

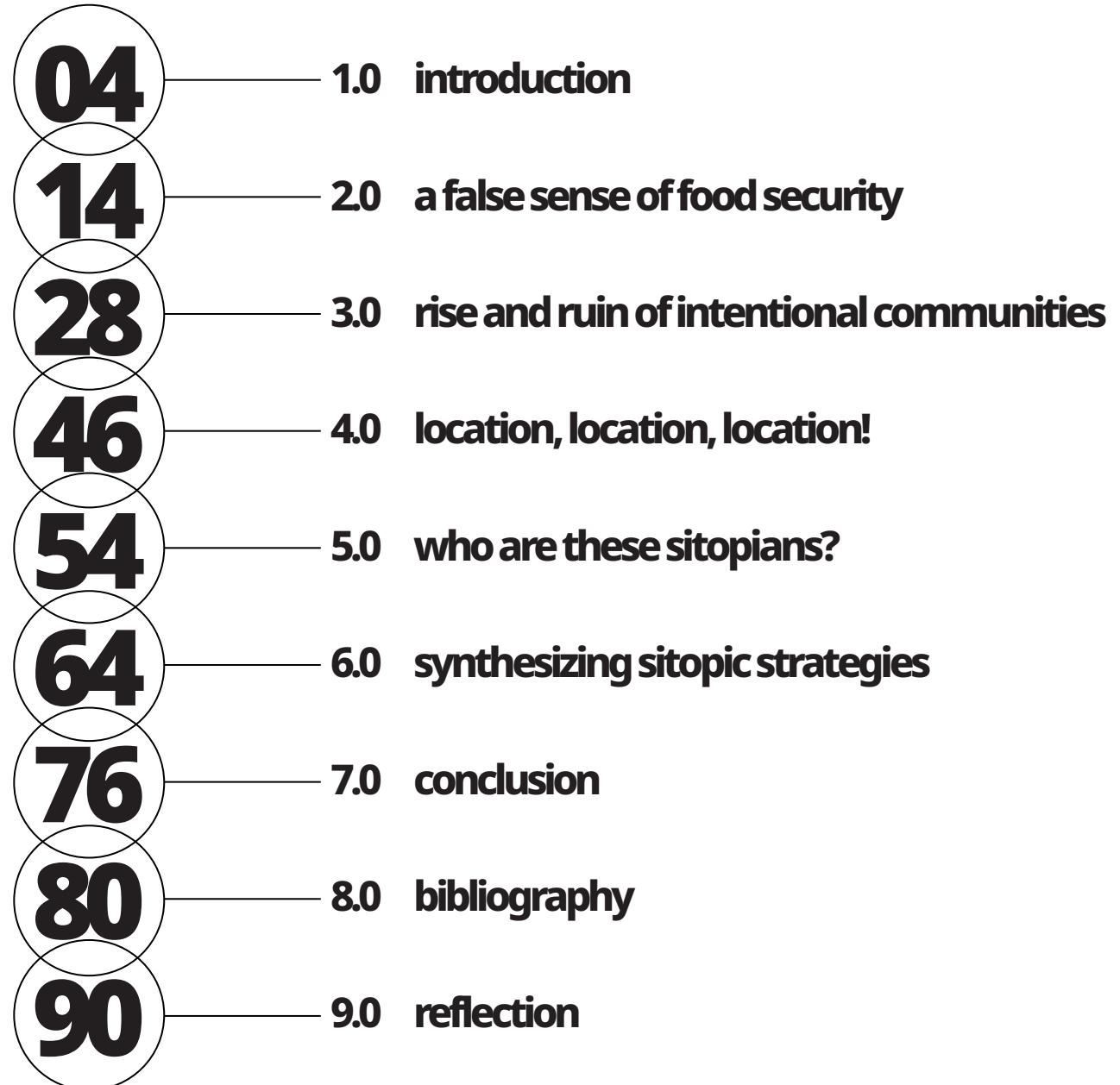


HOME TO FORK
[facing the false sense of food security]

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Author
YuHyun Oh | M.Sc. student



Design Mentor
Olv Klijn

Research Mentor
Brook Haileselassie

Building Technology Mentor
Ruurd Kuijlenburg

introduction



1.0 Introduction

In the Netherlands, the typical journey of a food product involves at least seven distinct actors, spanning from farm to table. Even in supply chains with minimal intermediaries, the power of food consumption is primarily concentrated in the hands of a few corporations before being distributed across over seven million households (Leenaers & Donkers, 2015). As a result, the average consumer holds significantly less influence over their dietary choices than commonly perceived.

The 'Farm to Fork' strategy, an integral part of the European Green Deal (2020), seeks to address this imbalance by shortening the food supply chain for the benefit of consumers, producers, and the environment (European Commission, n.d.-b). By reducing the number of intermediaries, this approach aims to empower both ends of the food system to make more informed and autonomous decisions.

The proposal of this thesis explores the possibility of advancing this concept even further by integrating food production directly into our homes. I am calling this the 'Home to Fork' strategy. Whether the contribution is significant or small, each person would gain the ability to place a finger on the pulse of food production. In doing so, inhabitants would once again be attuned to the consequences of certain consumption and lifestyle choices. The intent is not only to reduce dependency on an unsustainable food system but also to influence our dietary habits for the better and redirect the food system through a grassroots, community-driven approach. Through 'Home to Fork,' inhabitants can reestablish a meaningful connection to the land, one that has largely been lost in contemporary life.

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The proposed community will hereafter be referred to as a 'sitopia' or 'sitopic community' throughout this research. The term 'sitopia' was coined by architect, lecturer, and author Carolyn Steel as a play on the word utopia, which comes from the Greek *ou*, meaning 'not,' and *topos*, meaning 'place,' thus translating to 'no place.' In contrast, 'sitopia' combines the Greek word *sitos*, meaning 'food,' with *topos*, meaning 'place,' to form the idea of a 'food place' (Verhoeven, 2018). While a sitopia falls within the broader umbrella of intentional communities, defined as groups of people who choose to live and work together based on shared values, it differs in a subtle but meaningful way. Unlike ecovillages, cooperatives, cohousing models, and other forms of intentional communities, I define 'sitopia' as a place where food and all related activities form the core of both its collective identity and spatial organization.

1.1 Problem Statement

With the rise of modern cities and lifestyles, a growing sense of disconnect has taken root. While the epidemic of loneliness is often mentioned, this disconnect extends far beyond our social interactions. It touches nearly every facet of our daily lives, one of which is food. Food is a fundamental need, yet too often, we fail to look beyond the rows of supermarket shelves or ponder more than what we will eat for our next meal. By deliberate design, the processes of food produc-

left
Cow in Midden-Delfland (delft op zondag, 2022)

tion, preparation, and distribution have become increasingly intangible to the average person.

Before contemporary times, however, these activities were central to human life. Throughout history, the vast majority of people have been engaged in activities related to agriculture or food provision (Mohajan, 2019, p. 3). Food shaped settlements, sustained livelihoods, and formed the backbone of communities and cultures. And with good reason. The very stability of a community or society is dependent on the provision of food.

Following the industrial revolution and the rapid growth of cities, this responsibility has been outsourced to actors capable of greater efficiency and scale. Today, a vast global food network carries out this same task. However, entrusting sustenance entirely to large-scale systems raises pressing concerns. Although the global food network has upheld the responsibility of stocking supermarket shelves throughout the year, those managing it are not accountable for the degradation of ecosystems or the depletion of vital natural resources.

Despite the overwhelmingly negative impact the food system has on its ability to sustain itself, consumers are largely unaware of the severity of the issue. The immediate convenience of abundant and easily accessible food has left populations underinformed and unprepared for the mounting challenges facing food production. This disconnect is particularly evident in our cities, where the vast majority of the population lives. In times of food insecurity, densely populated urban areas are particularly vulnerable to

starvation, as they often lack the means and knowledge to produce food. A false sense of food security persists while the very foundations of the current food system erode away.

1.2 Research Question

The research question for this project is the following:

What strategies can effectively integrate food production and preparation within residential communities to develop a sustainable food system?

The research question can be broken down into three distinct segments: ***nutrition*** science, ***social*** science, and ***environmental*** science. The aim was to find broad fields of study that would apply to an intersection of dwelling design and the food system. “Food production and preparation” relates to nutrition science, “residential communities” relates to social science, and “sustainable food system” relates to environmental science. By beginning the research with these sciences, a foundation could be laid before progressing into the latter stages of research.

This research question also clearly defines the overarching goal: a sustainable food system; the means to be explored to achieve this goal: food production and preparation; and lastly, the context in which these methods are to be applied: residential communities. In doing so, the question is easy to understand, as it contains all the necessary information to determine the project’s purpose and direction.

What strategies can effectively integrate food production and preparation within residential communities to develop a sustainable food system?

above

Cyan: Nutrition Science

Magenta: Social Science

Yellow: Environmental Science

Credit: Author

1.3 Research Methodology

This research employed a mixed-method approach structured around four successive phases: **foundational research, case study analysis, demographic modeling, and spatial application**. The methodology was rooted in a comprehensive literature review supported by targeted media content and institutional data sources.

The initial stages of **foundational research** aimed to establish a base understanding of the global food system and its associated challenges. This was achieved through the review of video documentaries and selected literary sources. The global perspective was subsequently refined and contextualized within the Dutch setting using region-specific data, particularly from academic journals and official statistics published by the Centraal Bureau voor de Statistiek (hereafter referred to as CBS). The early stages of this research were primarily qualitative, drawing on visual and narrative insights from documentaries such as the BBC's 'Follow the Food,' as well as educational content produced by Wageningen University and Deutsche Welle.

To explore the intersection between architecture and food, three key books served as foundational texts. The first, 'Food and Architecture: At the Table,' edited by Samantha L. Martin-McAuliffe, draws compelling parallels between the two disciplines, highlighting how cultural traditions around food manifest in built form. The second, 'Flourishing Foodscapes: Designing City-Region Food Systems' by Saline Verhoeven, provided in-depth accounts of food-related activities in urban contexts and offered detailed frameworks for sustainable alternatives

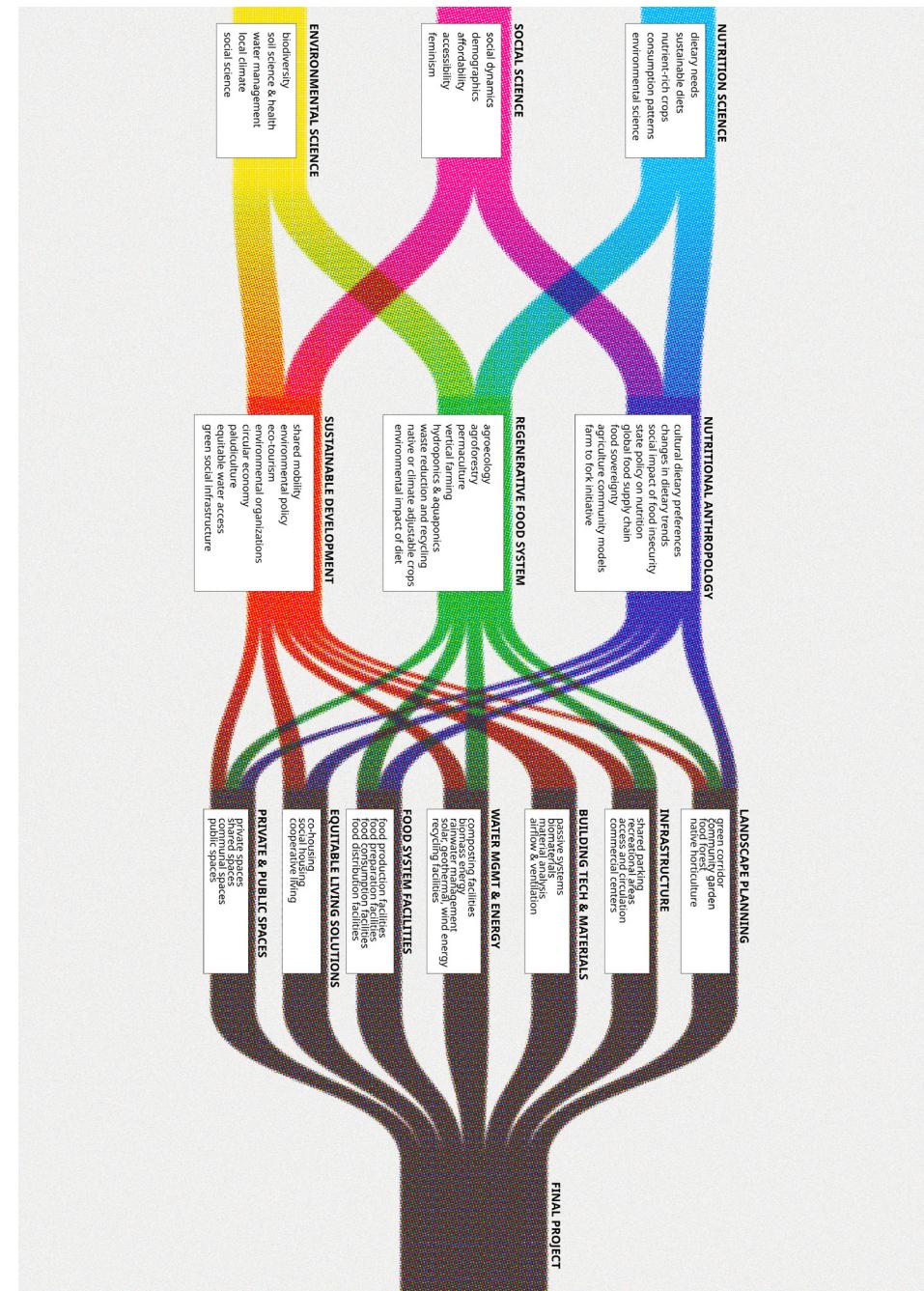
to the current food system. The third, 'Farming the City: Food as a Tool for Today's Urbanisation' by Francesca Miazzo and Mark Minkjan, presented numerous case studies illustrating the reconnection between urban residents and local food producers through various stages of food processing, distribution, and consumption. All three books provided insights into the complex relationship between food, people, and the built environment.

In the latter stages of the **foundational research**, the focus shifted toward quantitative analysis, with statistical data used to underscore the urgency of transitioning to a more sustainable food system. Particular attention was given to understanding the nitrogen crisis in the Netherlands and its relationship to local consumption patterns. The '2015 Dutch Food-Based Dietary Guidelines,' published by the Health Council of the Netherlands, were especially valuable in framing health-oriented dietary recommendations (as opposed to sustainability-oriented). Most importantly, this stage of the research revealed key conjunc-

tions between healthy eating habits and sustainable eating habits that were both under threat by the current food system. This comprehensive investigation helped identify key areas for intervention that later informed the development of design strategies.

The second phase of the research, **case study analysis**, centered on comparative case studies of intentional and agrarian communities. A series of short documen-

right
Research plan
Credit: Author



taries by author and filmmaker Kirsten Dirksen served as primary reference material. The analysis focused on identifying spatial and social characteristics that contributed to the longevity of successful communities. Given that many intentional communities fail over time, the research emphasized factors that support resilience, particularly in terms of spatial organization and social composition. The degree to which food was integrated into daily life frequently influenced architectural expression, manifesting in the placement and orientation of growing areas, kitchens, and communal eating spaces. Strategies that fostered social interaction and collective engagement were often linked to a community's longevity. In contrast, those characterized by physical or social isolation from the existing urban fabric tended to experience eventual decline and demographic aging. These insights reinforced the critical role of social structure in sustaining community life and informed subsequent phases of the design process.

The third phase involved **demographic modeling**. Consistent references in the literature to the significance of social composition in sitopic resilience led to the development of a hypothetical community profile. This profile was built using demographic data (such as sex, age, household composition, and civil status) sourced from municipalities located within a 30-minute commute of Midden-Delfland. This radius was chosen based on CBS data indicating that most individuals relocate either within their municipality or to a neighboring one and that the average Dutch worker commutes approximately 32 minutes (Centraal Bureau voor de Statistiek, 2024b).

To add a psychosocial dimension, the 'Mentality Model' developed by the research institute Motivation was used to incorporate Dutch lifestyle and value segments. Using these datasets, a hypothetical community of 100 households was generated through randomized demographic sampling. The randomization was performed using an algorithm suggested by ChatGPT. However, extensive manual changes were made to account for households that were too unrealistic (for example, a single-family household with a two-year-old baby). This model informed programmatic decisions such as the number and size of dwellings, cluster compositions, and the integration of communal and agricultural spaces designed to foster cohesion and mutual support.

The final phase focused on ***spatial application*** and design experimentation. Online research into food-integrated architectural strategies informed design decisions at multiple scales, from individual dwellings to neighborhood clusters and the overall sitopic structure. The spatial layout, circulation patterns, and architectural language were developed with particular attention to food production, preparation, and preservation at the domestic level. Each design move was expected to address systemic issues in the food system by contributing to sustainability and local food autonomy. In this phase, the research influenced the design, and vice versa, until the final design became definitive.

During the ***spatial application phase***, material selection and construction methods were informed by quantitative analysis using Ansys Granta EduPack, which

allowed comparison based on properties such as embodied energy, insulation value, and compressive strength. Life-cycle thinking guided material choices, favoring those with post-use agricultural potential. For instance, despite the current popularity of mass timber, the use of engineered wood was minimized due to its poor reusability in agrarian contexts, mainly because of synthetic binders and poor biodegradability. Although cork is often praised for its renewability and insulation performance, EduPack data revealed that it has a high embodied energy. Upon further research, it was found that its land use inefficiency made it unsuitable for large-scale use as an architectural material. Instead, more experimental materials, such as cattail rigid insulation, were explored as low-impact, agriculturally compatible alternatives that could be grown and harvested in the flooded peatlands of Midden-Delfland.

Throughout the research, the literature review remained the primary methodology. Primary sources included data and reports from reputable institutions such as the United Nations, European Commission, and CBS. Secondary sources primarily consisted of peer-reviewed academic articles accessed through platforms such as ResearchGate. This was complemented by visual and narrative insights from documentaries, along with case studies from key texts that explore the intersection of architecture, food systems, and sustainable urbanization. Although interviews were initially planned to gain firsthand insight into local community gardens and agricultural initiatives, significant obstacles, such as language barriers and difficulty arranging conversations, led to the early abandonment of this method. Instead, I decided to make the best use of my strengths by focusing on synthesizing a broad range of expert-authored sources, providing a credible foundation for the development of a sitopic design proposal. Ultimately, the goal was to produce a concrete, evidence-based architectural response to the research question.

1.4 Research Framework

The 'Home to Fork' project is conceived through a multidisciplinary research framework that brings together concepts from ***food autonomy, bottom-up sustainability, nutritional anthropology, regenerative food systems, and the Von Thünen model***. These concepts acted as a value system for the research and eventual manifestation of the design.

Food autonomy establishes the project's central ethical position: that individuals and communities should have the capacity to access, grow, and prepare food independently of industrialized food systems. This principle emerged from a personal realization that even basic food cultivation can be severely limited by domestic architectural conditions. In the Netherlands, it is common to find potted herb plants priced only slightly higher than a small plastic package containing a few sprigs of the same herb. Economically and environmentally, growing these herbs at home is a better option. However, in my living situation, the lack of direct sunlight and the absence of any outdoor space for even a single pot of basil made this impossible. Despite my best efforts, the plant withered within weeks. This experience marked a key realization: Food autonomy is often directly constrained by the way our homes are

designed. Within the context of this project, the right to food autonomy is treated as both a basic necessity and a form of empowerment for people of all economic brackets. It serves as a conceptual tool through which architecture can begin to untangle the complex challenges of today's food system.

Bottom-up sustainability provides the project's strategic outlook. It advocates for community-driven change over reliance on top-down policy reforms. Given the disproportionate power of industrial food actors and the limited incentives for institutional transformation, meaningful change is unlikely to emerge from the top. Instead, this project adopts a grassroots approach, asserting that the architectural design of homes and neighborhoods can foster sustainable practices through everyday living. Bottom-up sustainability complements food autonomy by focusing on how individual and collective agency, exercised through design, behavior, and local networks, can generate systemic impact from the domestic scale outward.

Nutritional anthropology provides a sociocultural framework for understanding how food practices are shaped by and can, in turn, shape the environments in which we live. It emphasizes that eating habits are not solely biological or individual choices but are also profoundly influenced by cultural, social, and environmental contexts. This perspective informs spatial decisions at multiple scales, from kitchen layouts and communal dining areas to the design of food-producing landscapes. It supports the idea that the intentional design of everyday environments can guide dietary behavior

and promote more sustainable relationships with food. Nutritional anthropology, therefore, serves to explain the interrelation between food and architecture.

