, K. C. (2022). Post-Growth Planning: Cities Beyond the Market Economy. In Routledge eBooks. Routledge Taylor & Francis Group. https://doi.org/10.4324/9781003160984
Savini, F. (2023). Post-Growth, Degrowth, the Doughnut, and Circular Economy: A Short Guide for Policymakers. Journal Of City Climate Policy And Economy, 2(2), 113–123. https://doi.org/10.3138/jccpe-2023-0004
Savini, F. (2024, 16 januari). Opinie: 'We hebben een gebrek aan ruimte, dus niet welvaart maar welzijn moet centraal staan'. Het Parool. https://www.parool.nl/columns-opinie/opinie-we-hebben-een-gebrek-aan-ruimte-dus-niet-welvaart-maar-welzijn-moet-centraal-staan~b59992d8/?referrer=https://www.linkedin.com/
Silvestri, G., Diercks, G., & Matti, C. (2022). X-curve: A sensemaking tool to foster collective narratives on system change. DRIFT & EIT Climate-KIC Transitions Hub.
Schenderling, P. (2022). Er is leven na de groei: Hoe we onze toekomst realistisch veiligstellen. Bot uitgevers.
Schenderling, P., & Olthaar, M. (2023, november). Meer levensvreugde door te leven van genoeg. [Podcast]
Schmelzer, M. (2015). The growth paradigm: history, hegemony, and the contested making of economic growthmanship. Ecological Economics, 118, 262–271. https://doi.org/10.1016/j.ecolecon.2015.07.029
Secchi, B., & Viganò, P. (2009). Antwerp, Territory of a New Modernity. SUN Amsterdam.
Snel, H. (2024, 14 January). [interview]
Tielbeke, J. (2020). "We willen systemen begrijpen door ze te veranderen". De Groene Amsterdammer.
United Nations Human Rights Office. (2009). Fact Sheet No. 21 (Rev. 1): The Human Right to Adequate Housing. In United Nations. OHCHR with UN-HABITAT.
United Nations. (2023). The Sustainable Development Goals Report - Special Edition. United Nations.
Urhahn, Stedenbouw & Strategie. (2024). Handreiking Naoorlogse Wijken. Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, programma MooiNL (Directie Ruimtelijke Ontwikkeling, afdeling Ruimtelijke Kwaliteit).
Veras Morais, M. (2020). Watering the Semiarid: Designing a wetness retention landscape in Jaguaribara, Brazil [Master Thesis]. Delft University of Technology.
Secchi, B., & Viganò, P. (2009a). Antwerp, Territory of a New Modernity. SUN Amsterdam.
de Vries, J. (2023, 22 februari). Onrust in het planningsparadijs: 30 jaar liberalisering en decentralisering. [Lecture] Studio Regionaal Strategisch Project - KU Leuven, Gent.
Wageningen University & Research. (2019). Een natuurlijkere toekomst voor Nederland in 2120. In KennisBasis Programma Biodiversiteit in een Natuur-inclusieve Samenleving (KB-36-003-004).
Wijnants, N. (2020). Twintigerstwijfels & DertigersDilemma's: De belangrijkste loopbaan- en levensvragen van millennials. Prometheus.
Wismans, L. (2023, 7 december). CO2 afvangen en opslaan kan prima. Hoeveel is de vraag. NRC Handelsblad. https://www.nrc.nl/nieuws/2023/11/24/co2-afvangen-en-opslaan-kan-prima-hoeveel-is-de-vraag-a4182195
Witteman, J. (2021, 23 september). Wat is de verhuurderheffing en waarom wil de Tweede Kamer ervan af? De Volkskrant. https://www.volkskrant.nl/nieuws-achtergrond/wat-is-de-verhuurderheffing-en-waarom-wil-de-tweede-kamer-ervan-af~bd225482/#:~:text=Wat%20is%20de%20verhuurderheffing%20ook,752%2C33%20euro%20per%20maand.
Zomerplaag, J. (1987, april). Nederland Nu Als Ontwerp maakt scenario's voor nabije toekomst. AGORA, 17.