Regenerative food systems form the ecological foundation of this project. Numerous studies have demonstrated that the food system plays a critical role in the broader discourse on sustainability. In its current form, it poses an existential threat to environmental and societal resilience. Addressing this challenge requires measures such as restoring biodiversity, rebuilding soil health, and closing nutrient cycles. These environmental strategies directly respond to the negative impacts of industrialized agriculture. The principles of regeneration also extend to architectural design, shaping decisions related to material selection, waste management, and the entire life cycle of buildings and resources. Regenerative thinking, therefore, informs not only sitopic practices but also the spatial and material design of the built environment, ensuring that cyclical systems become a defining characteristic of the sitopic community.

The **Von Thünen model** provides a spatial structure for organizing food production across the site. Initially developed in the 19th century to explain patterns of agricultural land use around urban centers, the model is reinterpreted in this project according to varying levels of cultivation expertise and labor intensity. Low-skill systems, such as herb walls or raised beds, are located closer to the home, facilitating daily interaction, while more demanding techniques, like paludiculture, are situated at the community's periphery. The spatial logic of the modified

Von Thünen model serves as a guide for the placement of various food-related activities. It informs both the layout of the sitopic community and the integration of food-related practices into daily domestic routines.

Together, these five concepts form the theoretical foundation for the research and architectural design. Each one contributes a distinct understanding of how food and space are interconnected, collectively shaping a framework in which the home is not merely a site for food preparation and consumption but a space of personal empowerment and systemic transformation. Instead of treating food as a concern outside the scope of architecture, these concepts suggest that it must be placed at the heart of domestic life and design practice.

a false sense of food se- curity



2.0 A False Sense of Food Security

This section, which shares its title with the thesis subtitle, plays a key role in the **foundational research phase**. It offers an in-depth analysis of the issues introduced earlier, arguing that food insecurity is a looming consequence of current practices within the global food system. Central to this discussion is the urgent need to confront the widespread but misleading perception of food security. This phase of the research aims to unpack the roles of key actors in the existing system and examine the **nutritional, environmental, and social** consequences of sustaining the status quo.

2.1 The Great Disconnect

The Netherlands is one of the last places you would expect to encounter issues of food insecurity. While large supermarkets like Walmart or Carrefour are rare in the country, the average distance to a supermarket is just 900 meters, or about a 15-minute walk. In Zuid-Holland, that distance is even shorter at 700 meters (Centraal Bureau voor de Statistiek, 2010). Inside these stores, consumers are met with aisles of cosmetically flawless produce and neatly packaged food products. According to the Global Food Security Index of 2022, the Netherlands ranks 5th out of 113 countries for food security (The Economist Group, 2022). On paper, it seems implausible that food security would be a significant concern in this part of the world.

Paradoxically, there can be too much of a good thing. According to the global food emissions database (EDGAR-FOOD), the food system accounted for 34% of greenhouse gas emissions in 2015, with 71% attributed to agriculture and land use

(Crippa et al., 2021). Of course, it should come as no surprise that feeding billions of people has quite an environmental cost. However, the greater issue is the disconnect. A 2022 study conducted by Wageningen University found that many consumers do not associate the current food system with critical environmental impact. The same consumers who understand the common talking points of resource depletion, energy over-consumption, and deforestation have yet to make the same link with our food system. Consumer tastes and preferences have a significant impact on the global food system and its environmental effects. The absence of public discourse around our food system leaves consumers unaware of the critical choices needed to steer it in a better direction, and those who do seek change often feel powerless to affect it (Van Bussel et al., 2022, p. 7).

...consumers are not aware of the actual impact of food production, and in particular livestock production. Some consumers recognize that there is some impact involved in food production, while others believe there is no connection between food production and the environment at all.

(Van Bussel et al., 2022, p. 7)

In this respect, the food system is a silent contributor to our environmental crisis. The remarkable truth is that an economic sector responsible for a third of greenhouse gas emissions remains under the radar of popular discourse on sustainability. The environmental issues of the food system do not garner the same attention as oil spills or microplastics. In

left
Produce shelves in Albert Heijn
(HortiLeads, 2019)

wealthy countries, the perceived abundance and banality of food pull a veil over the eyes of consumers, lulling us into a false sense of food security.

2.2 Impact of the Livestock Industry

As mentioned above, approximately one-third of global greenhouse gas emissions (GHGEs) are generated by the food system. Depending on the estimate, livestock contribute between 12% and 19.6% of GHGEs, and this figure is rising. According to the Food and Agriculture Organization of the United Nations (FAO), "emissions from enteric methane and manure rose 4% and 5%, respectively from 2015 to 2020" (The Breakthrough Institute, 2025). Addressing the greenhouse gas emissions from livestock is a contentious issue that the Netherlands has been grappling with for decades. Despite the political tug-of-war, the data is unambiguous.

In 2020, the Netherlands was the largest exporter of meat in the European Union, exporting a remarkable 3.6 billion kilograms, 85% of which was produced or processed domestically (Centraal Bureau voor de Statistiek, 2021). While the high volume of meat exports may be expected given the presence of Europe's largest port in Rotterdam, it also reflects the country's exceptionally intensive livestock sector. The Netherlands not only exports a significant volume of meat but also maintains the highest livestock density in Europe, which reflects the vast number of animals reared domestically (European Union, 2023). Additionally, the Netherlands is frequently cited as the second-largest food exporter by value after the United States (Viviano, 2017). There is no doubt that the Netherlands

punches above its weight in the global food system. However, while this is an impressive feat, the actual cost of this output lies elsewhere.

In Midden-Delfland, one is greeted by an almost surreal tranquility of green pastures and grazing cows; yet, beneath this serene exterior, the landscape faces a hidden crisis in the form of nitrogen. The Netherlands has the highest nitrogen surplus per hectare in Europe. Globally, the country consistently ranks second in terms of the highest nitrogen surplus after South Korea (OECD, 2019). The surplus of nitrogen in the air and water comes from two chemical compounds: ammonia (NH₃) and nitrogen oxide (NO_x). These compounds can originate from various sources, including industry, transportation, and energy generation; however, agriculture is the major contributor. According to a 2022 report by the Centraal Bureau voor de Statistiek (CBS), agriculture is responsible for 90.8% of ammonia emissions to the air. Combined with nitrogen oxides, this translates to 62% of elemental nitrogen originating from agriculture (Centraal Bureau voor de Statistiek, 2024a).

How did this nitrogen enter the system? Livestock is an incredibly inefficient method of food production. A whopping 80% of agricultural land is used for grazing and growing crops for animal feed, compared to just 16% for humans (Ritchie & Roser, 2019). In the fields that grow the crops for livestock feed, synthetic fertilizer containing nitrogen is used to compensate for the soils that have been depleted by intensive farming. In a short documentary by Mongabay, a 16th-generation farmer in the

Netherlands explains that the cows have been bred over time to produce a high yield of milk, and these cows need to be fed these crops to maintain that output (Mongabay, 2023). Then, of course, after the animals are fed these nitrogen-rich crops, their meat and dairy products are exported from the Netherlands, while the feces and urine remain. Together, these waste products trigger a biological and chemical breakdown of urea into ammonia (NH₃). This ammonia leaches from pastures and barns, contaminating the soil, air, and water systems.

This nitrogen surplus has contributed to the loss of approximately 80% of the Netherlands' original biodiversity. To put this into perspective, the average loss is about 65% in EU15 and 30% worldwide (Notenboom et al., 2006). The loss of biodiversity is a critical issue for the resilience of ecosystems to climate change, disease outbreaks, and invasive species (Li, 2024).

In the largest nature reserve in the Netherlands, the Veluwe, ecologists can visibly see oak and pine trees dying out due to the excess nitrogen in the soil. Ecologist Arnold van den Burg of the Biosphere Science Foundation has observed that the eggs of sparrowhawks have been failing, and their chicks are born with brittle bones. Although the sparrowhawks themselves are birds of prey, his studies have found that this is caused by a lack of amino acids in plants due to nitrogen deposition. This deficiency creates a ripple effect up the food chain, affecting snails and birds, which in turn impacts sparrowhawks at the top (Mongabay, 2023).

One of the most tangible ways to understand the loss of biodiversity is the so-called windshield phenomenon. Many people born before the 2000s recall a time when the front of their car would be covered with smashed insects after driving on the motorway. Nowadays, there are hardly any insects at all. Indeed, entomologists have recorded a drastic decline in insect populations in recent years (Vogel, 2021).

All of these issues are concerning not only for biodiversity but also for the ecosystem's ability to regulate the quality of air and water, and to support plant growth. As insects pollinate 90% of wild plants and 75% of crops in the Netherlands, this spells trouble for food production itself (Pan et al., 2024). Unless the agricultural industry develops a way to completely segregate production from the ecosystem and grow all edible crops in artificial conditions, the Netherlands will face a drastic drop in productivity. Simply put, continuing on this trajectory will result in food insecurity long before the turn of the century.

The consequences of excess nitrogen extend beyond environmental damage. The so-called nitrogen crisis (stikstofcrisis) of the Netherlands was formally recognized in 2019 following a ruling by the Administrative Jurisdiction Division of the Council of State. Legislation aimed at reducing nitrogen emissions led to the suspension of around 18,000 construction projects, further worsening the country's housing crisis (NOS Nieuws, 2019). Not only is the current food system detrimental to local ecosystems, but it is also slowly eroding the quality of life for residents in the Netherlands.

While the meat and dairy industry is an inextricable part of the Dutch identity and economy, the consequences are numerous and catastrophic for the environment and the food system. Policymakers have failed to enact meaningful changes despite being aware of the issues related to livestock and nitrogen for decades. Restricting construction and reducing livestock are last-minute policies that have been met with significant pushback. However, if the plummeting biodiversity is any indication, even these policies are too little and too late. Widespread education of the general public and strategic policies are urgently needed to transform the food system from the ground up, beginning with our lifestyles and dietary habits.

2.3 Fallout of a Global Food Supply Chain

The production side of the contemporary food system has been touched upon, but what about processing and distribution? Arguably, the unsustainable practices of food production can be attributed to the top-down pressure from food distributors that demand marketable products at a massive scale. These are not mom and pop stores at the street corner, but massive multinational conglomerates. Over the 20th century and up to the present, the number of agricultural businesses has drastically decreased while their size has increased (Leenaers & Donkers, 2015, p. 24). In other words, the distribution of our food has been consolidated in the hands of a few very powerful private businesses. This has a significant impact on how far our food has traveled, how much of it is wasted before it reaches the shelves, how fastidious we have become with food selection, and how much of

our diets consists of processed products, all in ways that are worse for our health and the environment. The current food system enables large-scale businesses to privatize profits while externalizing the negative consequences of their activities onto society.

...large farms – like many large-scale conventional businesses – tend to achieve profits without accounting for negative externalities caused by their agricultural practices.

(Miazzo & Minkjan, 2013, p. 53)

In the Netherlands, the typical journey of a food product involves at least seven distinct actors between farm and table (Leenaers & Donkers, 2015, p. 41). A bottle of orange juice in Albert Heijn may start from around 10,000 km away in the citrus belt of Brazil, where the fruit is harvested, juiced, and made into a concentrate. After being transported to the Netherlands, the concentration is diluted, packaged, and distributed (BBC, 2019). However, rather than being an outlier, this is the norm. Rabobank Amsterdam found that the ingredients of the average Amsterdam diner collectively traverse distances of 33,000 km (Verhoeven, 2018, p. 20). Even in supply chains with minimal intermediaries, the power of food consumption is largely controlled by a few corporations before being distributed to over seven million households. As a result, the average consumer holds significantly less influence over their dietary choices than is commonly perceived.

But how does a supermarket chain influence the dietary decisions of the consumer? After all, is it not the consumer



top
Diagram of current food supply chain
Credit: Author

bottom
Intensive farming in the Netherlands
(Cumming, 2022)

who decides which products to fill their shopping basket? The answer to this is a bit more complicated. Corporations with consumer-facing stores employ various psychological strategies to maximize profits. Department stores and retailers are famously known for having a lack of windows. This classic trick ensures that consumers lose track of time and are not distracted by what is happening outside. If consumers see the sky growing dark, they may choose to leave the store, leaving less opportunity for impulse purchases.

The popular furniture retailer IKEA also employs various manipulation strategies to increase sales. The restaurant is deliberately located halfway between the showrooms and the market hall to keep consumers in the store. As it is a bigger hassle to exit through the meandering maze and because IKEA's restaurant is deliberately cheaper than any alternatives in the area, consumers often opt to stay and eat in-store. Hot dogs and ice cream are sold at a loss after checkout to ensure customers are satisfied enough to return. IKEA also employs other subtle techniques to coax purchases, such as placing sale items at turning points for better visibility, arranging furniture to guide customer movement deeper into the showroom, and using the height and color of signage to direct attention to specific products (Mukherjee, 2022).

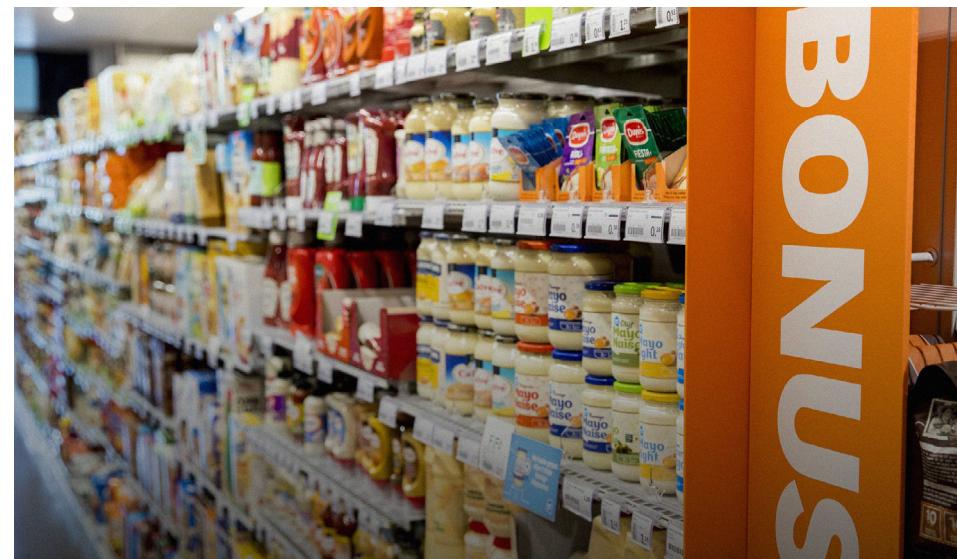
Similarly, supermarket chains such as Albert Heijn employ psychological strategies to influence consumer purchasing behavior. Both the strategic positioning of products and the use of targeted discounts have a significant impact on what consumers choose to buy.

It was found that almost all supermarkets, except Dirk, tempt their customers to opt for unhealthy products at the checkout and that these products are often explicitly aimed at children. On average, the survey stated that 82% of supermarket special offer brochures included unhealthy foods, and overall, measures to encourage healthy choices were lacking. Supermarkets were also said to lack clear targets to sell fewer unhealthy products.

(Caroline, 2022)

The situation becomes even more concerning when considering the broader food environment. Only approximately 16% of supermarket offerings consist of fresh products, while 70% are classified as highly processed foods. The '2015 Dutch food-based dietary guidelines,' published by the Health Council of the Netherlands, clearly describe the association between red meat consumption (particularly processed meats) and increased risks of stroke, diabetes, colorectal cancer, and lung cancer (Kromhout et al., 2016). Processed foods, in general, are discouraged due to their high salt or sugar content. It is worth noting that among the supermarkets that continue to promote unhealthy products, Albert Heijn and Jumbo together account for more than 50% of the market share in the Netherlands (Distrifood Dynamics, 2020). Thus, achieving widespread dietary change remains challenging when the majority of consumers rely on supermarkets where highly processed foods dominate the available options.

Some of the unsustainable decisions made by supermarket chains occur even before the products hit the shelves. Mountains of food products are discard-



top
Shelves of processed food products
(RTV Noord, 2020)

bottom
Mountains of wasted food products
(VPRO Tegenlicht, 2022)



ed in the latter stages of processing for no other reason than slight cosmetic imperfections. Food loss in supermarkets, restaurants, and at home is a common occurrence in industrialized countries like the Netherlands, where consumers are accustomed to expecting perfect produce and goods (Verhoeven, 2018, p. 138). This is especially true of the meat selection in popular supermarket chains. Offal and other less popular cuts are not typically found in the meat aisle. Consumers are only given the choice to eat the 'good' cuts of meat, while the rest is transported great distances to consumer markets that still include them in their diet. The fuel expended on transportation further contributes to the greenhouse gas emissions generated by the global food system.

Netherlands Exports of meat and edible

meat offal to China was US\$351.07 Million during 2024, according to the United Nations COMTRADE database on international trade.

(Trading Economics, 2025)

In sum, the contemporary food system is shaped not only by the pressures of large-scale production but also by the highly consolidated and manipulative structures of processing, distribution, and retail. Multinational corporations exert significant influence over both what is produced and what is ultimately available to consumers, narrowing dietary choices and promoting highly processed, less sustainable options. Through subtle psychological strategies, supermarkets and retailers shape consumer behavior

above
Trimming offal in a meat processing plant
(VPRO Tegenlicht, 2022)

in ways that prioritize profit over public health and environmental stewardship. Furthermore, stringent cosmetic standards and consumer expectations perpetuate high levels of food waste, exacerbating the system's inefficiencies and environmental impact. Together, these dynamics illustrate that meaningful change in food consumption patterns will require addressing the structural forces at play rather than placing sole responsibility on individual consumer choices. Such structural forces must work to give consumers greater agency in where and how they source their food and, as I propose, integrate these processes into the daily lives of people.

2.4 Remedies for an Ailing System

The Netherlands exports large quantities of meat, yet the maize that feeds its livestock is primarily imported from Ukraine (Centraal Bureau voor de Statistiek, 2021). This dependency on distant sources reveals a key vulnerability of the food system: its reliance on global supply chains. As geopolitical tensions and environmental instability continue to rise, it is worth asking how secure the systems that support our quality of life truly are.

This fragility is compounded by the environmental degradation caused by industrial agriculture. Pollinators are disappearing, soils are deteriorating, and nitrogen emissions are destroying biodiversity. These ecological crises threaten the very systems that make food production possible. Yet, for many consumers, these consequences remain invisible. Food arrives pre-packaged, hiding the environmental costs behind a polished facade. This detachment from food production has contributed to a dangerous

illusion of abundance and security. The nuances of this issue are deeply complex and multifaceted, and so, too, are the potential solutions. The massive farmer protests of 2022 serve as a clear reminder that the problem cannot be resolved by simply telling farmers to stop producing livestock or by relying on buyout schemes. Get rid of the cows and pigs? Reduce or halt meat exports? Just stop eating meat? These broad-stroke solutions fail to address the intricacies of the agricultural system and its deep integration into the Dutch economy and culture. Implementing meaningful change requires a deeper investigation to retrace our steps back to the root of the issue: our consumption habits.

As a society, we must rethink our relationship with food. If the means to practice food autonomy can be facilitated, it presents an opportunity to gain a better understanding of what we eat and how we eat. By moving away from reliance on industrial-scale agriculture, individuals can engage in a grassroots, bottom-up approach to transforming the industry. Change need not be driven solely by institutions and government bodies; it can and must emerge from the everyday choices and lifestyles of ordinary people. The key is to empower consumers to make those choices.

Six central problems underpin the current food system, each of which is addressed by the sitopic community model proposed in this thesis.

First, the current food system relies heavily on global supply chains that stretch across continents. Much of the animal feed used in the Netherlands, for in-

stance, is imported from countries such as Ukraine and Brazil. At the same time, food products often travel thousands of kilometers before reaching supermarket shelves. This dependence introduces serious vulnerabilities. Disruptions in trade, war, climate events, or logistical breakdowns can all jeopardize food availability and price stability. Furthermore, these long chains alienate consumers from the source of their food, reinforcing a false sense of abundance. Sitopic communities respond to this challenge by fostering local, small-scale food systems. By producing and processing food within or near the community, reliance on external inputs is reduced, transport emissions are minimized, and a greater sense of food sovereignty is established. This not only improves environmental performance but also strengthens resilience during times of crisis.

Second, power within the food system is highly concentrated in the hands of a few multinational corporations. These companies exert control over production, processing, and distribution, leaving consumers with little influence over what is available to them. Even seemingly diverse options are often owned by the same parent companies. The illusion of choice masks the reality that strategic marketing, pricing structures, and product placement shape consumer preferences. Sitopic communities help restore food agencies by decentralizing food-related decisions. When residents are directly involved in growing, preparing, and sharing food, power is redistributed. The collective governance of food systems within the community enables people to align decisions with nutritional and environmental values. In doing

so, the sitopic model not only reduces dependence on corporations but also strengthens democratic participation in food production.

Third, modern lifestyles have led to a profound disconnection between people and the origins of their food. In urbanized societies, very few individuals are directly involved in the processes of cultivation, harvesting, or food preparation. As a result, food is perceived more as a commodity than a relationship. This detachment weakens our awareness of the delicate ecosystems that support us, and it dulls our sense of accountability for their degradation. Sitopic communities address this disconnection by placing food at the heart of everyday life. Edible landscapes, shared gardens, and seasonal eating cycles reintroduce people to the rhythms and responsibilities of food. In this context, appreciation becomes rooted in experience. When the intricacies of food production are made visible, people become more thoughtful consumers and stewards of the land. A deeper connection to food fosters long-term thinking.

Fourth, industrial agriculture remains one of the most destructive forces to ecosystems globally. Practices such as monoculture, excessive irrigation, pesticide use, and heavy dependence on synthetic fertilizers lead to soil exhaustion, water contamination, and loss of biodiversity. These practices compromise the long-term productivity of the land, even as they aim to maximize short-term yield. Sitopic communities propose a different approach. Rather than separating people from the ecological consequences of their consumption, sitopias cultivate a relationship of reciprocity between

residents and their environment. Regenerative agricultural methods such as polyculture, crop rotation, composting, and wetland-compatible systems like paludiculture are encouraged. These practices not only restore soil and habitat health but also engage residents in a feedback loop, fostering a sense of community ownership. Living near the land they farm motivates individuals to avoid harmful practices and seek balance with local ecosystems. When the environment that nourishes us is also the one we inhabit, the incentives to care for it become immediate and personal.

Fifth, large retailers and food corporations actively shape consumer behavior through psychological strategies. Techniques such as shelf placement, discount promotions, and product bundling are designed to prioritize high-profit, ultra-processed foods that negatively impact both human health and the environment. These tactics create a food environment where unhealthy choices are convenient and appealing, while healthier alternatives are often less accessible or visible. Sitopic communities counter this by removing the influence of commercial retail spaces and establishing a direct connection between the places where food is grown and where it is consumed. To support this shift, food preparation and distribution are embedded in the community through shared facilities such as communal kitchens and canteens. These spaces make fresh, seasonal meals more convenient, while also fostering social interaction and collective routines. By designing a built environment that encourages healthy choices instead of exploiting consumer impulses, the sitopic community cultivates a more

conscious, equitable, and sustainable food culture.

Sixth, the current food system generates enormous waste. Cosmetic standards, overproduction, and long-distance transportation all contribute to significant losses throughout the entire supply chain. Sitopic communities address this issue by implementing circular systems that reintegrate organic waste into local agricultural cycles. Food scraps are composted and returned to the soil, and building materials are selected for their reusability, biodegradability, or compatibility with agricultural reuse. Additionally, greywater and blackwater systems are designed to retain nutrients within the local environment rather than flushing them into external sewage systems or the sea. In most contemporary settings, waste is managed out of view. Water disappears down the drain, and garbage is removed to distant processing facilities. When a problem is out of sight, it becomes easier to ignore. In a sitopic community, keeping these processes visible and integrated into daily routines helps residents develop a stronger awareness of their consumption and its consequences, encouraging more mindful and responsible habits.

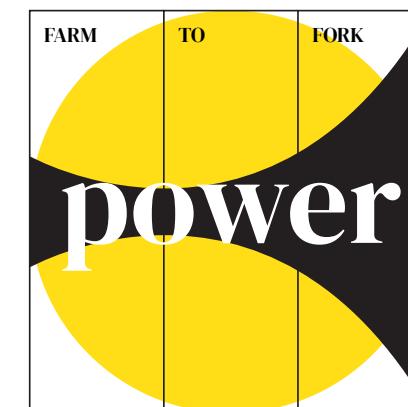
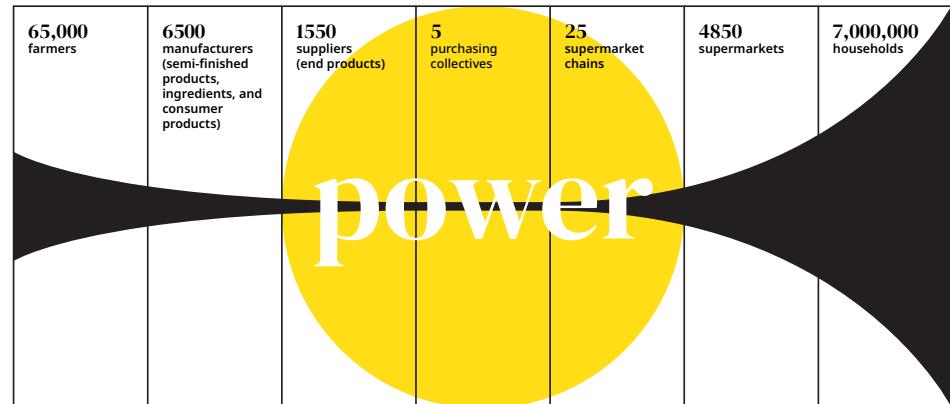
The **'Farm to Fork'** strategy, an integral part of the European Green Deal (2020), seeks to address the imbalance of power by shortening the food supply chain for the benefit of consumers, producers, and the environment. By reducing the number of intermediaries, this approach aims to empower both ends of the food system to make more informed and autonomous decisions.

This thesis proposes to take this a step

further with the '**Home to Fork**' concept by integrating food production directly into the domestic environment. Through this strategy, individuals can maintain a tangible and continuous connection to the food system on which we all depend, regardless of the scale of their personal contribution. While architecture alone cannot resolve the environmental crisis or the complex social issues that underpin it, it holds the potential to reshape the daily habits that sustain the current unsustainable food system. By embedding the processes of production, preparation, distribution, and consumption within the home, dwellers can reclaim agency from global distribution networks and corporate agriculture, fostering a more resilient and localized food culture. Eventually, the know-how of this alternative living pattern can germinate

beyond the sitopic community and take root among the general population. Food is power. Autocrats use food to bribe militaries into quashing dissent. Food has swayed votes and pushed legislation in democracies. Even today, food remains a significant contributor to political unrest, refugee crises, and violent conflict around the world. Sheltered as we are from the horrors of scarcity in the Netherlands, the continuation of unsustainable food consumption and production practices will hasten the tipping point that dismantles the deceptive lull of food security.

Food security is not an immutable truth; it is a moment in time. It should be on all of our minds.



right top
Diagram of current food supply chain
Credit: Author

right middle
Diagram of 'Home to Fork' supply chain
Credit: Author

right bottom
Diagram of proposed 'Home to Fork' supply chain
Credit: Author

rise and ruin of in- tentional commu- nities

3.0 Rise and Ruin of Intentional Communities

Intentional communities are groups of people who choose to live and work together based on shared values. One of the earliest documented examples is the Homakoeion, founded by Pythagoras around 525 BCE in southern Italy. This community was based on principles of intellectualism, mysticism, and gender equality (Kelley, 2011). Since then, intentional communities have emerged in many forms, but are often rooted in religious or spiritual ideologies.

In the 20th century, numerous intentional communities were established based on political or ecological ideals. A large number of communist communes were established in places such as communist China and Russia, although many were eventually undermined by the regimes under which they operated. The 1960s witnessed a proliferation of thousands of hippie communes, most of which were short-lived due to internal conflicts, lack of structure, or economic instability. Despite these challenges, several intentional community movements have continued into the present day. Notable examples include the Foundation for Intentional Community, founded in 1948; the Yamagishi Life communal movement in Japan, founded in 1958; the cohousing movement, which began in Denmark in 1972; and the ecovillage movement, which gained momentum in the 1990s (Kelley, 2011).

Similar to the hippie communes of the 1960s, a significant proportion of informal or poorly structured intentional communities dissolve within just a few years. Diana Leafe Christian, a prominent au-

thor on ecovillages and intentional communities, notes in her book 'Creating a Life Together' that approximately 90% of intentional communities fail (Christian, 2003). While this figure is more a qualitative observation than a data-driven statistic, it is undeniable that considerable challenges are involved in sustaining intentional communities over time.

The establishment of intentional communities is often likened to starting a business, with failure occurring at similar rates. Similarly to businesses, the reasons for failure are often practical shortcomings in organizational structure or social conflict.

...the more relevant drivers that cause many communities to unravel sound more like the challenges afflicting any organisation today: capital constraints, burn-out, conflict over private property and resource management, poor systems of conflict mediation, factionalism, founder problems, reputation management, skills shortage, and failure to attract new talent or entice subsequent generations.

(Clay, 2024)

Ironically, those most drawn to alternative forms of living are often individuals who lack the practical skills or technical expertise required to sustain a self-sufficient community. A key lesson from the failures of many such communities is that assembling only like-minded individuals with a shared desire to reject mainstream society rarely provides the economic or organizational capacity needed for long-term viability. Without a diverse

left

Photo by Patty Paulsen of Sunburst Sanctuary (Knapp, 2019)

set of skills, clear governance structures, and a sustainable financial model, these communities often struggle to maintain stability or adapt to unforeseen challenges (Clay, 2024). Simply put, the proposed sitopic community must work with the system rather than against it.

To better understand the factors that contribute to the longevity or decline of intentional communities, the following section presents case studies of successful, unsuccessful, and currently declining examples. The focus is on communities grounded in social, ecological, or food-related values, rather than those founded on religious or spiritual ideologies. Although spiritual communities have historically influenced the intentional living movement, they can sometimes foster problematic dynamics. In extreme cases, such as Jonestown and Damanhur, the combination of charismatic leadership and social isolation has produced harmful outcomes. These examples underscore the risks associated with centralized authority and radical ideologies. In contrast, this research prioritizes models that emphasize social collaboration and sustainability. The patterns and insights drawn from the case studies will inform the development of the social and spatial framework for the proposed sitopic community.

3.1 Lessons from Intentional Communities

Bonton Farms (Dallas, Texas, USA)

Daron Babcock established Bonton Farms in what is characterized as a "food desert" in South Dallas. The initiative was started as a response to systemic poverty, food insecurity, and the lack of op-

portunity within the historically marginalized Bonton neighborhood. Operating as a nonprofit organization, the community focuses on regenerative agriculture as a means of social renewal. It offers a range of supportive programs, including job training, housing support, health services, and food access initiatives. The food system centers on organic urban farming and animal husbandry, with produce distributed through farmers' markets, community-supported agriculture programs, and farm-to-table meals. Spatially, Bonton Farms reclaims vacant lots and reintegrates them into the urban fabric, contributing to both food production and community pride. Key infrastructural elements include a community market and an 11,000-square-foot wellness and education center. The organization has faced the challenge of operating in an area affected by disinvestment and social fragmentation, but has successfully built momentum through local partnerships and volunteer engagement. Currently, Bonton Farms continues to expand its programs and infrastructure. It offers a compelling model for integrating food systems and place-making into a community-led framework for regeneration (Freethink, 2020).

Conceptually, Bonton Farms illustrates how food-related activities can revitalize a neighborhood by fostering a sense of purpose and agency among its participants. By increasing autonomy over food production and consumption, the community gains greater control over daily life and local resources. Several strategies from Bonton Farms are particularly

right
Bonton Farms urban planters and coffeehouse
(Kershaw's Challenge, 2023)



relevant for informing the design of the proposed sitopic community. The first is the **integration of growing spaces** within an existing urban fabric, demonstrating how agriculture can be embedded into residential environments. The second is the **establishment of business outlets** such as Bonton's coffeehouse and market, which are licensed to prepare and sell food produced on-site. These spaces generate income, encourage social interaction, and serve as points of connection between residents and the broader public. The third is the **implementation of paid internships**, which address labor needs while also providing education and employment opportunities. It is important to note that Bonton Farms does not function as an isolated community. Rather, its strategies are designed to break down barriers of marginalization and reconnect the neighborhood with the broader urban context of Dallas.

Occidental Arts & Ecology Center (Sonoma County, California, USA)

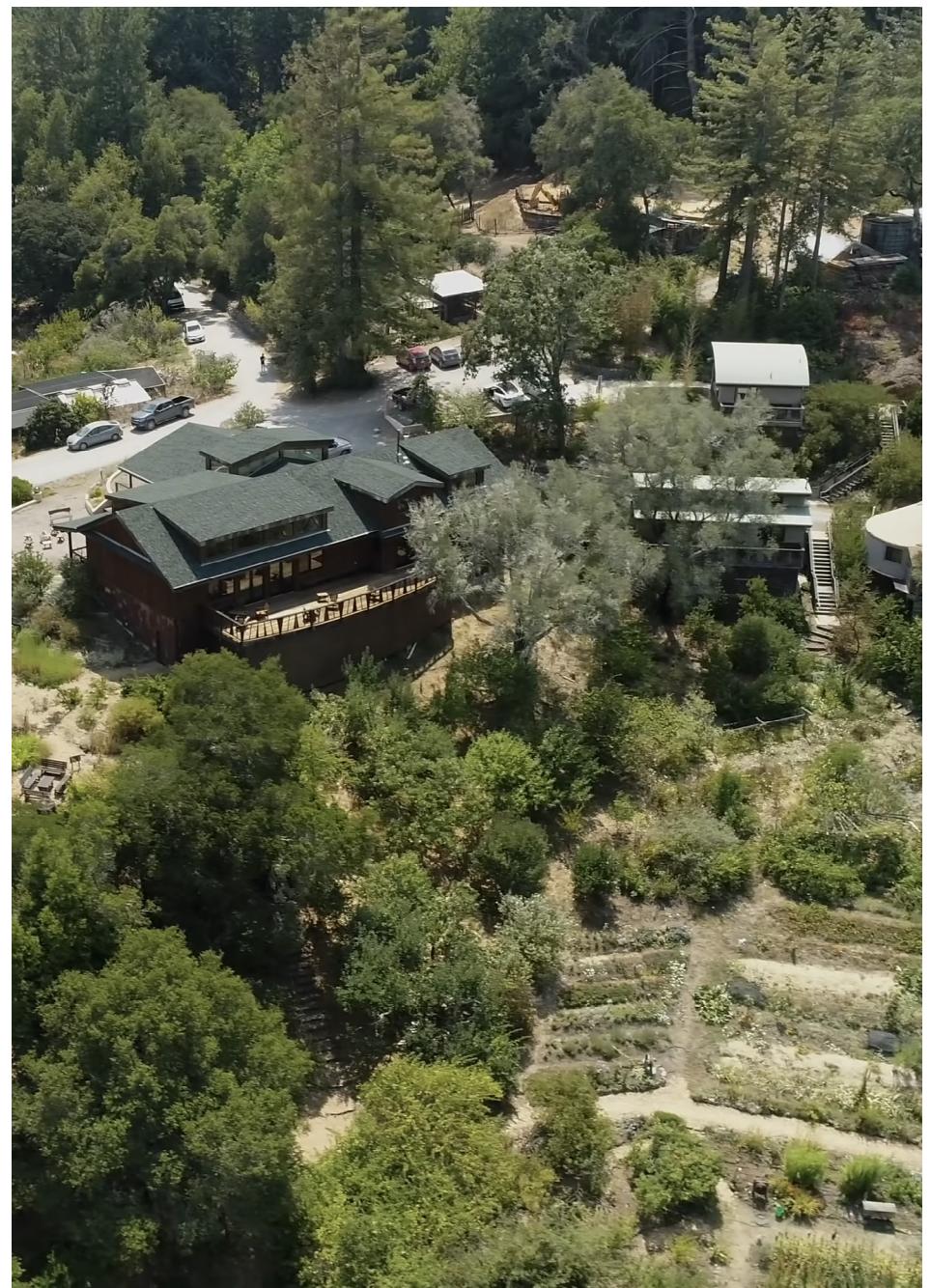
The Occidental Arts & Ecology Center was founded in 1994 by the Sowing Circle on an 80-acre ecological reserve in Northern California. Its mission is to foster regional resilience through ecological design, conservation hydrology, permaculture, and public policy advocacy. OAEC operates as a nonprofit institute that blends intentional living with outreach, training, and advocacy work. The social structure comprises resident staff, program participants, and partner organizations, all working collaboratively on-site and regionally. The center's food system is anchored in the certified-organic Mother Garden, which promotes biodiversity, seed saving, and edible landscaping. Architecturally, OAEC integrates demon-

stration gardens, retreat facilities, and watershed restoration zones within a cohesive site plan. Challenges have included balancing educational outreach with internal community dynamics and ecological management. OAEC exemplifies how intentional communities can operate as ecological and social catalysts within broader regional systems (Occidental Arts & Ecology Center, 2025).

Several key strategies can be drawn from the example of the Occidental Arts and Ecology Center (OAEC). As director Brock Dolman states in a short documentary by Kirsten Dirksen, "soil is what's being grown here" (Kirsten Dirksen, 2022a). This statement highlights the OAEC's foundational focus on **cultivating healthy soil ecosystems**. It emphasizes the importance of restoring the soil microbiome, improving water retention, and replenishing nutrients. These are all lessons that are particularly relevant to the degraded agricultural soils of Midden-Delfland after centuries of monoculture and livestock farming. Effective methods for improving soil health include **implementing closed-loop nutrient cycles, incorporating organic matter into topsoil to enhance water retention, and avoiding synthetic pesticides** to protect microbial life.

Another valuable strategy employed by the OAEC is its **continuous flow of volunteers and visitors** who come to learn and participate. The center makes a conscious effort to balance sustainability with comfort, using practical solutions such as vacuum-flush toilets instead of

right
OECD guest house and Mother Garden
(Kirsten Dirksen, 2022)



composting systems in the dormitories used by visitors. These accommodations make ecological practices more accessible to those unfamiliar with alternative lifestyles. This approach reinforces the importance of designing sitopic communities as places of exchange, where temporary residents and visitors can internalize sustainable values through lived experience. Unlike passive forms of outreach, sharing work, meals, and living arrangements offers immersive learning that has the potential to shape long-term behavior and spread knowledge beyond the community (Kirsten Dirksen, 2022a).

A third key strategy is the ***involvement of experts and professionals*** in leadership roles. By drawing on individuals with backgrounds in ecology, agriculture, design, and policy, the OAEC ensures that its practices are grounded in scientific understanding and contemporary best practices. This integration of professional expertise also helps prevent intellectual isolation, maintaining the community's relevance and connectivity to broader societal developments (Occidental Arts & Ecology Center, 2025).

These three strategies (soil regeneration, experiential education, and expert-led governance) drawn from the success of the OAEC, provide a valuable foundation for shaping the organizational and agricultural structure of my proposed sitopic community.

Earthhaven Ecovillage (Western North Carolina, USA)

Earthhaven Ecovillage was established in 1994 on 329 acres of forested land near Asheville, North Carolina, to create a living model for sustainable, bioregional

culture. It operates through a hybrid governance model: common land is owned collectively through a homeowners' association, while individual neighborhoods are organized as cooperatives or limited liability companies. The community fosters ecological self-sufficiency and cultural resilience through permaculture-based food systems, organic farming practices, and educational outreach initiatives, supported by the School of Integrated Living. Earthhaven Ecovillage is completely off the grid, and the residents draw power from solar systems and micro-hydro power systems. Architecturally, Earthhaven features a wide array of natural building techniques, including cob, timber frame, and straw bale construction. Shared spaces such as community kitchens and multipurpose gathering facilities support social cohesion. Earthhaven is a functioning eco-village with around 100 residents and a strong focus on climate adaptation and intentional education. (Earthhaven Ecovillage, 2025).

The hybrid governance model of Earthhaven Ecovillage is one of its most distinctive features. The community is composed of several individual neighborhoods, each functioning as a semi-autonomous entity within the larger ecovillage framework. These neighborhoods are dispersed across a forested landscape, creating a spatially fragmented layout. Their architectural expression varies considerably, reflecting the personal choices and financial means of their residents. One neighborhood consists of a single earthship home inhabited by an aging couple.

right
Neighborhood in Earthhaven Ecovillage
(Kirsten Dirksen, 2025)



ple, while another features a multi-family residence with a more urban design and modern amenities. This diversity in building type and neighborhood scale suggests a **high degree of individual autonomy**, though it also raises questions about overall community cohesion. Furthermore, Earthaven's remote location poses practical challenges; its distance from urban centers restricts employment opportunities outside the community, potentially limiting socio-economic diversity and integration (Kirsten Dirksen, 2025).

Despite the village's emphasis on sustainability, community-wide initiatives beyond energy conservation and renewable energy appear to be limited. Agricultural practices are largely individual, with no evident centralized farming system or coordinated food strategy in place. This lack of collective production may contribute to a weaker sense of interdependence among residents. However, the high degree of personal autonomy and the loosely structured governance model may ease the transition for individuals accustomed to urban lifestyles. Encouraging food cultivation as a **voluntary rather than obligatory** activity could help maintain long-term participation by minimizing burnout and avoiding an excessive burden of responsibility (Kirsten Dirksen, 2025).