Data sets

Algemeen Hoogtebestand Nederland. https://www.ahn.nl/

Atlas van de Leefomgeving. https://www.atlasleefomgeving.nl/

Centraal Bureau voor de Statistiek (2023). Kaart van 100 meter bij 100 meter met statistieken. https://www.cbs.nl/nl-nl/dossier/nederland-regionaal/geografische-data/kaart-van-100-meter-bij-100-meter-met-statistieken

CBS, PBL, RIVM, WUR (2024). Bereikbaarheid met de auto en het openbaar vervoer (ov) in 2014, op basis van de bereikbaarheidsindicator (BBI) (indicator 2138, versie 04, 6 september 2018) www.clo.nl. Centraal Bureau voor de Statistiek (CBS), Den Haag; PBL Planbureau voor de Leefomgeving, Den Haag; RIVM Rijksinstituut voor Volksgezondheid en Milieu, Bilthoven; en Wageningen University and Research, Wageningen.

Klimaateffectatlas (2024). https://www.klimaateffectatlas.nl/nl/

European Environmental Agency (2023). https://www.eea.europa.eu/en

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (Rijk) (2022) Leefbaarometer meting 2020. https://data.overheid.nl/dataset/leefbaarometer-meting-20201

Nationale Databank Flora en Fauna (2024). Soortendiversiteit in Nederland op basis van Rode-Lijstsoorten. https://nationaalgeoregister.nl/geonetwork/srv/dut/catalog.search#/metadata/5958771a-8c92-4238-8ffe-6a121e5db86e?tab=general

Statline, Centraal Bureau voor de Statistiek. https://opendata.cbs.nl/statline/#/CBS/nl/

Topotijdreis. https://www.topotijdreis.nl/kaart/1900/@204228,503922,5.98

https://mobiliteitsscan-info.nl/overige-pagina/bereikbaarheidsindicator-bbi/

Reference projects

15 min city concept: Carlos Moreno (2021). https://www.mdpi.com/2624-6511/4/1/6

Agricultural housing co-operative: De Stadsboerderij. Biodynamic agricultural housing co-operative in Almere. https://stadsboerderijalmere.nl/erf-vliervelden

Agroforestry: Agroforestry Netwerk Nederland (https://www.agroforestrynetwerk.nl/praktijkvoorbeelden)

Biobased materials agriculture: Feddes / Olthof (2019). Couleur Locale – adaptive agriculture in Flevoland. https://www.feddes-olthof.nl/regio-van-de-toekomst

Biobased materials: Building Balance. Biobased materials in the east of the Netherlands: https://buildingbalance.eu/

Community supported agrictulture: Lenteland. Regenerative community farms: https://www.lente.land/

Community-supported agriculture: De Stadsgroenteboer, Amsterdam. https://www.stadsgroenteboer.nl/

Creek recovery: STOWA (2020). To a climate-resilient creek valley landscape. https://klimaatadaptatienederland.nl/actueel/actueel/nieuws/2020/beekdallandschap/

Ecological lake in between Flevopolders (Ketelmeer): Eikelboom (2023).

Floating neighbourhood in peat landscape: Gemeente Woerden (2019). https://www.slappebodem.nl/projecten/88/veenetie-een-onderzoek-naar-de-haalbaarheid-van-drijvend-bouwen-in-veenweidegebied

Forgotten side like Noordoostpolder: Wageningen University & Research. 2019)

Housing co-operative: De Nieuwe Meent (2019). Amsterdam. https://nieuwemeent.nl/

Housing co-operative: De Warren (2019). Amsterdam. https://dewarren.co/

Middle city: Plan for the Netherlands in 2121. Kuipercompagnons in Rotmans (2022)

Nature museum: Studio Marco Vermeulen (2015). Biesbosch Museumeiland. https://marcovermeulen.eu/nl/projecten/biesbosch+museumeiland/#:~:text=Gebouw%2C%20interieur%2C%20waterspeeltuin%20en%20zoetwatergetijdenpark,Joyce%20Langezaal%20ontwierp%20de%20tentoonstelling.&text=In%20het%20kader%20van%20Ruimte,grote%20polder%20Noordwaard%20mee%20stromen

Peat landscape: Fabrications & Buro Sant en co (2022). Green hart: soil + water + energy.

River recovery: George Descombes (2015), Renaturation of the River Aire. https://landezine.com/renaturation-of-the-river-aire-geneva/

Timber forest strategy: Studio Marco Vermeilen (2019). Bouwen met bomen. https://marcovermeulen.eu/nl/projecten/bouwen+met+bomen/

7.2 tips and takeaways

Maybe you want to do something after reading this thesis. What can you do today to help the transition towards a lifestyle within planetary boundaries? Here are some tips to inform yourself.

Websites
Measure your ecological footprint to get an insight: https://www.footprintcalculator.org/home/en

Read more (academic) about postgrowth citites: https://www.postgrowthcities.com/resources/

Books (see references)
The limits to growth (Meadows et al., 1972)
Less Is More (Hickel, 2020)
Er is leven na de groei (Schenderling, 2022)

Podcasts
Circular Metabolism Podcast (2023, August). Pathways towards Post-Growth (Julia Steinberger, Jason Hickel, Giorgos Kallis)

Postgrowth City Podcast (2024, March). #3 The urban/rural divide and degrowth: Julia Spanier.

Zeehandelaar, M. (Red.). (2023, november). Het Uur met schrijver en cultuurhistoricus Eva Rovers (P. van der Wielen)

Just Enough (2024, March). "Bouwen, bouwen, bouwen" is niet de oplossing voor de wooncrisis (Paul Schenderling, Sanne van Manen, Marjet Rutten). Leven na de groei.

Films
A lecture of Yvonne Rydin about Post-growth planning: The Bartlett School of Planning. (2014, 17 januari). Centenary Lecture Series: "The Future of Planning: Beyond Growth Dependence" with Yvonne Rydin [Video]. Youtube. https://www.youtube.com/watch?v=HHvsjyeBKmI

A film about the Planetary Boundaries, told by David Attenborough: Rockström, J., & Gaffney, O. (Regisseurs). (2021). Breaking Boundaries - The Science of Our Planet. Netflix. Preview: https://www.youtube.com/watch?v=2Jq23mSDh9U&t=289s

An interview with George Monbiot (in English): Uden, J. (Red.). (2024, 3 januari). George Monbiot (J. Abbring; seizoen 2024) [VPRO]. VPRO. https://www.vpro.nl/programmas/wintergasten/gasten/george-monbiot.html

Postgrowth City Manifesto (Postgrowth Cities Coalition, 2024) >

Manifesto

With our eyes fixed on a postgrowth world, we must promote:

#1
Residential buildings that no longer contribute to environmental destruction, but instead catalyze human and ecological flourishing by helping build communities and reduce the consumption of resources and energy;

#2
Transport systems that are no longer produced by environmentally destructive machines, but instead prioritize ecological and social sustainability, granting people access to healthy food, care, and meaningful social engagement;

#3
Institutions that cease fetishizing private property as a right, but instead pursue forms of autonomy and democracy that center on essential needs such as social care, health, meaningful social engagement, and human well-being;

#4
Planning laws that no longer aim to ensure ever-increasing land values, but instead recognize land's social value and promote regeneration within ecological limits;

#5
Ways of providing resources that cease producing carbon, pollution, and waste, but instead foster human health, regenerate ecologies, and are integrated into local communities;

#6
A societal work ethic that is no longer dominated by competition and individualism, but instead promotes mutual understanding, trust, and compassion, thereby allowing all communities affected by planning decisions to honestly engage with one another.

7.2 tips and takeaways

Maybe you want to do something after reading this thesis. What can you do tomorrow to help the transition towards a society within planetary boundaries? Here are four key takeaways for policymakers, spatial planners, or other interested people.

On the next few pages, you can find the appendices of this thesis; the soft stories and an overview and examples of the four futures. There are two separate documents that also form an appendix to this thesis.

Appendix A: the soft story atlas. This covers the three soft stories and takes the reader through the four futures for each soft story.

Appendix B: a summary in Dutch for policymakers, containing the main takeaways. This is designed as a flyer.