Another key takeaway from Earthaven Ecovillage is the **strategic use of communal spaces** to create varying levels of affordability. In one of the shared housing complexes, a communal kitchen serves residents whose individual units lack private kitchens, thereby reducing construction and utility costs. A shared

laundry facility further supports this model of collective resource use. By integrating shared amenities, the overall size and cost of individual units can be adjusted, making housing more accessible to a broader range of residents. This approach offers a valuable strategy for the sitopic community, where common spaces can be intentionally designed to balance affordability, functionality, and social interaction (Kirsten Dirksen, 2025).

Earthaven Ecovillage offers meaningful insights for the design of sitopic communities. It demonstrates that individuals with diverse values and comfort levels can coexist within a flexible spatial and governance framework. The community's loose, non-hierarchical decision-making structure encourages social stability while allowing for individual autonomy. Shared infrastructure, such as communal kitchens and laundry facilities, not only improves affordability but also fosters regular social interaction. Although Earthaven's remote location limits access to external employment and services, its model underscores the importance of accommodating diverse lifestyles, supporting decentralized governance, and designing shared spaces with intention.

Windsong Cohousing (Langley, British Columbia, Canada)

Windsong Cohousing, initiated in the early 1990s by Howard Staples and Miriam Evers, is a suburban cohousing community designed to foster shared responsibility and a sense of community. Located in Langley, British Columbia, it consists of 34 private units organized around shared

right
Windsong Cohousing covered central street
(Canadian Cohousing Network, n.d.)



outdoor and indoor spaces, including a central common space. Governance is resident-led, with monthly meetings, collaborative decision-making, and shared chores forming the backbone of community life. The food system includes a small communal garden, group meals, and coordinated cooking efforts that reinforce social bonds. A defining feature of Windsong is its central covered street, a glass-roofed corridor reminiscent of an arcade. This architectural element serves as both the main circulation route and a social spine, facilitating spontaneous encounters and maintaining a strong sense of community presence throughout the year. While Windsong has navigated the shift from its founding ideals to more pragmatic daily routines, it has continued to thrive for over 30 years. Much of this longevity can be attributed to its thoughtful spatial design, which subtly yet effectively encourages neighborly interaction. Windsong offers a compelling example of how intentional spatial planning can support long-term community cohesion (Windsong Cohousing, 2023).

The **central covered street** in Windsong Cohousing is a distinctive architectural feature that holds potential for application in the spatial design of clusters within a sitopic community. In the context of British Columbia's wet and cold winters, the covered walkway functions as a climate-responsive indoor-outdoor space, providing year-round shelter while maintaining openness and natural light. Similarly, in the Netherlands, where winters are also damp and cold, a covered circulation route could serve both practical and social functions. At Windsong, the glass-roofed corridor serves as the primary access point to individual residenc-

es while also functioning as a social spine that encourages spontaneous encounters and daily interaction. Its semi-public character helps to blur the boundary between private and communal life, while also serving as a flexible zone for events and informal gatherings. Although the design fosters a strong sense of shared space, it is important to note that Windsong follows an individual ownership model. Most homes are privately owned and occupied by their original residents. While this provides long-term residential stability and autonomy, it has contributed to the aging of the community. Over thirty years since its founding, many of the initial residents have reached old age. In a way, this demographic trend reflects the strength of the community in Windsong Cohousing since many residents have chosen to stay. However, it also highlights the challenges of maintaining intergenerational balance. For the proposed sitopic communities, Windsong Cohousing exemplifies why a **mix of ownership models** must be implemented to prevent the community from falling into decline (Kirsten Dirksen, 2024b).

Kailash Ecovillage (Portland, Oregon, USA)

Kailash Ecovillage was founded in 2007 when Ole and Maitri Ersson purchased the deteriorating Cabana apartment complex in Southeast Portland with the vision of transforming it into an urban model of ecological resilience and community living. Motivated by a desire to reduce environmental impact and prepare for systemic instability, they began depaving parking areas and converting

right
Aerating the compost bins at the Kailash Ecovillage
(Kirsten Dirksen, 2021)



lawns and unused spaces into food-producing landscapes. The community operates under a rental-based cohousing structure with governance guided by consensus, informal leadership, and active participation from its 55 residents. The food system is rooted in permaculture principles and includes an expansive urban food forest, berry and grape patches, fruit trees, and vegetable gardens. Architecturally, the original apartment buildings have been retrofitted to include shared facilities, such as a community room, laundry facilities, a tool shed, and bike storage. Outdoor spaces have been transformed into edible landscapes where a swimming pool once stood. Kailash has faced the challenge of maintaining an intensive landscape within an urban context, which requires continual labor, coordination, and engagement. However, this has been offset by the community's high degree of resident participation and a clear sense of shared purpose. Today, Kailash Ecovillage continues to thrive, with a long waiting list and growing recognition as a leading example of ecological urban transformation. The project demonstrates how an existing suburban property can be transformed into an agrarian oasis within the suburbs (Kailash Ecovillage, n.d.).

One of Kailash Ecovillage's core environmental strategies is its **rainwater harvesting and groundwater recharge system**. Roof surfaces and other hardscapes are used to collect rainwater, which is then stored on site for garden irrigation and other non-potable uses. Instead of directing excess water into the municipal stormwater system, the landscape has been carefully reshaped and depaved to allow water to soak into the ground. This

enables gradual infiltration that helps replenish the aquifer beneath the site. In areas once dominated by impermeable surfaces, water is now either stored in tanks for future use or absorbed directly into the soil. This approach not only conserves water but also restores the local hydrological cycle, offering a valuable model for improving water retention in urban environments (Kirsten Dirksen, 2021).

Sanitation at Kailash is managed through a city-permitted system that includes **composting toilets and urine-diversion infrastructure**. Human waste is processed on-site through aerobic composting methods and turned into safe, nutrient-rich compost. Urine is collected separately, diluted, and used as fertilizer in the food forest. While the idea of handling human waste may be uncomfortable for some, Kailash demonstrates that with proper systems and community buy-in, ecological sanitation can be both practical and sanitary. This closed-loop approach not only reduces reliance on centralized sewage infrastructure but also transforms waste into a productive resource that directly supports local food cultivation (Kirsten Dirksen, 2021).

Organic waste from kitchens and gardens is processed through a **community-managed composting system**. Residents maintain several large compost bins constructed from concrete blocks, where food scraps, plant clippings, and other organic materials are placed to decompose. The compost piles are aerated periodically to support microbial activity, and the bins are used in rotation to allow time for proper breakdown. Once fully composted, the material is returned

to the food forest as a soil amendment. This process enhances soil health, improves moisture retention, and supports a healthy microbiome, closing the nutrient cycle within the site and reducing the need for external inputs (Kirsten Dirksen, 2021).

Kailash Ecovillage employs a **rental model** intentionally designed to promote affordability and social inclusion. Rents are kept below the Portland market average, enabling access for individuals and families from a range of income levels. Residents rent units within the converted apartment complex and take part in the upkeep of shared spaces and landscapes. Each person contributes a minimum of one hour per month to community tasks, reinforcing a culture of shared responsibility and participation. Rather than encouraging private ownership, this model supports long-term stability by reducing turnover and cultivating a strong sense of collective investment. The community remains in high demand, with a waitlist numbering in the hundreds, indicating the appeal of an affordable, ecologically grounded urban lifestyle (Kirsten Dirksen, 2021).

These four strategies (rainwater harvesting and aquifer recharge, ecological sanitation, decentralized composting, and an inclusive rental model) drawn from the example of Kailash Ecovillage, offer practical and scalable solutions for the design of my proposed sitopic community. Together, they demonstrate how resource circularity, community participation, and affordability can be integrated into an urban ecological framework.

3.2 Synthesis of Strategies

Together, these case studies offer a diverse and instructive set of strategies for designing a sitopic community that is ecologically regenerative, socially cohesive, and economically inclusive. From **Benton Farms**, we learn the power of embedding agriculture into existing urban environments, the importance of linking food production to local economies, and the value of food systems as tools for community empowerment. The **Ocidental Arts & Ecology Center** emphasizes the need for soil restoration, the impact of immersive environmental education, and the stabilizing effect of professional leadership within intentional communities. **Earthaven Ecovillage** provides insights into decentralized governance and the utilization of shared infrastructure to enhance affordability, while also highlighting potential pitfalls, such as limited collective food production and geographic isolation, that can hinder community cohesion. **Windsong Cohousing** demonstrates how thoughtful spatial design, particularly the central covered street, fosters social interaction and year-round engagement; however, its single-ownership model has led to an aging population and raises concerns about long-term demographic sustainability. Finally, **Kailash Ecovillage** provides a replicable urban model for circular systems through rainwater harvesting, ecological sanitation, communal composting, and a rental model that supports affordability and participation. Taken together, these case studies provide lessons not only from what works but also from what could be improved.

3.3 Food as a Social Glue

Food is more than nourishment; it is one of the most consistent and powerful forms of human connection. Across time and geography, the acts of growing, preparing, and sharing food have formed the basis of social relationships and cultural identity. An appreciation for food is a universal human experience that transcends class, politics, and culture. The idea that food brings people together may seem intuitive or even clichéd, but, as mentioned at the beginning of this chapter, social cohesion is a crucial component in the longevity of intentional communities. As such, the idea that food is a 'social glue' is a compelling argument for organizing a sitopic community around the shared value of food-related activities.

Food-related gatherings often serve as the connective tissue of daily life. In 'Food and Architecture,' Amy B. Trubek describes how sugarhouses in Vermont, built for boiling maple sap, have become deeply social spaces. These structures host seasonal gatherings where neighbours and family come together not only to make syrup but to taste, talk, and reaffirm their connection to 'place.' Rather than serving a purely functional role, the sugarhouse mediates between nature and culture, reinforcing community through collective labour, storytelling, and seasonal food rituals (Martin-McAuliffe, 2016, pp. 43–56). In the same book, Aglaia Kremezi vividly captures how the age-old ritual of pig slaughtering, or 'choirospagia,' on the island of Kéa in the Cyclades reveals food as a powerful social glue, binding people through shared labour, space, and tradition. This multi-day event is a seasonal festivity.

Families, friends, and neighbours gather around the 'stegadi,' a porch that becomes the beating heart of activity. While men handle the initial slaughter, women continue the work over several days, preparing sausages, loza, and paspalas (Martin-McAuliffe, 2016, pp. 61–70). Such practices stand in stark contrast to picking up a shrink-wrapped cut of meat from the supermarket. In the Netherlands and many other wealthy nations, the social component of food production has all but disappeared. The result is a growing disconnect from the labour, time, and care that food requires, making it increasingly difficult to appreciate what we consume.

This disconnect is also apparent in South Korea. Traditionally, food has been an intrinsically social activity in Korean culture. A substantial number of dishes are cooked at the table and shared communally from one grill or one pot. Specific ingredients are closely tied to region, and even to the season and weather. Certain combinations, like 'makgeolli' (rice wine) and 'jeon' (savory pancakes), are commonly craved on rainy days, while dishes like samgyetang (chicken ginseng soup) are served boiling hot during the peak of summer to replenish energy drained by the heat. 'Kimjang,' the communal preparation of 'kimchi,' the fermented vegetable side dish, is another example. Traditionally held in October, this event would bring families and neighbors together to prepare large batches of kimchi to last through the winter months. My wife's side of the family still maintains this tradition. Her grandmother gathers

right
Vermont sugarhouse
(Northshireliving, 2019)





the elderly women of the neighborhood to help salt and wilt hundreds of heads of cabbage, afterwards layering each one with the family's recipe of spicy kimjang sauce. In return, the family prepares a large meal of 'suyuk' (boiled pork with spices) to be eaten with freshly made kimchi. Yet, this tradition is rapidly fading as more people turn to store-bought alternatives. The shift toward convenience is not limited to kimchi. In a society that is quick to embrace new technologies, the drive for efficiency often supersedes long-standing values. The lesson here is clear: food has long served as a vital social glue, but the pursuit of convenience increasingly threatens this role.

But there is still hope. In modern urban settings around the world, where efficiency often overrides tradition, food continues to create spontaneous op-

portunities for social connection. A recent article from *World Day* captures a familiar scene: strangers gather around a food truck in New York City, drawn by the scent of grilled meat or freshly baked bread, and end up exchanging conversation over a shared table (John, 2024). These small encounters may seem insignificant, yet they illustrate food's enduring power to connect people. As anthropologist Robin Fox puts it, "Eating together is a more intimate act than looking over an account book together. By the mere act of eating together, the participants are sharing far more than just food. They are acknowledging their interdependence and reaffirming the social bond between them" (John, 2024).

above
Women making kimchi for the winter
(Bae, 2021)

These observations are supported by research. In a study titled "Breaking Bread: The Functions of Social Eating," researchers found that individuals who eat with others more frequently report higher life satisfaction, stronger social networks, and a greater sense of community engagement. Those who share meals regularly tend to have more people they can depend on for emotional and practical support. The act of eating together activates the brain's endorphin system, particularly when combined with laughter, storytelling, and reminiscence. The same study found that evening meals, especially when shared with people outside one's immediate household, had the most significant impact on feelings of closeness and well-being (Dunbar, 2017).

Despite these benefits, contemporary communities often discourage shared meals. Busy schedules, fragmented social networks, and housing that emphasizes privacy over community all contribute to a decline in communal eating. The 'Breaking Bread' study revealed that 70% of respondents had never shared a meal with a neighbor (Dunbar, 2017). This erosion of everyday sociability has implications not only for personal well-being but also for community resilience.

These findings point to an important design challenge for the proposed sitopic community. If food is a vehicle for social connection, it must be meaningfully integrated into spatial planning and everyday life. Shared kitchens, communal harvest events, edible landscapes, and flexible dining areas are not secondary amenities. They are central to the success of a sitopic community. A resident may adhere to the most environmentally

responsible diet in the world, but if those practices occur in a social vacuum, they have limited impact on wider consumption patterns and systemic change. Designing for shared food experiences is not merely a nostalgic gesture for dying traditions. It is a deliberate strategy for countering social fragmentation and fostering healthier, more sustainable habits. Just as water systems or transport networks are considered infrastructural necessities, so too should be the systems that support communal food-related activities.

location, location, location!



4.0 Location, Location, Location

Midden-Delfland is a municipality in the province of Zuid-Holland, the Netherlands. While the site location was predetermined, there are several compelling reasons why this region is particularly well-suited for exploring the themes of this thesis. Predominantly pastoral, it is positioned between major urban and agricultural centers. To the north lies The Hague, the administrative heart of the country; to the south, Rotterdam, home to the largest port in Europe; and to the northwest, Westland, the municipality with the highest concentration of agricultural businesses in the Netherlands. Below, I have broken down six reasons why Midden-Delfland is a suitable location for a proposed sitopic community.

Firstly, **Europe** is facing an urgent environmental crisis related to nitrogen pollution and biodiversity loss, both of which are largely driven by conventional agriculture and livestock farming. This makes it essential to explore regenerative and decentralized food systems in this continent.

Secondly, **Western Europe** benefits from a high degree of political and social stability. This enables long-term planning and allows residents the capacity to reconsider their reliance on industrial food systems without the pressure of political or economic instability. Alternative forms of living cannot be explored in societies that have more pressing matters to address.

Thirdly, **the Netherlands** is widely regarded as a global leader in agricultural innovation. Institutions such as Wageningen University contribute significantly to re-

search and development in sustainable farming practices, which can inform and support experimental projects like the sitopic community.

Fourthly, **Zuid-Holland** is a key province for food production and distribution. The province houses a dense network of farms, logistics hubs, and research facilities, providing a fertile ground for testing new food strategies at the intersection of rural and urban needs.

Fifthly, the proximity of **Midden-Delfland** to both metropolitan and agricultural areas offers a rare and valuable spatial dynamic. This adjacency enables direct feedback loops between food producers and consumers, supporting short supply chains and community-supported agriculture. It also ensures that residents of an intentional community are not geographically isolated from major employment centers. With The Hague, Rotterdam, and Delft all within commuting distance, future residents can participate in urban economic life while living in a rural, food-oriented environment.

Lastly, the **Duifpolder** within Midden-Delfland is relatively underdeveloped, offering a blank slate for imagining new forms of community and land use. With few existing structures and a manageable scale, the area is well-positioned for a pilot project that integrates housing, food production, and social infrastructure from the ground up.

left
Birds flocking in Duifpolder, Midden-Delfland
(Midden-Delfland.net, 2025)

4.1 The ZUS Plan

The ZUS plan is the result of an interdisciplinary effort to redesign deltas across various regions, including the peat meadow landscape of Midden-Delfland. The proposal involves flooding selected land areas to function as reservoirs, storing excess water during periods of surplus and retaining it during times of drought. In doing so, monocultural pastures are partially replaced with a more dynamic landscape composed of forests, wetlands, and peatlands.

While the ZUS plan offers a strong foundation for envisioning the future of Midden-Delfland, the group identified opportunities for a more nuanced approach to the transitions between different landscape types. The modified proposal refines the borders of flooded zones using soil data. Areas of lower elevation with peat-rich soils would be designated for flooding. In contrast, the clay-rich soil of the ancient riverbed could be allocated for other purposes, such as agriculture or forestation.

Another key consideration was the location of existing dwellings within the municipality. Rather than imposing disruptive changes that would displace communities, the proposal aims to integrate the plan around current residential areas. The rigid, geometric lines of the original ZUS proposal were softened into more organic, responsive borders.

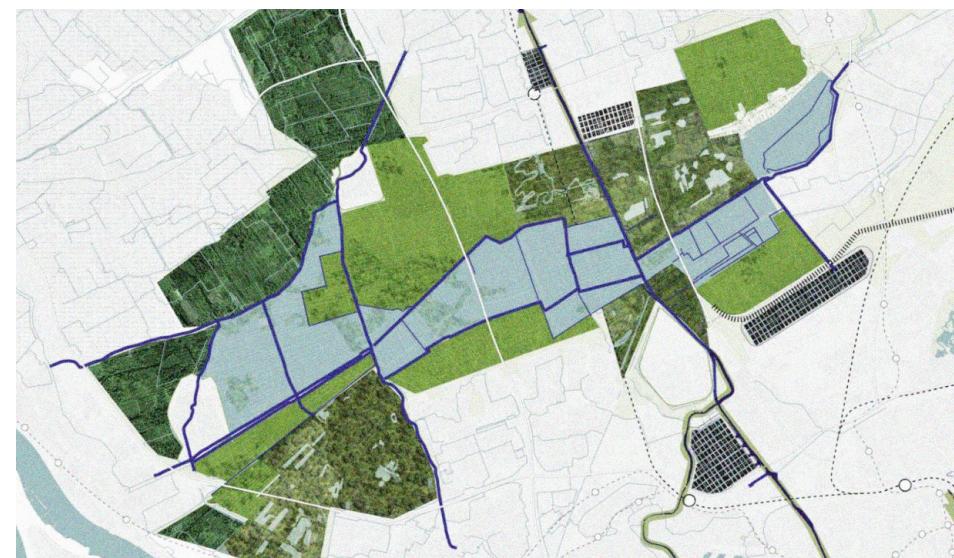
Within this context, the Duifpolder was selected as the specific site for exploration. Identified by the municipality as a high-value zone, the polder is known for its high concentrations of bird species. Its central location in Midden-Delfland

also presents compelling conditions for experimenting with new forms of rural habitation.

4.2 Peat and Paludiculture

Peatland is a defining feature of the Dutch landscape, particularly in polder regions such as the Duifpolder. Formed over centuries through the accumulation of organic material in waterlogged conditions, peat soils shaped both the ecology and agricultural history of the Netherlands. Much of the land reclaimed from wetlands in the western provinces, including Midden-Delfland, was originally peatland. Its high water table and organic-rich soils made it fertile and productive, but also vulnerable to subsidence and degradation when drained. The Dutch mastery of water management made large-scale cultivation possible, but the long-term ecological costs of draining peatlands are now becoming clear.

Although peatlands cover only about 3% of the Earth's surface, they store more carbon than all the forests in the world combined (Greifswald Moor Centrum, 2023). Their role as natural carbon sinks makes them critical in the fight against climate change. In their natural state, peatlands continuously form new peat by accumulating plant material in saturated conditions. This not only sequesters carbon but also supports high biodiversity, improves water quality, and offers excellent fertility, particularly in temperate and boreal regions. Healthy peatlands retain moisture, have low fire risk, and maintain high groundwater levels and surface elevation (Food and Agriculture Organization Of The United Nations, 2020, pp. 13-14).