DEFINE THE BOUNDARIES

- Spatial design is fundamentally about organising a system within a specific territory. Both the system and the territory have their boundaries. It is important to map out these lower and upper boundaries.
- Analyse the area based on these boundaries and identify zones that differ from one another. This will help in understanding the social and ecological carrying capacity.

LOOK FOR SHARED VALUES AND THEIR TRENDS

- Find existing shared values to create a future vision that everyone can agree on.
- Identify where these values are already being practised or where changes in the interpretation of values are occurring. Understanding this duality can form the basis of scenarios, as they are likely to react differently to the social and environmental carrying capacity of a place.

IMAGINE THROUGH SCALES

- Develop scenarios at different scales and use different methods to reach as many people as possible. Ensure that all potential scenarios are essentially desirable.
- By overlaying and comparing scenarios, you will be able to identify actions that are safe to take regardless of the future, as well as long-term choices that become apparent.

EVALUATE AS DESIGNER

- Evaluate the scenarios with different people and compare them with existing plans and designs, preferably the same as the value research. This should be an iterative process.
- However, keep in mind the role of the designer, who brings together all interests (with or without a voice), but has space as their resource and has the capacity to set priorities.

7.3 appendix | soft stories

Johanna and Cor | *Walking the dog in the English woods, taking a bike ride along the Vecht, or going for a run along the Zwarte Water. For a day of shopping, they don't have to go far, as Zwolle has the nicest city centre in the Netherlands, but if they want something different, they usually go to Deventer or Utrecht. The children have left home a few years now, so they live far too big. "It's true, we are the classic empty nesters. But boy, it is nice living here!"*

In 25 years, Johanna and Cor have come to love Zwolle very much. They lived very nicely in Stadshagen for more than a decade, with all the other families. In 2009, the four kids got bigger, and all wanted their own rooms. They managed to sell their house with some profit and bought a beautiful, refurbished house in old Assendorp, close to the city centre. Johanna is a doctor in Zwolle and Cor works in logistics. "It was a blessing to have the children grow up here. Everything is within cycling distance: the school, and the hockey club. Even when they went out in the evening, we knew they never had to go home for long along scary roads."

A little guiltily, Johanna explains that they indeed live way too big. "But it is like that in the whole neighbourhood. We know all our neighbours; some have lived here for 30 years." The houses are super nice old buildings with real wooden floors. Worried about the future? Not so much. They see the popularity of the city growing. There is a lot of additional construction, Stadshagen is being expanded and in the city centre, for example, old warehouses are being converted. "I hope to continue living here for as long as possible. I know there are old people's homes, but of course, because of the government cuts, they have all been cut back too, so I don't want to move into those either if it's not necessary yet."



Image 129. The soft story of Johanna and Cor

Sem and Meike | *"At one point we were negotiating with our own real estate agent. He declared us crazy that we wanted to overbid that much. In the end, we didn't get the house because someone overbidded us..." Amid the hustle and bustle of the moving, Sem tells the story of the search of their new house in Stadshagen, Zwolle. He and his girlfriend are both 29 and wanted to leave Gouda, where they were renting an apartment. "We both felt that the time was there to… you know, settle down," Sem says with a suggestive smile. They chose Zwolle for its location: close to Utrecht, where Sem works, and close to family in Overijssel. "But mainly for the mentality. The harsh 'everyone on it's own' of the Randstad, you don't have that here. Zwolle is still very dorpelijk (village-like). Three neighbours already offered to lend us a drill."*

Climate risks did not play a role in the choice of house or location, Sem says. But when they got this house that was built in 2000, it did give them a safe feeling. "There were things that needed to be done, like the bathroom and some maintenance, but with a newish house like this, you just know that the base is okay. No concrete rot, no asbestos, no cracks in the walls, you know! We have seen different things in other houses we saw, in the centre of Zwolle for example."

Their house stands right on the edge of the clay formed by the Ijssel River and the low peat of the Mastenbroekpolder. According to the Knowledge Centre Tackling Foundation Problems (KCAF), their street is indeed safe. The Centre combines the soil type with the year of construction and the type of foundation, showing the vulnerability of areas. The flood risk map shows some bigger concerns. Sem says he did the test on Overstroomik.nl (Do I flood .nl), after he saw a link in the news. "It said we could flood up to 3 metres! But it probably won't get that far. I saw that they were reinforcing the dike just last week."





Image 130. The soft story of Thomas and Meike.

Pieter | *Not far from the busy Zwolle en Kampen, we find Pieter, a young dairy farmer in the Vecht valley. 'De ene keer geet 't gladjes, de ander keer geet 't stroef,' he says in the dialect, loosely translated to 'sometimes everything goes smoothly, sometimes everything goes rigidly'. Dutch farmers are known for being stiff and not very advertising about their problems. "Yeah, what can I say?"*

For centuries, Pieter's family has been farmers. "But it used to be different, ey. Back then, you had a cow, a goat, and some land. My grandfather was born here across the street. They had just canalised the Vecht and his parents built their new farm here in 1913. He helped soldiers from England land here on this field," Pieter points at the meadow next to his farm. After the war, my dad was born, and he really built up the business when he was older. Now we have more than 400 cows," he says proudly. "They graze in the fields here, and we sell the milk to the Albert Heijn."

Pieter also was at the Malieveld during the farmer's protests in 2023. "I was so frustrated. It felt good to let our voices be heard because they do not ever listen. If those nitrogen rules would go into effect, it would simply mean no milk at the Albert Heijn!" Pieter sighs. "I just don't get how we get forced to do all these things, change our lives completely, sell our family heritage business, but all these people buying our harvest and products in the supermarket don't."