However, much of the Netherlands' historic peatland has been drained for agriculture, leading to severe environmental consequences. Today, around 0.4% of the world's land consists of drained peatland, yet this small fraction produces approximately 5% of all human-made carbon emissions (Greifswald Moor Centrum, 2023). When peat is drained, the lowered water table causes oxidation of organic material, releasing large amounts of carbon into the atmosphere. This process is often accompanied by biodiversity loss, increased fire frequency, acidification of surrounding waters, and a decline in soil fertility and peat depth (Food and Agriculture Organization Of The United Nations, 2020, pp. 13-14). In polder regions, such as the Duifpolder, continued drainage accelerates subsidence and undermines the long-term viability of the land.

Rewetting peatland has become a necessary step toward ecological restoration and climate mitigation. One of the most promising approaches to this is paludiculture: the productive use of wet peatlands through the cultivation of water-tolerant crops. Unlike traditional agriculture, which requires drainage, paludiculture maintains high groundwater levels and preserves the carbon-sequestering function of peat soils while still allowing for land-based economic activity.

A wide variety of plants are suitable for paludiculture, offering potential uses across sectors. *Phragmites australis* (common reed) can be used as fodder, fuel, thatch, or building insulation. *Alnus glutinosa* (black alder) produces

wood for cabinetry and flooring. *Juncus effusus* (soft rush) can be used for basket weaving. *Nelumbo nucifera* (lotus) is cultivated for food, and *Drosera rotundifolia* (round-leaved sundew) is harvested for medicinal purposes. These examples illustrate the potential of paludiculture to contribute to sustainable food systems, local economies, and regenerative material streams (Food and Agriculture Organization of the United Nations, 2016).

The benefits of rewetting and adopting paludiculture are extensive. They include climate protection through peat conservation, improved water quality via nutrient retention, species protection through habitat restoration, and sustainable extraction of raw materials. Additionally, these systems can support regional economies, preserve the land's ecological and cultural archive functions, and maintain the long-term usability of historically cultivated polder land (Greifswald Moor Centrum, n.d.-a).

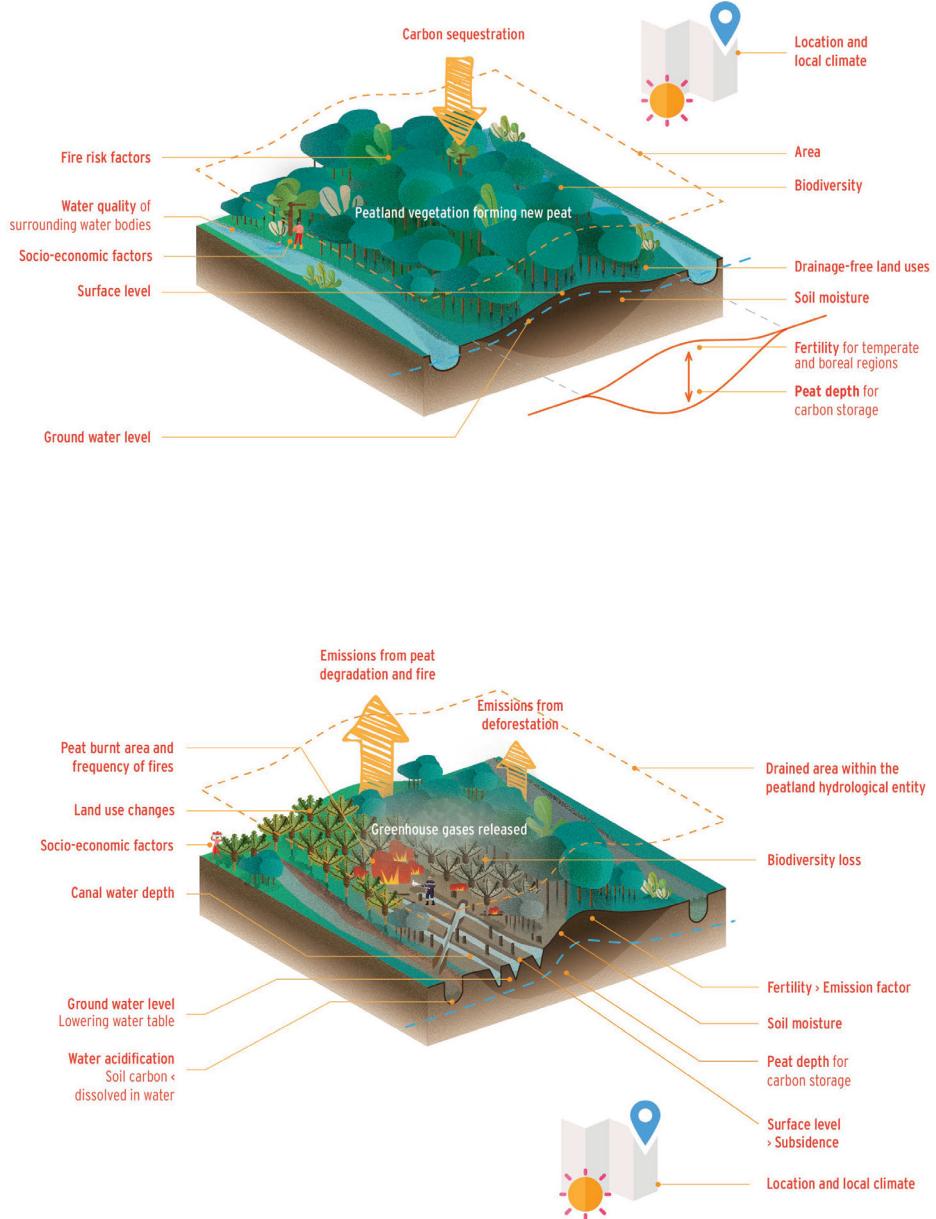
Despite its potential, several obstacles limit the broader adoption of paludiculture. Current agricultural subsidies and policies often support drainage-based land use, creating financial disincentives for rewetting. Paludiculture is sometimes not recognized as a legitimate form of agricultural production, which complicates access to funding and regulatory support. Other challenges include the need for grassland conservation, high initial investment costs, a lack of market infrastructure, and limited recognition of the ecological services provided by wetland farming. Furthermore, the absence of established pilot farms, the need for multi-stakeholder coordination, and a general lack of public awareness remain

significant barriers (Greifswald Moor Centrum, n.d.-b).

In the context of a sitopic community situated within a polder like the Duifpolder, paludiculture offers a compelling model for reconciling productive land use with ecological responsibility. It challenges the historical reliance on drainage and introduces a forward-looking alternative that aligns with the goals of carbon reduction and regional self-sufficiency. By treating wet peatland as a resource rather than a liability, paludiculture helps transform a fragile landscape into one of resilience and regenerative potential.

top
Pristine peatlands
(Food and Agriculture Organization Of The United Nations, 2020)

bottom
Drained peatlands with canals
(Food and Agriculture Organization Of The United Nations, 2020)



4.3 Group Site Masterplan

The final group masterplan of the Duifpolder was designed to address several key factors of the area.

The first design problem was the different elevations and soil conditions of the land. Areas with peat had sunk lower over the years and would be better suited as reservoirs or controlled wetlands rather than pastures. Not only would this aid water storage for surrounding municipalities, but it would also help address the carbon dioxide emitted from the peat. The south of the polder is a popular spot for local birdlife, and so this area is partially flooded to create a natural reserve for wildlife and biodiversity. A strip of forest serves as a natural boundary between this ecozone and the areas of human habitation. Most importantly, the wetlands are connected by the existing canals and controlled by the pump station situated on the inlet in the northwest corner.

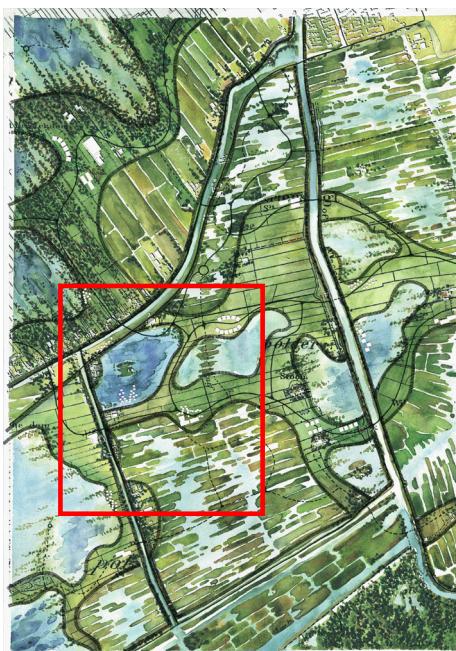
The layout of flooded zones is carefully adjusted to preserve existing dwellings wherever possible. In the northern section of the polder, a seasonally flooded area is reimagined as a public park, creating a recreational and ecological buffer that connects nearby communities along the Gaag and Kwakelweg.

Circulation paths are laid out with intentional dips and curves. This spatial strategy draws inspiration from the way historical Dutch villages were often shaped by the meandering lines of rivers, with public spaces forming at natural low points. In this plan, the curves provide sheltered pockets for new residential clusters, designed to support small-scale, communi-

ty-oriented living.

Several of the rewet zones are allocated for paludiculture. With livestock production currently the dominant land use in Midden-Delfland, the shift to wetland-based agriculture introduces an alternative economic model for the region. The cultivation of crops such as cattails, reed, and peat moss could generate new income streams while contributing to climate mitigation.

The site of this thesis is located within the red zone marked with the letter 'Y'.



left
Duifpolder Group Proposal
Credit: Anna Lugard

above
Group Masterplan
Credit: YuHyun Oh

who are these sitopi- ans?



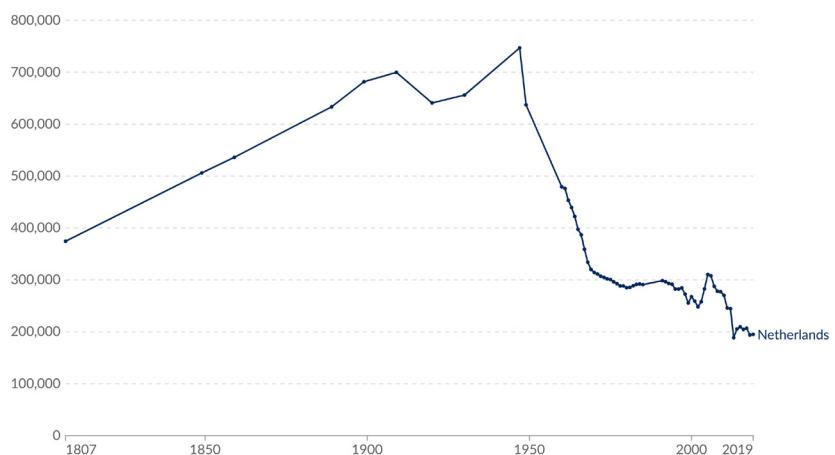
5.0 Who Are These Sitopians?

There was a time when the majority of the population was involved with farming or other food-related activities, but that is no longer the case. Advances in agricultural science and technology throughout the 20th century have drastically increased yields per farmer, freeing the majority of the population to pursue work in other sectors. If you give the average urbanite a parcel of land to grow their own food, many will have neither the time nor the motivation to do so.

However, imposing the values of a sustainable food system is not the goal of the proposed sitopic community, nor is gathering only like-minded ecologists and environmental activists in a single isolated microcosm. Instead, the com-

munity must serve as a porous and adaptable social hub, open to surrounding municipalities and responsive to a broader public. The transfer of values happens not by imposition, but through interaction. A neighborhood cookout or composting lesson may do more to shift behavior than a manifesto ever could.

As such, expecting full participation in food cultivation within the proposed sitopic community would be unrealistic and a serious flaw in planning. A more grounded approach is to study the demographic composition of the municipality and its neighboring areas to predict who is likely to move into such a community. This hypothetical profile then becomes the basis for major design decisions.



above
Number of people employed in agriculture, Netherlands, 1807 to 2019
(Our World in Data, n.d.)

left
The Wedding Dance by Pieter Bruegel the Elder
(Wikipedia contributors, n.d.)

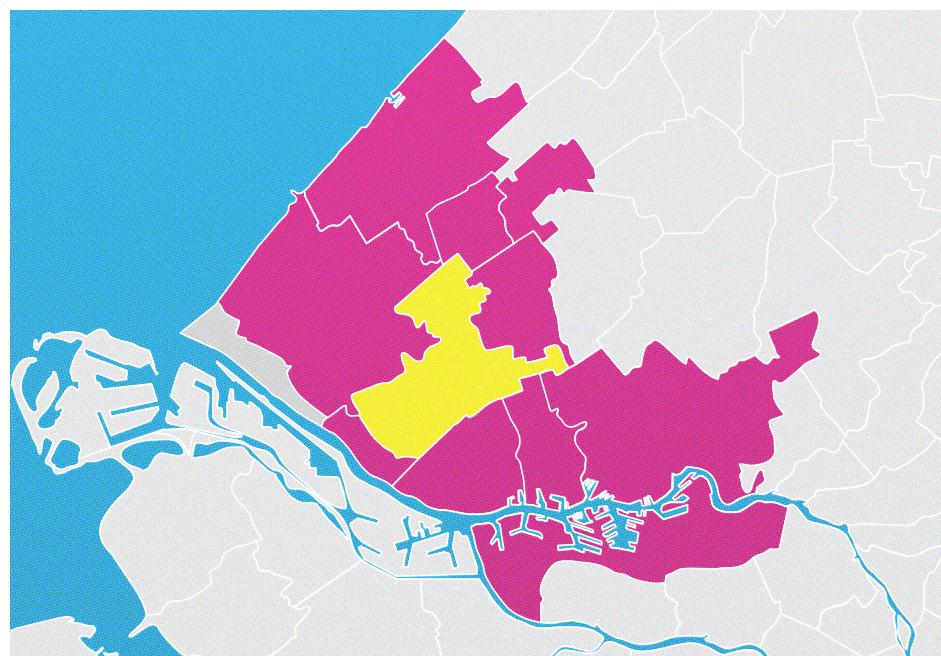
5.1 Demographics of Zuid-Holland

The demographic study begins with a pragmatic assumption: that future residents will resemble the demographic and social profiles of surrounding municipalities. In the Netherlands, most people relocate within their own municipality or to a neighboring one, with an average commute of approximately 32 minutes (Centraal Bureau voor de Statistiek, 2024b). Based on this, demographic modeling focused on municipalities within a 30-minute radius of Midden-Delfland.

The selected municipalities were Midden-Delfland (19,414), Delft (103,581), Rijswijk (55,220), Den Haag (548,320), Westland (111,382), Maassluis (33,567), Vlaardingen (73,924), Schiedam (79,279), and Rotterdam (651,631). Delft, Den Haag, Westland, and Rotterdam were

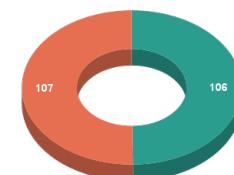
included for their regional significance; the others for their proximity to the Duifpolder. Population figures are based on 2023 data from 'AdminStat,' developed by the research firm UrbiStat (AdminStat, n.d.).

Supplementary demographic data on sex, birth country, citizenship, household type, and age distribution were sourced from the demographic data website 'City Population,' while civil status figures were drawn from AdminStat. These datasets were normalized into percentages and used to generate a hypothetical profile of the sitopic community. The age distribution was weighted toward individuals aged 18 to 35, reflecting CBS findings that this group relocates more frequently (Centraal Bureau voor de Statistiek, 2024). The result was a per-



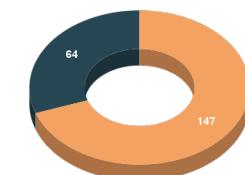
SEX

● MALES
● FEMALES



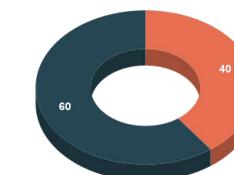
BIRTH COUNTRY

● NETHERLANDS
● OTHER COUNTRY



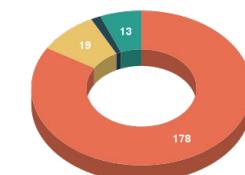
HOUSEHOLD TYPE

● ONE-PERSON
● MULTI-PERSON

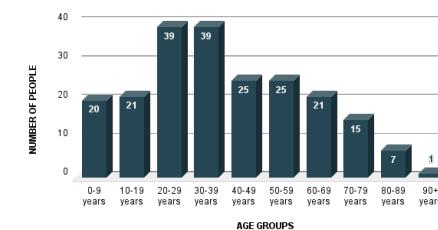


CITIZENSHIP

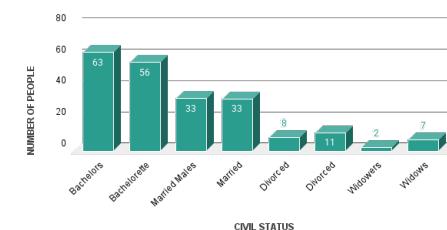
● NETHERLANDS
● EUROPEAN UNION
● EUROPE (REST)
● OTHER COUNTRY



AGE DISTRIBUTION



CIVIL STATUS



left

Map of municipalities used for demographic study
Credit: Author

above

Graphs made using demographic data
Credit: Author

centage-based hypothetical profile that reflects the likely composition of future residents across various demographic categories, allowing the design to anticipate the household compositions within the sitopic community.

5.2 Motivation Mentality Model

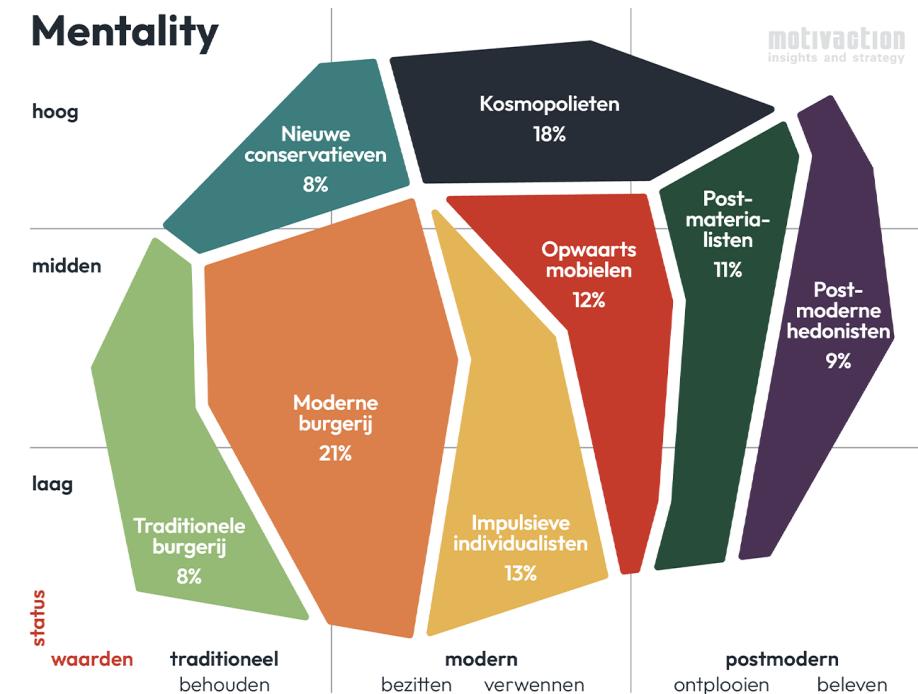
To complement the demographic data with a psychosocial dimension, the 'Motivation Mentality Model' was incorporated into the demographic study. Developed by the Dutch research institute Motivation, this model segments the Dutch population into lifestyle groups based on shared norms and values. Rather than focusing on previously studied markers such as age and sex, the model identifies deeper behavioral patterns and ideological orientations. These distinctions are critical when designing a sitopic community, where participation in food-related and environmentally conscious practices is likely to depend not only on demographic factors but also on personal values and worldviews.

The Mentality Model divides the population into eight segments:传统者 (8%), 现代主流 (21%), 新保守派 (8%), 冲动个体主义者 (13%), 现代人 (18%), 社会攀登者 (12%), 后物质主义者 (11%), and 后现代享乐主义者 (9%)。They are plotted on a graph with socioeconomic status on the x-axis and values on the y-axis. Each segment has its own attitudes toward dietary habits, community, and the environment (nutrition science, social science, environmental science). For example, post-materialists may be open to alternative food systems and communal living. In contrast, social climbers or impulsive individualists may

be less inclined to participate in collective gardening or shared cooking initiatives unless these align with their personal aspirations or convenience (Motivation, 2024).

Including the Mentality Model in the demographic study served two key purposes. First, it added nuance to the hypothetical community by helping to predict how different types of residents might engage with the core values of the sitopic project. Second, it avoided the pitfall of designing for a narrow or overly homogeneous group of ideal participants. For the sitopic community to function as a socially integrated and outward-facing initiative, it must accommodate a range of lifestyles and motivations, not just those of the environmentally committed.