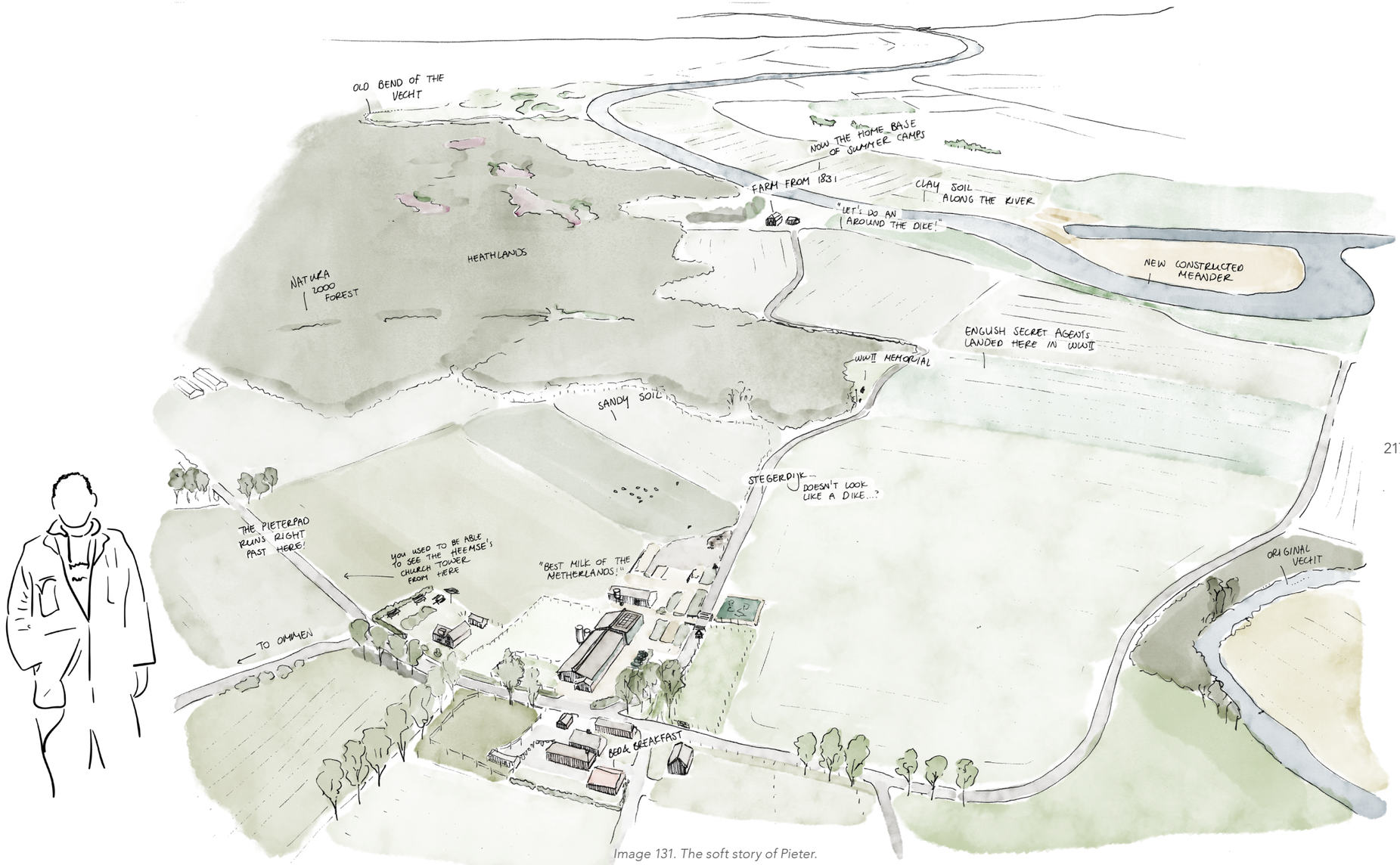


Image 131. The soft story of Pieter.

Kees in IJsselmuiden | *"They say they are talking to us and trying to find solutions, but I haven't heard from them since before summer!" Kees (59) lives at the edge of IJsselmuiden and has a view over the Koekoek polder. Last year, the municipality presented plans for a new neighbourhood of 300 houses right next to his backyard. "That I don't have a problem with, it's good that they are finally building something. But they are planning a 3-metre high noise barrier at the edge of my garden, which means that I'll never have sun in my garden again.*

The house he bought 36 years ago lies in between the old bakery the new neighbourhood is named after (De Bakkerij) and a transport company. Across from his neat garden will be elderly homes. To meet noise requirements for the new housing, a noise barrier is needed. "I'm so angry. Especially because I have tried to come up with solutions. I offered to sell a piece of my garden to the municipality so they can build the wall at a spot that doesn't block ALL my sunlight. "We will work on it," they said. I haven't heard from them since."



"This is what is the problem. They are finally making some plans for houses, that's good considering the housing crisis and all. But they don't think! And especially, they don't listen. Now the elderman is saying that the 'neighbourhood' is causing the delay in the planning of the housing, but if he would have just listened, there would have been no delay."

Geertje in Flevowijk | *In the heart of the Flevowijk in Kampen, lives Geertje, an 81-year-old woman. Her quaint home, a relic from the sixties, stands as a testament to the passage of time in this aging neighborhood. The Flevowijk, once an expansive outlying area of Kampen, now finds itself more centrally located, thanks to the emergence of the new Reeve-delta river. Geertje, a widow living alone, reflects on the changes she has witnessed over the decades. Her home, though a symbol of the past, is a reminder of the challenges faced by the community. The housing stock, although nostalgic, lacks modern comforts and energy efficiency, contributing to the prevalence of grey spaces that grapple with heat stress and water nuisances.*

The community of Flevowijk is a place where both pride and concern are evident in the fabric of society. Many of the residents feel a strong attachment to the vast green areas and open spaces. However, the outdated living conditions have negatively impacted the quality of life for the residents, resulting in a high rate of depression and loneliness.

As Geertje gazes out of her window, she contemplates the neighbourhood's struggles – a community ageing together with homes in dire need of repair. "Look, most of us have been living here for decades. The Flevowijk really is the social housing neighbourhood of the city. But that shouldn't mean we get left behind, right? And all those youngsters not being able to find a home… it must be terrible! I wish the government would do something!" Geertje acknowledges the need for improvement but remains proud of the space and green areas surrounding her. She envisions a future where the Flevowijk becomes a place that welcomes both young and old, fostering a sense of community and addressing the pressing issue of loneliness.



Dunya and Liesbeth in Kampen | *"Liesbeth, could you move? I want a picture of the tower without you on it, haha!" Laughing, Dunya tries to get a picture of the huge clock tower next to the Kampen city hall without her best friend on it, which is a challenge in itself, at 65 metres. It is a little bit before lunchtime and the two friends just arrived in the city centre of Kampen. They are doing leg 14 of the Zuiderzee hike today, a hike around the whole old coastline of the Zuiderzee. "We do one every week on Saturday. We drive to the end point of the hike and take public transport to the beginning. Sometimes we cheat a little. We mostly do it for the coffee and lunch in all the villages afterwards, haha!" Dunya agrees. "After the Afsluitdijk, that was especially needed. Gut, that was boring."*

Liesbeth explains that the hike is a beautiful way to experience the Dutch landscape. "It made me think about how special it is that we built an enormous dike in this huge lake. Such a long time ago!"

7.3 appendix | alternative growth futures in-depth

	circular growth	innovative growth	societal growth	ecological growth
values	responsibility, pride	pride, safety	responsibility, safety	responsibility
urban	ecological problem, technological solutions	urban problem, technological solutions	urban problem, behavioural solutions	ecological problems, behavioural solutions
water	how; the process. focus on the cycle	how; the construction and use. focus on the efficienct use of space	where; within ctites and current buildings. focus on the use, not property	where; on what grounds. focus on the users
soil	part of a system, valuable reusable resource	spatial moving characteristic of an area	other system than urban which is made room for	part of the ecological system, part of nature based solutions
interviewee	organism that can be monitored with ecosystem services	leading characteristic of an area	part of shared landscape that should be taken care of	leading part of ecological system, together with water
interviewee	*"This one goes well with the innovative one. I can see it happening super much. The neighbourhood is already so inventive, and with the water and the green… you are there with just small adjustments!"*	*"I feel this the most! It just really fits here; everything has been thought of. Water, traffic… In older neighbourhoods or city centres, I don't think there is space for this. There we should maybe demolish and build new ones, so we can insert these solutions."*	*"Horrific! No fences, sharing everything? Don't come to me with that. That should be on people's own initiative. While it is really a village in a city, here. It is already super social, everyone comes to you to have a talk."*	*"Taking tiles out of people's gardens? What is the use in that? Then you have all that sand lying around, and especially in the living room… But there is a way in between. Like those green spaces in between, they could be more bushy instead of grass. For me it doesn't have to be ey. I do see something for the 'soil label' like the energy label."*
interviewee	*"Such an attractive image this one. Suppose this works out! But what I find difficult, is that I see this happening already around me, but all small local initiative groups, as that is the power. The neighbourhood is too big for it to really catch on wider. But top-down also doesn't work… But yeah, I find this one very appealing."*	*"Ah, this is very much the current way of doing things, very far away from behaviour focused. Less appealing to me. It is hopeful, though. This one is more hopeful on the larger scale, while circular and societal growth are only hopeful on the small scale."*	*"So many of people my age are looking for these types of things, but they are really struggling with the rules and stuff. Personally, I also find it tricky with the privacy. When you have guests over, you want to have a place for just you and your friends, right… But I do think our society is too individualistic right now. Also, a student in our attic, that costs a lot to renovate huh…"*	*"This one is very top down right…?" Looks angry. "Around Christmas, everyone had wet basements, so it's closer than you think. I can see the house here disappearing in the end, but we're not there yet. This is way more extreme than the other three, I feel like."*

circular growth



Circl, Amsterdam, Architecten Cie



Prefab top-up element, VORM



Modular construction, Almere, Mirck Architecture

innovative growth



Veenetië, Woerden



Norbruislaan, Utrecht, Vanschagen Architecten



Modular Office Renovation, Delft

societal growth



Erve Kiekebos, Empe



De Warren, Amsterdam



Aahof, Zwolle

ecological growth



River Aires, Geneva, Atelier Descombes



Dakakker, Rotterdam. By Floor Beerthuis



Catharijnesingel, Utrecht, OKRA

Click on the images to read more about the projects!

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Voerman, J. sr. (1857-1941). Melktijd in de schaduw [painting]. Simonis & Buunk.