The national distribution of Motivation's mentality segments was used to assign value-based profiles to the hypothetical residents of the sitopic community. This added a psychosocial layer to the demographic model, helping to shape spaces with varying levels of engagement, privacy, and collaboration. Not all residents will want to farm, preserve food, or cook collectively. Still, some may find value in dining at a communal canteen that offers convenient, seasonal meals or in tending a shared herb wall outside their home. Designing for a range of entry points allows people with different motivations and routines to participate on their own terms. This low barrier to entry encourages gradual adoption of sustainable habits through daily life, while a high barrier risks alienating those who do not already align with the sitopia's values.



above
Motivation Mentality Model
(Motivation, 2024)

5.3 Hypothetical Composition of Sito-pia

The hypothetical community of Sito-pia was developed through a multi-step process that translates demographic and psychosocial data into a coherent framework. The selected site is located in an area of ancient riverbed soil within the Duifpolder, slightly elevated above the surrounding peatland. According to the group masterplan, this area would be nestled in the concave of a flooded reservoir, ensuring easy access to water for agricultural use. With a total area of approximately 220,000 square meters (approx. 71,000 sqm residential zone and 150,000 sqm agricultural zone for grain production), this land was identified as particularly suitable for cultivation.

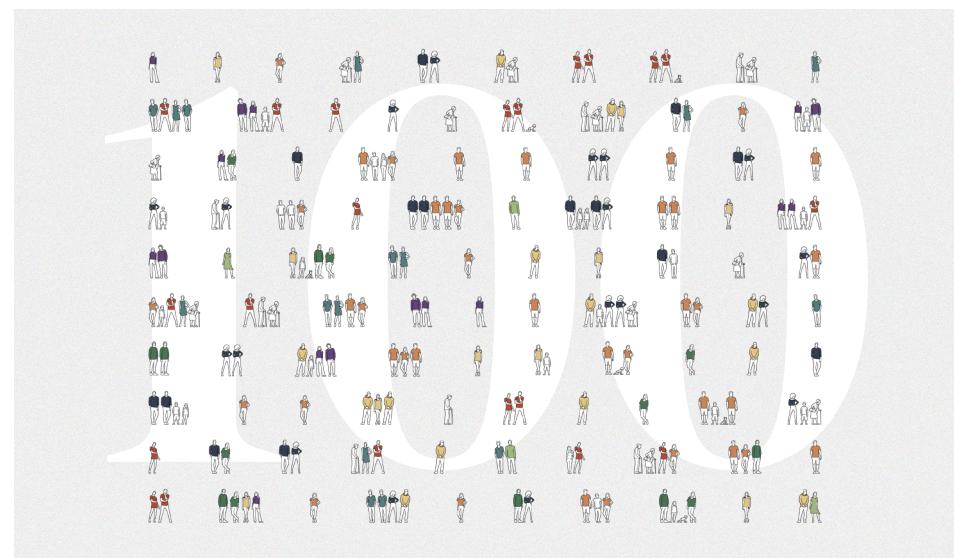
Alik Pelman's findings in his paper "Individual Nutritional Self-Sufficiency: A Viable Option in the Present Era" propose that 750 square meters per person is sufficient for self-sufficiency in a Mediterranean climate. Referencing this, I adjusted the figure to 1,000 square meters per person to better suit the temperate Dutch context (Pelman et al., 2024). If needed, the site could therefore support around 220 individuals. While total self-sufficiency is not the goal, this number served as a useful benchmark to test the feasibility of supporting a small-scale sitopic community.

Using CBS data, which indicates that the average Dutch household size is 2.11 people, this population was translated into approximately 104 households (Centraal Bureau voor de Statistiek, n.d.). For design simplicity, this was rounded to 100 households. These households were constructed using the aforementioned

demographic and mentality data collected from nearby municipalities. ChatGPT was asked to create a randomization algorithm to generate household compositions under these constraints. However, many of the initial results were implausible. For example, certain households would be composed solely of minors, while others would have a married resident living with a single person of the same age group. Manual adjustments were made to preserve the proportional integrity of the data while ensuring the creation of realistic scenarios. Households were also adjusted so that the values and lifestyle mentalities of members aligned.

The final result was a diverse set of households reflecting a variety of life stages and living arrangements. These included students, single adults, couples, young families, elderly residents, and multi-generational homes. Based on the specific needs of these profiles, households were assigned to one of six unit types. Smaller dwellings such as student housing, studio units, and one-bedroom apartments were designated as rentals. These dwellings were intended for short-term or transitional residents. Larger homes, including 1-2 bedroom houses, 2-3 bedroom houses, and 3-4 bedroom houses, were allocated to owner-residents who were more likely to stay long term and engage deeply with community life.

This housing mix supports intergenerational diversity and a steady flow of younger residents, many of whom may not initially be drawn to food production or sustainability. Drawing from the model of Kailash Ecovillage, these residents



top
Alik Pelman (second from right) prepping ingredients
(Eco No-Mads, 2024b)

bottom
100 households of hypothetical community
Credit: Author

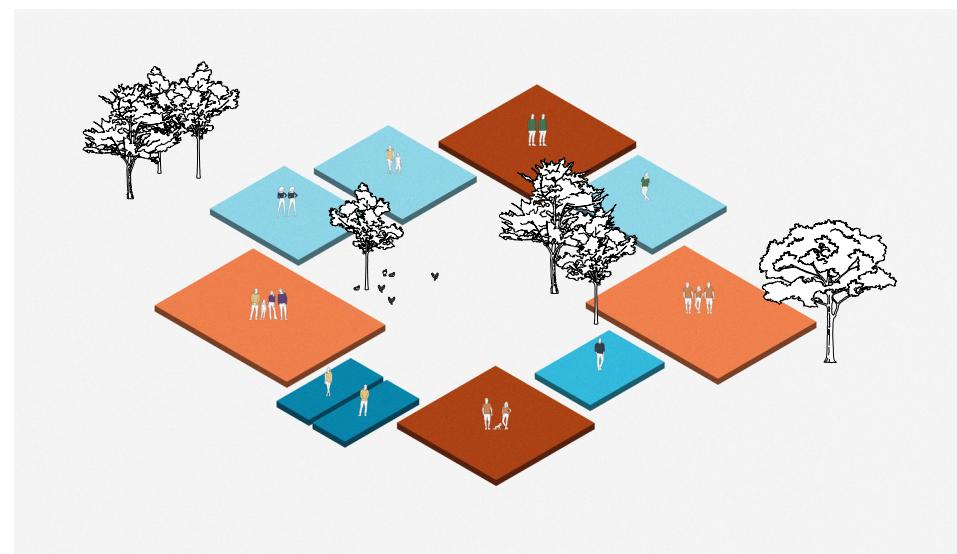
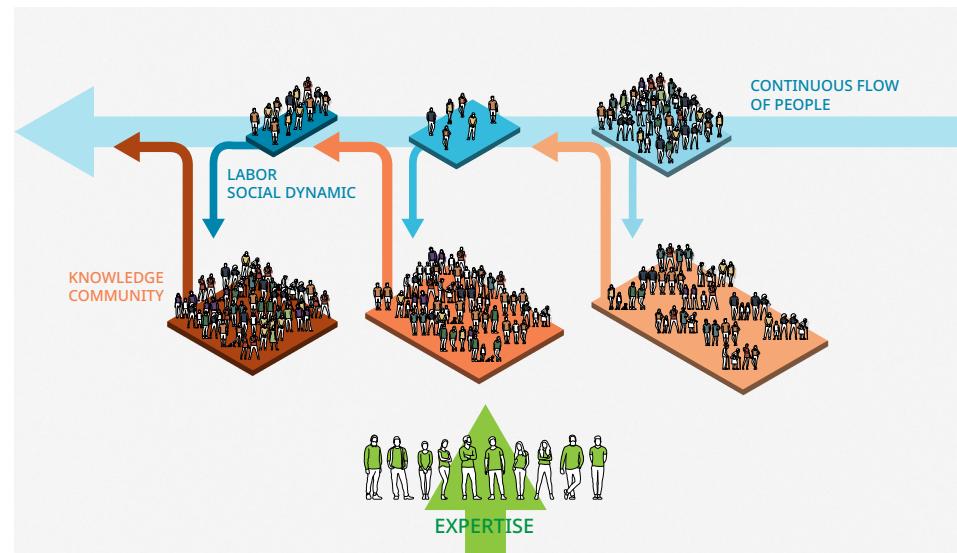
could take on light responsibilities such as contributing a few hours each month to communal gardening or food-related tasks. Through this low-commitment involvement, they become gradually immersed in the sitopic way of life. As seen at the Occidental Arts & Ecology Center, short-term residents can become valuable carriers of ecological knowledge, taking their lived experience into the broader world once they move on. In contrast, owner-residents provide long-term stability, serve as stewards of the community's culture, and maintain the continuity and shared memory needed to anchor the sitopic project over time.

The 100 households are organized into ten clusters, each consisting of ten households. This structure was chosen to strike a balance between social intimacy and collective capability. Ten households offer enough people to share labor and responsibilities, while still allowing for meaningful relationships between neighbors. The size is comparable to a classroom, which reinforces the notion of the sitopic community as a 'school' for continuous learning. 'Graduates' of the school are expected to share the strategies they learned elsewhere.

Each cluster is supported by an ecological and agricultural expert who lives outside the cluster but works closely with it. This is the 'teacher' of the classroom. This design decision was informed by case studies where a lack of specialist knowledge led to systemic breakdown or failure. The expert plays an active role in education, planning, and technical support, ensuring that residents can participate meaningfully without needing to be experts themselves. Once again, this

ensures a low barrier for new residents who are not familiar with this alternative lifestyle.

Creating a hypothetical profile of the sitopic community allowed for a more intentional design. With a clearer sense of who the residents might be, design decisions could be evaluated against the needs, values, and limitations of specific household types. This helped avoid overly generic solutions. Instead of designing for an unknown user group, the model acted as a useful reference for a targeted approach in circulation, program, and spatial strategies. This method proved valuable in making research-driven choices that support both individual lifestyles and community cohesion.



top

Community structure model
Credit: Author

bottom

Cluster size and composition model
Credit: Author

synthe- sizing sitopic strate- gies

6.0 Synthesizing Sitopic Strategies

The strategies developed for the sitopic community were grounded in a research approach that combined quantitative tools, theoretical frameworks, and material analysis. Spatial organization was explored using an adapted Von Thünen model to structure food production relative to domestic life. Environmental design drew from theories of passive solar architecture, biophilic design, and hydrological systems to embed natural processes into the form and function of the dwelling. Material choices were evaluated through comparative lifecycle analysis using Ansys Granta EduPack, which enabled the selection of construction systems based on embodied energy, thermal performance, and post-use ecological compatibility. Together, these methodologies informed a design logic that supports the sitopic vision: architecture that fosters regenerative food systems.

6.1 Adapted Von Thünen Model

The Von Thünen model, developed in 1826 by German economist Johann Heinrich von Thünen, is a foundational theory in economic geography that explains how agricultural activities are spatially organized in a human settlement. It proposes a series of concentric rings that radiate outward from a city, with each ring representing a different type of land use based on the cost of transportation, perishability of the product, and land value (Verhoeven, 2018). The model demonstrates how logistical and economic considerations of food production once shaped the geography of our settlements, with more perishable or transport-heavy goods produced nearer to population centers. Although the model

was developed before the emergence of the global food system and the invention of modern transportation and preservation technologies, it highlights an essential truth: food systems are spatially and hierarchically organized.

For the sitopic community, this concept is reinterpreted to suit the realities of a smaller, self-contained settlement. At this scale, concerns such as transport distance and perishability are almost negligible. Instead, the organizing principle was modified to be the level of expertise, labor, space, and coordination needed for each type of food production. Low-effort, low-skill, and individual activities are placed close to the home, while more demanding, collective tasks are located further away. This reordering supports a gradient of participation, encouraging residents to engage at levels appropriate to their time, interest, and ability. It is also a strategy designed to account for the varying motivation levels of residents, as explained by the Motivation Mentality Model.

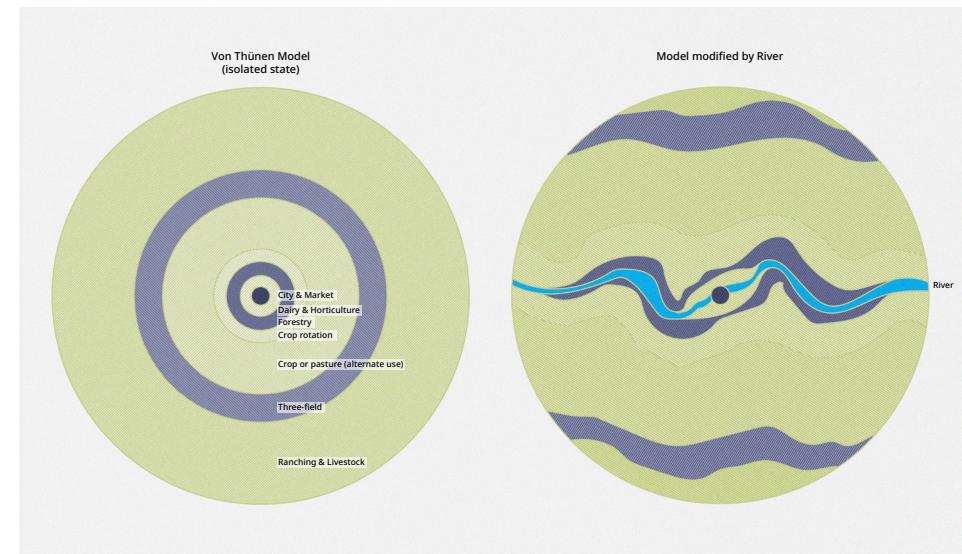
This modified Von Thünen model provides a simple hierarchical system that informs the spatial integration of food production methods in the sitopic community. Residents can begin with simple tasks close to their homes and choose to participate more deeply as their knowledge and interest grow. At the same time, this hierarchy ensures efficient use of land and labor while encouraging shared responsibility and social interaction.

left

Johann Heinrich von Thüne
(Visuotinė lietuvių enciklopedija, n.d.)

Von Thünen Model. Starting from the center, the rings include:

- **Market and city center:**
the site of consumption and distribution.
- **Dairy and horticulture:**
highly perishable goods grown close to the market.
- **Forestry:**
heavy goods used for fuel and construction; proximity reduces transport costs.
- **Crop rotation:**
grain production is managed through regular crop rotation to maintain soil health.
- **Pasture or mixed-use farming:**
transitional land uses or supplementary crop zones.
- **Three-field system:**
a traditional method of rotating between autumn crops, spring crops, and fallow land.
- **Ranching and livestock:**
the outermost zone, where large plots are used for grazing; animals can walk to the market for slaughter, reducing transport needs



Adapted Von Thünen Model. Starting from the center, the rings include:

- At the dwelling:
herb walls and indoor planters, which can be maintained privately with minimal expertise.
- At the cluster level:
free-range chickens, fruit trees, and rooftop farming, which require moderate involvement and are maintained collectively by 8-10 households with the oversight of the designated cluster farmer.
- At the block level:
mushroom houses, horticulture greenhouses, and food forests, which require specialized knowledge and are shared between five clusters, and are maintained by a mix of community volunteers, paid internships, and professional growers.
- At the community level:
paludiculture and grain-based permaculture, which demand high expertise, coordination, and space, and are maintained by professional farmers for the benefit of the community.



top
Von Thünen Model
(Verhoeven, 2018)

bottom
Adapted Von Thünen Model
Credit: Author

6.2 Vessel of Sun and Rain

The integration of natural elements such as sunlight and rain into the built environment has long been advocated in biophilic design. In the context of a sitopic community, where food production is embedded into daily life, the dwelling must actively participate in environmental cycles. This section outlines the rationale behind designing the domestic unit as a vessel that responds to and utilizes sun and rain.

Sunlight plays a critical role in both passive climate regulation and food cultivation. Studies in passive solar design demonstrate how orienting structures to maximize southern exposure in temperate climates significantly reduces heating demand (Uwa & Pourvahidi, 2024). Additionally, differential exposure to sunlight within a single building can create varied temperature zones, which can be used for indoor plant growth or food preservation techniques such as drying or cool storage.

Rainwater harvesting is equally critical. According to the European Environment Agency, rainwater collection can improve rainwater resilience and alleviate stress on urban infrastructure (European Environment Agency, 2025). Beyond irrigation, harvested rainwater has potential as greywater for non-potable household uses such as toilet flushing or laundry. When filtered through stepped biofiltration beds, greywater can be safely returned to nearby reservoirs or reused for irrigation, supporting a localized water cycle. The visibility of this system also functions as an educational tool, prompting residents to be more mindful of what they wash down the drain. In areas like

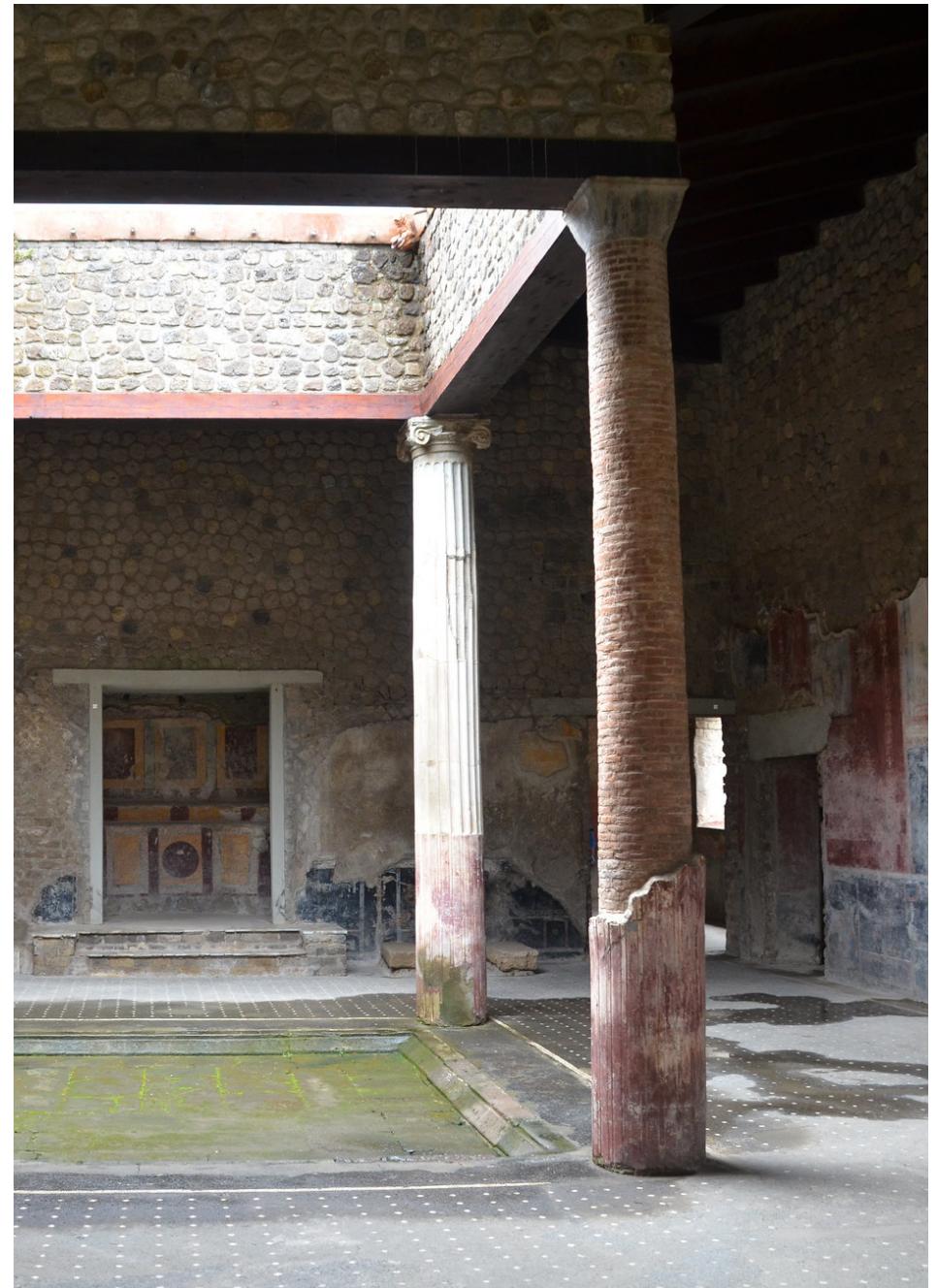
Midden-Delfland, where peatland subsidence and water regulation are ongoing concerns, retaining and reusing rainwater on-site not only supports household self-sufficiency but also contributes to the ecological resilience of the broader polder landscape.

The concept of the building as a vessel for ecological flows is rooted in biophilic design principles, which suggest that visible, legible connections to natural systems can enhance both environmental behavior and psychological well-being (Almusaeed et al., 2006). Architectural precedents such as the Roman 'impluvium' exemplify this sensibility. In Roman atrium houses, inward-sloping roofs directed rainwater into a central basin, making water collection a visible and celebrated function of the home.

Similarly, the Korean hanok features an open inner courtyard known as a 'madang,' which connects the dwelling's different rooms with a shared outdoor space. This courtyard mediates between the interior and the natural elements of sun, wind, and rain while serving as a space for domestic work and family gatherings. Both examples illustrate how the form of the 'vessel' can serve to bridge the disconnect between the indoors and the outdoors.

In sum, the architectural form of the domestic unit in a sitopic community must go beyond aesthetics to function as a

right
Roman impluvium
(Raddato, 2019)





bridge with natural systems. By shaping the home as a vessel for sun and rain, daily living becomes synchronized with ecological flows while simultaneously facilitating the various passive functions of the house. Functions such as thermal zoning and rainwater harvesting can aid food-related activities within the house. With intentional form design, the home is transformed into an active site of learning and participation, where residents are not just sheltered from the elements but engaged with them.

6.3 Minimizing Embodied Energy

In keeping with the sitopic community's focus on regenerative practices, material selection was guided by an effort to minimize embodied energy across the life cycle of each unit. Embodied energy refers to the total energy required to extract, process, transport, and assemble

building materials. It represents a significant portion of a building's environmental footprint, particularly in low-energy dwellings. Therefore, reducing embodied energy from the outset was a key strategy in aligning architectural design with ecological goals.

Quantitative analysis was conducted using *Ansys Granta EduPack*, a material comparison tool that enabled a detailed evaluation of potential materials based on their embodied energy. This methodology helped identify the trade-offs between commonly praised materials and their actual environmental cost when measured across a full lifecycle.

At the start of the spatial design phase, a

above
Hanok courtyard
(Dongchonjae, n.d.)

comparative analysis was conducted using standard materials commonly found in the Dutch construction sector. This included concrete, glulam, plywood, structural steel, aluminum, low-e glazing, and rigid foam insulation. The analysis revealed that materials like structural steel and rigid foam have significantly high levels of embodied energy. Although concrete exhibited a relatively moderate embodied energy per kilogram, reinforced concrete would contain a large amount of structural steel, meaning that its environmental impact escalated once this was factored in.

As a result of these findings, the structural strategy shifted toward maximizing biodegradable, low-impact materials wherever possible. While biodegradable materials cannot replace concrete in foundational elements, their use in walls, roofs, and insulation provides an opportunity to reduce the building's lifecycle emissions significantly. For the foundation, a pier-and-beam foundation system was chosen in place of a conventional slab, which allowed the design to limit concrete use while still meeting structural stability requirements for the soft soil conditions of Midden-Delfland. This would be possible due to the lightweight construction materials used above ground.

A second layer of analysis was conducted by filtering the database to display only biodegradable materials. The comparison mapped embodied energy against thermal conductivity, highlighting materials with strong insulating properties and minimal environmental cost. Straw stood out as a high-performing material on both axes. With an extremely low em-

bodied energy and excellent insulation capacity, it also carries added value in the context of sitopic cultivation as a by-product of cereal grain production. This dual function (both architectural and agricultural) aligned with the broader regenerative goals of the project. Other natural materials, such as hempcrete, wood fiber board, and cellulose insulation, were also considered for their complementary performance characteristics; however, straw remained the baseline material for insulation and infill due to its availability, affordability, and carbon-sequestering potential.

Cork is widely praised for its renewability and thermal performance. However, after investigating its properties using *Granta EduPack*, it was found to have a high embodied energy per cubic meter. Follow-up research also revealed that cork's yield per hectare is relatively low compared to other plant-based materials, making it an inefficient option in terms of land use. If adopted on a large scale, cork as a construction material would be unsustainable. These findings reinforced the need to focus on materials that could be regionally sourced, require minimal processing, and hold potential for circular use within an agrarian landscape.

As an alternative to cork, more experimental biodegradable materials were explored. One example is rigid insulation panels compressed from *Typha latifolia* (common cattail), a fast-growing wetland plant. Cattail-based insulation offers a combination of low embodied energy, decent thermal resistance, and full compatibility with circular agricultural systems (Brinksma et al., 2022). Because the plant thrives in saturated peat soils,

Material	Min Density (kg/m3)	Max Density (kg/m3)	Avg Density (kg/m3)	Volume (m3)	Mass (kg)
Concrete (normal, Portland cement)	2200	2600	2400	12	28800
Glulam	500	650	575	4	2300
Plywood (7 ply, beech) parallel to face layer	700	800	750	4	3000
Structural Steel, S235J, wrought	7810	7890	7810	1	7810
Aluminium alloy, wrought (6061, T4)	-	-	-	-	150
Low-e glass	-	-	-	-	120
Phenolic Foam (closed cell, 0.120)	115	125	120	14	1680

Components

Qty.	Component name	Material	Recycled content	Mass (kg)	Primary process	Secondary process	% removed	End of life	% recovered
1	Concrete (normal, Portla...	Concrete (normal, Portla...	Virgin (0%)	2.88e+04			0	Downcycle	80
1	Glulam	Glulam	Virgin (0%)	2300			0	Reuse	50
1	Plywood (7 ply, beech)...	Plywood (7 ply, beech)...	Virgin (0%)	3000			0	Combust	10
1	Structural steel, S235J	Structural steel, S235J	Virgin (0%)	7810			0	Recycle	90
1	Aluminum, 6061, T4	Aluminum, 6061, T4	Virgin (0%)	150			0	Recycle	90
1	Low-e glass	Low-e glass	Virgin (0%)	120			0	Reuse	50
1	Phenolic foam (closed...	Phenolic foam (closed...	Virgin (0%)	1680			0	Landfill	10

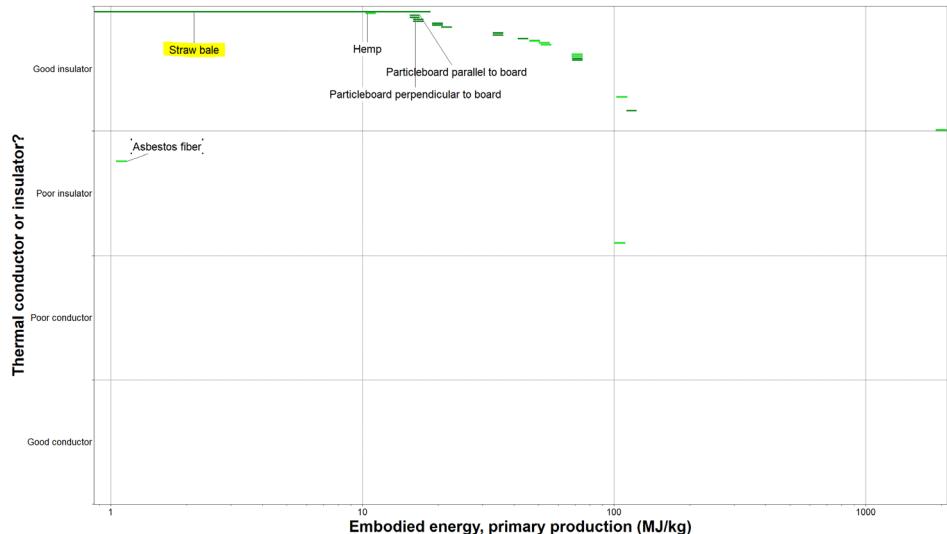
Component	Material	Recycled content* (%)	Part mass (kg)	Qty.	Total mass processed** (kg)	Energy (MJ)	%
	Concrete (normal, Portland cement)	Virgin (0%)	2.9e+04	1	2.9e+04	2.9e+04	4.5
	Glulam	Virgin (0%)	2.3e+03	1	2.3e+03	1e+05	15.9
	Plywood (7 ply, beech), parallel to face layer	Virgin (0%)	3e+03	1	3e+03	1e+05	16.5
	Structural steel, S235J	Virgin (0%)	7.8e+03	1	7.8e+03	2e+05	32.3
	Aluminum, 6061, T4	Virgin (0%)	1.5e+02	1	1.5e+02	2.6e+04	4.1
	Low-e glass	Virgin (0%)	1.2e+02	1	1.2e+02	2.2e+03	0.3
	Phenolic foam (closed cell, 0.120)	Virgin (0%)	1.7e+03	1	1.7e+03	1.6e+05	26.3
Total				7	4.4e+04	6.3e+05	100

top
Calculation of Mass of 50m² Home
Credit: Author

middle
Edupack Eco-Audit of Materials of 50m² Home
Credit: Author

bottom
Edupack Embodied Energy of 50m² Home
Credit: Author

right
Edupack Chart Index
Credit: Author



it also fits within the wider ecological logic of Midden-Delfland, where sections of the landscape are being converted to wetland zones to mitigate peat subsidence. Cultivating cattail as a building crop serves dual purposes: reducing material footprint and supporting the ecological transition of the site.

The embodied energy analysis shaped more than just material selection; it clarified the sitopic community's construction logic. The identification of straw as a preferred material demonstrated how agricultural by-products can support both spatial and ecological goals. The rejection of high-impact materials, such as rigid foam and cork, was based not on ideology but on performance metrics and land-use efficiency. This approach ensured that every building component contributes to the site's regenerative

strategy without compromising on structural performance or thermal comfort.

6.4 The Edible House of Cultivation

The architectural philosophy behind the sitopic community does not view the house as a sealed or static entity. Instead, it treats the dwelling as a living system that both shelters its occupants and participates in the larger ecological cycles of food, water, and soil. This perspective influenced the choice of materials and construction methods, which were selected not only for their thermal and structural properties but also for their ability to support regenerative agricultural systems after the building reaches the end of its service life.

Material selection began with an emphasis on reducing embodied energy and maximizing biological compatibility.

Prefabricated, load-bearing straw wall panels, such as those produced by Eco-cocon, were chosen as a core structural element. These panels combine insulation and structure in a single assembly, utilize renewable straw for infill, and allow for vapor permeability. At the end of their lifespan, they can be composted or returned to the soil, making them ideal for the sitopic context where circularity is key (Ecococon, n.d.).

To provide greater thermal mass in the integrated greenhouse, additional wall systems were designed using compressed earth blocks and wattle-and-daub. These techniques use subsoil, straw, and wood laths that are locally available in the Dutch landscape. When decommissioned, these materials naturally reintegrate into the soil. Interior finishes such as clay plaster contribute to this strategy by maintaining breathability and being fully compostable.

Wood species were carefully selected for both their performance and agricultural afterlife. Oak was used for structural elements, such as roof beams and greenhouse frames, due to its strength and durability. Robinia pseudoacacia, known for its resistance to rot, was chosen for garden retaining walls. After use in construction, these timbers can be chipped into mulch, used as a growing substrate for mushrooms, or converted into bio-char to enhance soil fertility.

Engineered wood products such as OSB, LVL, and plywood were used sparingly. Although they are often praised for their sustainability, these materials typically rely on synthetic adhesives that hinder biodegradability and limit their reuse in

food-producing systems. Lifecycle performance and reintegration into the agrarian environment were prioritized over industry trends.

All materials were chosen with disassembly and circular reuse in mind. When possible, wood joinery was used instead of steel connections. Non-toxic options such as natural paints, untreated woods, and clay-based adhesives reduce contamination and support composting or reuse. Where non-biodegradable materials were necessary, they were minimized and limited to roles that biodegradable alternatives could not perform.

A study found that up to 30% of the total weight of materials delivered to construction sites is ultimately wasted (Osmani, 2011). By treating the house as a temporary assemblage of biologically active materials rather than a permanent fixture, the materials become a part of the landscape's productive future both during its construction and at the end of its lifespan. Straw and cattail can become mulch. Wood can support fungal growth. Earthen walls return to the ground from which they came. In this way, the home contributes not only to daily comfort and shelter but also to the long-term health of the land that sustains it.

right
Ecococon construction site
(EcoCocon, n.d.)



conclu- sion



7.0 Conclusion

This thesis has examined the complex and unsustainable nature of the contemporary food system, particularly in the Dutch context. It argues that the current model, shaped by global supply chains, powerful corporations, ecological degradation, and growing consumer detachment, requires a fundamental shift. While the European Green Deal's 'Farm to Fork' strategy begins to address this by shortening supply chains, this thesis proposes going a step further: the 'Home to Fork' strategy. This concept embeds food-related activities within the domestic realm, giving individuals and communities a direct role in the system that sustains them.

Although the Netherlands ranks high in food security indexes, its ecosystems are under strain, its agricultural system is dependent on external inputs, and many of its citizens remain unaware of the systemic risks involved. As this thesis argues, food security is not a guaranteed right. Without structural change, this privilege will not last.

The sitopic community developed in this research is both a critique of the present and a vision for a more resilient future. Grounded in insights from nutrition science, social science, and environmental science, the project combines foundational research, case studies, demographic modeling, and design experimentation to identify core issues within the food system, trace their root causes, and propose architectural strategies to address them.

Six central challenges were identified: dependence on international supply

chains, corporate concentration, disconnection between people and food, environmental degradation, psychological manipulation by retailers, and excessive waste. These problems were approached as fundamentally social in nature, with food autonomy proposed as a means of resolving them. Architectural and spatial strategies were developed to support this autonomy at both individual and community levels.

Lessons from precedent communities such as Bonton Farms, the Occidental Arts & Ecology Center (OAEC), Earthaven Ecovillage, Windsong Cohousing, and Kailash Ecovillage informed several critical design decisions throughout this project. Despite their differences in geography, structure, and scale, these communities revealed several consistent patterns.

One of the most important lessons was the value of integration over isolation. Communities that remained connected to surrounding urban areas or regional networks were more likely to remain economically viable and socially relevant. In contrast, those that became insular often struggled with demographic aging, ideological stagnation, or practical limitations. Most importantly, each successful community emphasized the importance of a shared purpose. Whether that purpose was ecological stewardship, food justice, or communal living, it served as a foundation for cooperation and long-term commitment among residents.

Informed by these findings, the design

left
Cutlery etiquette: Finished
Credit: Author

of the sitopic community embraces diversity. It is structured to accommodate a wide range of residents with different lifestyles, values, and levels of interest in food cultivation. Rather than assuming uniform participation, the design was shaped using demographic data and psychosocial insights, including the Motivation Mentality Model. This helped ensure that the community would support multiple ways of engaging with the food system. Participation is encouraged through design features such as shared kitchens, communal gardens, rooftop horticulture, and seasonal food events. These create opportunities for involvement at various levels, ranging from passive engagement to active participation. Residents can gradually become more involved over time or choose to remain lightly engaged depending on their preferences and capacities. By offering a range of entry points and respecting the individuality of each resident, the sitopic community fosters a culture of learning, mutual support, and shared responsibility without relying on rigid expectations.

The sitopic community is not envisioned as a utopia. It is a grounded response to an urgent and tangible crisis. It treats architecture not as a passive container for life, but as an active agent in reshaping values, habits, and systems. In this model, the home becomes not just a site of consumption, but also a site of personal growth and knowledge transfer. The ambition is not to reach perfection, but to offer a viable alternative. This alternative empowers individuals to reclaim agency over what they eat, how they live, and their contribution to the world around them.

If the food system is to change, the place to begin is home.

8.0 Bibliography

Adams, T. (2021, October 29). Why a lack of squished bugs on the windscreen is a worrying sign. The Guardian. <https://www.theguardian.com/commentisfree/2020/sep/06/why-a-lack-of-squished-bugs-on-the-windscreen-is-a-worrying-sign>

AdminStat. (n.d.). Demographic statistics Province of ZUID-HOLLAND. <https://ugeo.urbistat.com/AdminStat/en/nl/demografia/dati-sintesi/zuid-holland/28/3>

Agritech Future. (2022, May 9). This Dutch tomato farm might just solve the global food crisis. <https://agritechfuture.com/smart-farming/this-dutch-tomato-farm-might-just-solve-the-global-food-crisis/>

Almusaed, A., Almssad, A., Abdushaik, Z., & Khalil, S. (2006). Biophilic architecture, the concept of healthy sustainable architecture. ResearchGate. https://www.researchgate.net/publication/287940355_Biophilic_architecture_the_concept_of_healthy_sustainable_architecture

BBC. (2019, June 1). Follow the Food: Closing the Gap. <https://www.bbc.com/future/bespoke/follow-the-food/>

Brinksma, H., Van Der Stelt, M. J. C., & Oostra, M. (2022). Typha as a circular building material. IOP Conference Series Earth and Environmental Science, 1122(1), 012039. <https://doi.org/10.1088/1755-1315/1122/1/012039>

Caroline. (2022, November). Holland Times. <https://www.hollandtimes.nl/2022-edition-9-november/dutch-supermarkets-do-too-little-to-encourage-healthy-eating/>

Centraal Bureau voor de Statistiek. (n.d.). Huishoudens nu. Centraal Bureau Voor De Statistiek. <https://www.cbs.nl/nl-nl/visualisaties/dashboard-bevolking/woonsituatie/huishoudens-nu>

Centraal Bureau voor de Statistiek. (2010, September 6). Supermarkt voor meeste Nederlanders op loopafstand. Centraal Bureau Voor De Statistiek. <https://www.cbs.nl/nl-nl/nieuws/2010/36/supermarkt-voor-meeste-nederlanders-op-loopafstand>

Centraal Bureau voor de Statistiek. (2021, June 22). Nederland grootste vleesexporteur van de EU. Centraal Bureau Voor De Statistiek. <https://www.cbs.nl/nl-nl/nieuws/2021/25/nederland-grootste-vleesexporteur-van-de-eu>

Centraal Bureau voor de Statistiek. (2024a, March 22). Stikstofemissies naar lucht. Centraal Bureau Voor De Statistiek. <https://www.cbs.nl/nl-nl/dossier/dossier-stikstof/stikstofemissies-naar-lucht>

Centraal Bureau voor de Statistiek. (2024b, April 16). Thuiswerkers wonen kwartier verder van werk. Centraal Bureau Voor De Statistiek. <https://www.cbs.nl/nl-nl/nieuws/2024/16/thuiswerkers-wonen-kwartier-verder-van-werk>

Centraal Bureau voor de Statistiek. (2024c, May 26). Iets meer verhuizingen in 2023. Centraal Bureau Voor De Statistiek. <https://www.cbs.nl/nl-nl/nieuws/2024/22/iets-meer-verhuizingen-in-2023>

Christian, D. L. (2003). *Creating a life together: Practical Tools to Grow Ecovillages and Intentional Communities*. New Society Publishers.

City Population. (2025). Zuid-Holland (Province, Netherlands) - Population statistics, charts, map and location. https://www.citypopulation.de/en/netherlands/admin/NL33_zuid_holland/

Clay, A. (2024, September 26). Like start-ups, most intentional communities fail – why? | Aeon Essays. Aeon. <https://aeon.co/essays/like-start-ups-most-intentional-communities-fail-why>

Crippa, M., Solazzo, E., Guzzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2(3), 198–209. <https://doi.org/10.1038/s43016-021-00225-9>

Distrifood Dynamics. (2020). Marktaandelen - Distrifood. Distrifood. <https://www.distrifood.nl/food-data/marktaandelen>

Dunbar, R. I. M. (2017). Breaking Bread: the Functions of Social Eating. *Adaptive Human Behavior and Physiology*, 3(3), 198–211. <https://doi.org/10.1007/s40750-017-0061-4>

Earthaven Ecovillage. (2025, June 10). Earthaven Ecovillage. <https://www.earthaven.org/>

Ecococon. (n.d.). Home. EcoCocon. <https://ecococon.eu/>

European Commission. (n.d.-a). EDGAR - FOOD. Retrieved May 18, 2025, from https://edgar.jrc.ec.europa.eu/edgar_food

European Commission. (n.d.-b). Farm to fork strategy. https://food.ec.europa.eu/vertical-topics/farm-fork-strategy_en

European Environment Agency. (2025, June 4). Water savings for a water-resilient Europe. European Environment Agency's Home Page. https://www.eea.europa.eu/en/analysis/publications/water-savings-for-a-water-resilient-europe?utm_source=chatgpt.com

European Union. (2023, January). Agri-Environmental Indicator - Livestock patterns. Eurostat. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-_livestock_patterns

Food and Agriculture Organization of the United Nations. (2016, April 7). Potential crops for paludiculture in temperate, boreal and tropical climates – Susanne Abel [Video]. YouTube. <https://www.youtube.com/watch?v=1vTzT7yi1o4>

Food And Agriculture Organization Of The United Nations. (2020). Peatlands mapping and monitoring: Recommendations and technical overview. Food & Agriculture Org.

Freethink. (2020, February 5). How Urban Farming Saved a Dallas Community [Video]. YouTube. https://www.youtube.com/watch?v=gfCcI6_1iiA

Garden, M. (n.d.). Dialogue on Ecovillages. Inclusive Democracy. https://www.inclusivedemocracy.org/journal/vol2/vol2_no2_dialogue_ecovillages_PRINTABLE.htm

Geuze, S. (2016, June 6). Vervuiled Nederland: Eiken sterven op de Veluwe. Nederlands Dagblad. De Kwaliteitskrant Van Christelijk Nederland. <https://www.nd.nl/nieuws/nederland/615491/vervuiled-nederland-eiken-sterven-op-de-veluwe>

Greifswald Moor Centrum. (n.d.-a). Hintergrund. <https://www.moorwissen.de/hintergrund.html>

Greifswald Moor Centrum. (n.d.-b). Probleme & Hemmnisse bei der Umsetzung von Paludikultur. <https://www.moorwissen.de/probleme-hemmnisse.html>

Greifswald Moor Centrum. (2023, January 3). Peatlands, Climate and Paludiculture [Video]. YouTube. <https://www.youtube.com/watch?v=uXuRiLh5ds>

John. (2024, October 26). Food as social glue: how shared meals shape our cultural fabric and unite strangers. World Day. <https://www.journee-mondiale.com/en/breaking-bread-breaking-barriers-how-food-shapes-our-social-fabric/>

Kailash Ecovillage | Intentional Community | Portland OR. (n.d.). Kailash Ecovillage. <https://www.kailashecovillage.org/>

Kelley, L. (2011, August 13). Timeline of intentional communities. <https://peacenews.info/node/3538/timeline-intentional-communities>

Kirsten Dirksen. (2021, September 26). Rundown apartments reborn as food-forest coliving Agritopia [Video]. YouTube. <https://www.youtube.com/watch?v=iCGXVc-cBVk>

Kirsten Dirksen. (2022a, February 6). 7 friends built restoration ecovillage. Outcome 50 years on [Video]. YouTube. https://www.youtube.com/watch?v=QcbUN_1lvAA

Kirsten Dirksen. (2022b, April 11). Oldtimer got wild rocky land, started NorCal off-grid Watertopia [Video]. YouTube. https://www.youtube.com/watch?v=03jgK_9aWoM

Kirsten Dirksen. (2024a, August 11). Family wraps homestead in greenhouse to warm up & grow food all year [Video]. YouTube. https://www.youtube.com/watch?v=irp_HPzfbQ

Kirsten Dirksen. (2024b, December 9). Whole ecovillage fits inside giant greenhouse: walkable, weatherproof [Video]. YouTube. <https://www.youtube.com/watch?v=EzKSKqjEmDA>

Kirsten Dirksen. (2025, January 12). How entire village runs fully off-grid on small hydropower & solar [Video]. YouTube. <https://www.youtube.com/watch?v=-YfcVFExDJE>

Kromhout, D., Spaaij, C. J. K., De Goede, J., & Weggemans, R. M. (2016). The 2015 Dutch food-based dietary guidelines. *European Journal of Clinical Nutrition*, 70(8), 869–878. <https://doi.org/10.1038/ejcn.2016.52>

Leenaers, H., & Donkers, H. (2015). *Food Atlas of the Netherlands* (1st ed.). Noordhoff.

Li, J. (2024, August 20). What Are The Consequence Of Biodiversity Loss? Earth.Org. <https://earth.org/what-are-the-consequence-of-biodiversity-loss/>

Martin-McAuliffe, S. L. (2016). Food and architecture: At The Table. Bloomsbury Publishing.

Miazzo, F., & Minkjan, M. (2013). Farming the city: Food as a Tool for Today's Urbanisation. Valiz.

Mohajan, H. (2019). The first industrial Revolution: creation of a new global human era. MPRA Paper. <https://ideas.repec.org/p/pra/mpra/96644.html>

Mongabay. (2023, September 13). The Netherlands weighs up its future amid farmer protests and dying ecosystems [Video]. YouTube. <https://www.youtube.com/watch?v=aP2SzOu5wmE>

Motivation. (2024). Mentality. <https://www.motivation.nl/en/mentality>

Mukherjee, P. (2022, December 21). How IKEA Has Mastered Gruen Effect - Bootcamp - Medium. Medium. <https://medium.com/design-bootcamp/how-ikea-has-mastered-gruen-effect-c51b0c3b6d80>

NOS Nieuws. (2019, September 6). 18.000 projecten in de knel door stikstofuitspraak. NOS. <https://nos.nl/artikel/2300556-18-000-projecten-in-de-knel-door-stikstofuitspraak>

Notenboom, J., Van Veen, M., & Wesselink, L. G. (2006). Halting the loss of biodiversity in the Netherlands. In Planbureau Voor De Leefomgeving. Planbureau voor de Leefomgeving. <https://www.pbl.nl/sites/default/files/downloads/500094001.pdf>

Occidental Arts & Ecology Center. (2025, June 9). Home - Occidental Arts & Ecology Center. <https://oaec.org/>

OECD. (2019). Nutrient balance. <https://www.oecd.org/en/data/indicators/nutrient-balance.html?oecdcontrol-a95d6ff852-var3=2019>

Osmani, M. (2011). Construction Waste. In Waste (pp. 207–218). <https://doi.org/10.1016/b978-0-12-381475-3.10015-4>

Pan, K., Universiteit Leiden, De Snoo, G., Biesmeijer, K., & Marshall, L. (2024, April 22). Buzzing decline: Dutch landscape is losing insect-pollinated plants. Leiden University. <https://www.universiteitleiden.nl/en/news/2024/04/buzzing-decline-dutch-landscape-is-losing-insect-pollinated-plants>

Pelman, A., Nachtomy, O., & Carmel, Y. (2024). Individual nutritional self-sufficiency: a viable option in the present era. *Frontiers in Sustainable Food Systems*, 8. <https://doi.org/10.3389/fsufs.2024.1424879>

Philips, A. (2013). Designing urban agriculture: A Complete Guide to the Planning, Design, Construction, Maintenance and Management of Edible Landscapes. John Wiley & Sons.

Price, O., Johnsson, M., Heffernan, E., & Gibbons, B. (2019, January 1). An investigation in the sustainable economic practices of ecovillages. Figshare. https://ro.uow.edu.au/articles/report/An_investigation_in_the_sustainable_economic_practices_of_ecovillages/27696876?file=50438040

Ritchie, H., & Roser, M. (2019, November 11). Half of the world's habitable land is used for agriculture. Our World in Data. <https://ourworldindata.org/global-land-for-agriculture>

Schuttenhelm, R. (2021, May 2). Van vogels tot eikenbos: stikstof nekt leven op de Veluwe. NU. <https://www.nu.nl/klimaat/6130230/van-vogels-tot-eikenbos-stikstof-nekt-leven-op-de-veluwe.html>

Severs, A. (2017, August 30). 70 procent van voedingsmiddelen in supermarkt is sterk bewerkt. Nieuws Voor Dieristen. <https://www.nieuwsvoordieristen.nl/70-procent-van-voedingsmiddelen-in-supermarkt-is-sterk-bewerkt/>

The Breakthrough Institute. (2025, April 11). Livestock Don't Contribute 14.5% of Global Greenhouse Gas Emissions. The Breakthrough Institute. <https://thebreakthrough.org/issues/food-agriculture-environment/livestock-dont-contribute-14-5-of-global-greenhouse-gas-emissions>

The Economist Group. (2022). Global Food Security Index 2022. https://impact.economist.com/sustainability/project/food-security-index/reports/Economist_Impact_GFSI_2022_Global_Report_Sep_2022.pdf

Tina, C., & Tina, C. (2024, August 14). 3 Reasons Why Intentional Communities Fail. CommunityFinders. <https://communityfinders.com/why-intentional-communities-fail/>

TNO. (2024, April 15). Predicting farm emissions from mobile measurements. tno.nl/en. <https://www.tno.nl/en/newsroom/insights/2024/04/predicting-farm-emissions-from-mobile/>

Trading Economics. (2025, April). Netherlands Exports of meat and edible meat offal to China. <https://tradingeconomics.com/netherlands/exports/china/meat-edible-meat-offal>

Uwa, J. N., & Pourvahidi, P. (2024). An Overview of the Effects of Passive Solar Strategies on Thermal Comfort. *Journal of Mediterranean Cities*, 4(1). https://doi.org/10.38027/mediterranean-cities_v04n01_2

Van Bussel, L., Kuijsten, A., Mars, M., & Van 'T Veer, P. (2022). Consumers' perceptions on food-related sustainability: A systematic review. *Journal of Cleaner Production*, 341, 130904. <https://doi.org/10.1016/j.jclepro.2022.130904>

Van Halm, I. (2022, August 16). The Dutch nitrogen crisis shows what happens when policymakers fail to step up. Energy Monitor. <https://www.energymonitor.ai/policy/the-dutch-nitrogen-crisis-shows-what-happens-when-policymakers-fail-to-step-up/?cf-view>

Verhoeven, S. (2018). Flourishing foodscapes: Design for City-Region Food Systems.

Viviano, F. (2017, September). This Tiny Country Feeds the World. National Geographic. <https://www.nationalgeographic.com/magazine/article/holland-agriculture-sustainable-farming>

Vogel, G. (2021, June 1). Where have all the insects gone? Science | AAAS. <https://www-science-org.tudelft.idm.oclc.org/content/article/where-have-all-insects-gone>

Volza. (2025, March 17). Animal Feed Imports in Netherlands. <https://www.volza.com/p/animal-feed/import/import-in-netherlands/>

VPRO Tegenlicht. (2022, November 21). Zo ziet de Nederlandse voedselindustrie eruit (1/2) | VPRO Tegenlicht [Video]. YouTube. <https://www.youtube.com/watch?v=Yx0wgIDgjeM>

Windsong Cohousing. (2023). Windsong Cohousing. <https://windsong.bc.ca/>

8.1 Figures

Ahn. (2025, February 4). AHN Viewer. AHN. <https://www.ahn.nl/ahn-viewer>

Bae, A. S. E. (2021, October 10). Kimjang: The Art of Kimchi Making — The Kraze. The Kraze. <https://thekrazemag.com/latest-updates/2021/10/10/kimjang-the-art-of-kimchi-making>

Canadian Cohousing Network. (n.d.). Canadian Cohousing Network. <https://old.cohousing.ca/>

Cumming, E. (2022, May 7). This Dutch tomato farm might just solve the global food crisis. The Telegraph. <https://www.telegraph.co.uk/news/0/dutch-tomato-farm-might-just-solve-global-food-crisis/>

delft op zondag. (2022, November 6). Bijzonder Midden-Delfland in het spotlicht. Delft Op Zondag. <https://www.delftopzondag.nl/nieuws/algemeen/97582/bijzonder-midden-delfland-in-het-spotlicht>

Dongchonjae. (n.d.). 한옥 게스트하우스 등촌재. Retrieved May 20, 2025, from <https://dongchonjae.modoo.at/>

EcoCocon. (n.d.). Building with EcoCocon. <https://ecococon.eu/sk/blog/2020/building-with-ecococon-panels>

Food And Agriculture Organization Of The United Nations. (2020). Peatlands mapping and monitoring: Recommendations and technical overview. Food & Agriculture Org.

HortiLeads. (2019, April 8). Albert Heijn test plasticvrije groenten en fruit. Onder Glas. <https://www.onderglas.nl/albert-heijn-test-plasticvrije-groenten-en-fruit/>

Kershaw's Challenge. (2023, May 2). 2023 Beneficiary Introductions: Bonton Farms. <https://www.kershawchallenge.com/blog/2023/5/2/2023-beneficiary-introductions-bonton-farms>

Kirsten Dirksen. (2021, September 26). Rundown apartments reborn as food-forest coliving Agritopia [Video]. YouTube. <https://www.youtube.com/watch?v=iCGXVkcBVk>

Kirsten Dirksen. (2022, February 6). 7 friends built restoration ecovillage. Outcome 50 years on [Video]. YouTube. https://www.youtube.com/watch?v=QcbUN_1lvAA

Kirsten Dirksen. (2024, December 9). Whole ecovillage fits inside giant greenhouse: walkable, weatherproof [Video]. YouTube. <https://www.youtube.com/watch?v=EzKSKqjEmDA>

Kirsten Dirksen. (2025, January 12). How entire village runs fully off-grid on small hydropower & solar [Video]. YouTube. <https://www.youtube.com/watch?v=-YfcVFExDJE>

Knapp, F. (2019, April 29). The Last Great California Hippie Commune is still going Strong. Messy Nessy Chic. <https://www.messynessychic.com/2019/04/23/the-last-great-california-hippie-commune-is-still-going-strong/>

Leenaers, H., & Donkers, H. (2015). Food Atlas of the Netherlands (1st ed.). Noordhoff.

Midden-Delfland.net. (2025, May 11). Duifpolder. Midden-Delfland. <https://www.middendelfland.net/landschap/duifpolder.htm>

Mohajan, H. (2019). The first industrial Revolution: creation of a new global human era. MPRA Paper. <https://ideas.repec.org/p/pra/mprapa/96644.html>

Motivaction. (2024). Mentality. <https://www.motivaction.nl/en/mentality>

Northshireliving. (2019, August 22). Maple Syrup. Northshire Living. <https://northshireliving.com/2019/03/21/its-sugaring-season-in-vt-check-out-our-favorite-spots-to-enjoy-vermonts-finest-export-maple-syrup/>

Our World in Data. (n.d.). Number of people employed in agriculture. <https://ourworldindata.org/grapher/number-of-people-employed-in-agriculture?country=~NLD>

Raddato, C. (2019, September 9). Atrium of Villa San Marco in Stabiae. World History Encyclopedia. <https://www.worldhistory.org/image/11172/atrium-of-villa-san-marco-in-stabiae/>

Raddato, C. (2020). A visitor's guide to Oplontis, Stabiae & Boscoreale. World History Encyclopedia. <https://www.worldhistory.org/article/1552/a-visitors-guide-to-oplontis-stabiae--boscoreale/>

RTV Noord. (2020, February 21). Afperser Albert Heijn veroordeeld tot jaar cel. RTV Noord. <https://www.rtvnoord.nl/nieuws/219140/afperser-albert-heijn-veroordeeld-tot-jaar-cel>

The Economist Group. (2022). Global Food Security Index 2022. https://impact.economist.com/sustainability/project/food-security-index/reports/Economist_Impact_GFSI_2022_Global_Report_Sep_2022.pdf

Verhoeven, S. (2018). Flourishing foodscapes: Design for City-Region Food Systems.

Visuotinė lietuvių enciklopedija. (n.d.). Johann Heinrich von Thünen. Visuotinė Lietuvių Enciklopedija. <https://www.vle.lt/straipsnis/johann-heinrich-von-thunen/>

VPRO Tegenlicht. (2022, November 21). Zo ziet de Nederlandse voedselindustrie eruit (1/2) | VPRO Tegenlicht [Video]. YouTube. <https://www.youtube.com/watch?v=Yx0wgIDgjeM>

Wikipedia contributors. (n.d.). File:Pieter Bruegel de Oude - De bruiloft dans (Detroit).jpg - Wikipedia. [https://en.wikipedia.org/wiki/File:Pieter_Bruegel_de_Oude_-_De_bruiloft_dans_\(Detroit\).jpg](https://en.wikipedia.org/wiki/File:Pieter_Bruegel_de_Oude_-_De_bruiloft_dans_(Detroit).jpg)

reflección reflexion

9.0 Reflection

What is the relation between your graduation project topic, your master track (A, U, BT, LA, MBE), and your master programme (MSc AUBS)?

My graduation project, Home to Fork, investigates how the design of dwellings can actively support sustainable food systems by integrating food-related activities into everyday domestic life.

This topic aligns closely with the Architecture track (A), as it addresses a broader societal challenge through architectural strategies. The project investigates how such strategies can influence the nutritional, social, and ecological dimensions of daily life, approaching dwelling architecture not merely as shelter, but as a tool for initiating change in these aspects of life that may initially appear unrelated to the built environment. At its core, the project examines how the program and function of architecture can shape the lifestyles of its occupants. It seeks to demonstrate how design decisions at the scale of a humble home in Midden-Delfland can transform the dynamics of a community and, in turn, contribute to alleviating systemic issues such as environmental degradation and unsustainable food practices in Dutch society.

As a master's-level project, Home to Fork attempts to do more than replicate existing communities, but build upon these precedents by proposing a novel combination of known architectural strategies. Strategies include the use of both conventional and experimental biodegradable materials, the intentional programming and orientation of spaces to foster

food-related social interaction, and the development of a form language that supports the tenets of permaculture. All aforementioned strategies are grounded in research that directly links each design response to specific challenges within the food system. Both the problem identification and the proposed solutions have been developed with careful attention to the contextual sensitivities of Midden-Delfland. Most importantly, the project does not stray outside the scope of what architecture is capable of, therefore maintaining a direct relation with the Architecture master track.

In alignment with the goals of the AUBS master's programme, Home to Fork uses research as the foundation for all major design decisions at the dwelling, cluster, and community scale. I strongly believe the strength of any proposed solution is only as powerful as the severity of the problem it seeks to address. As such, particular emphasis was placed on understanding the global food system and its environmental impact in the Dutch context. The project also examines the future consequences of maintaining the current food system, underscoring the urgency for change. I was motivated to pursue a graduation topic that not only reflects my personal interests, but also engages with a critical issue that is likely to grow in relevance for dwelling architecture in the coming decades. The intersection of architecture and the food system represents a timely and meaningful subject in the current state of the world. While I am certainly not the first to explore this intersection, I am invested in the continued development of this field and aim to contribute to the ongoing discourse around architectural solutions

for sustainable food systems. This potential for future dialogue and innovation is, in my view, a key point of connection between my project and the aims of the AUBS programme.

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

As mentioned previously, all major design decisions in Home to Fork were grounded in research. At the core of the project is the argument that the unsustainable dietary habits prevalent today stem from a fundamental disconnect between food production and food consumption. To address this, the project emphasizes the importance of engaging occupants in food-related activities, regardless of the scale of their contribution, as a means to foster awareness and promote change. To support this engagement, the design of the individual dwelling was centered on accommodating various methods of food production and preservation. My position is that sustainable dietary habits cannot be meaningfully adopted unless people are provided with adequate architectural space to support such practices. Based on research into a range of food-related activities, the dwelling incorporates zones with varied temperature and humidity levels, each tailored to specific food processes.

A key concept explored in the design is the idea of the "vessel of rain and sun." Research into permaculture identified water retention as one of the major challenges in sustainable agriculture. In response, the dwelling was designed to

facilitate the harvesting and storage of rainwater. Simultaneously, the architectural form creates distinct areas of direct sunlight, indirect light, and shade, addressing the diverse needs of plant cultivation and food preservation. These environmental gradients became a defining feature of the project's spatial and formal language, thus allowing research to manifest the foundation of architectural design.

At the beginning of the project, I developed an extensive list of topics and sub-topics I intended to research. However, as I began exploring permaculture and other regenerative food systems, it became clear that gaining in-depth knowledge in all of these areas would not necessarily result in meaningful architectural outcomes. I found that certain methods of food production, such as grain cultivation, paludiculture, and hydroponics, require a level of technical expertise and time commitment that exceeds what can reasonably be expected of the average occupant. Since the community I was designing was not intended to consist of full-time farmers, these methods were excluded from the dwelling-scale design. This realization led to a shift in my research priorities. As I developed the sitopic community, I chose to limit or omit certain research areas that relied on specialist knowledge more appropriate to urban planning than architectural design. I also recognized that I would not have sufficient time to engage with those topics at a depth that would contribute meaningfully to the project.

Throughout the design process, I continued to adjust the scope and depth of my research in response to emerging spa-

tial strategies. For example, I researched the concept of food forests enough to understand their relevance and placement in the outer zones of the community. However, I did not pursue detailed knowledge of their establishment or the specific species involved, as this level of information would not significantly impact the architectural design. In this way, the design process played an active role in shaping the direction of the research. It helped identify which areas were critical to informing spatial and material decisions, and which could remain conceptual in order to maintain focus and clarity throughout the development of the project.

In a similar vein, the design process also revealed numerous opportunities for further research into materials and construction methods for the individual dwelling. Starting from a conceptual framework based on the required functions and spatial relationships within the home, I was continuously engaged in evaluating different material and construction options. Each decision required careful comparison to determine which solutions would best support the intended design outcomes, particularly in relation to sustainability, thermal performance, and integration with food-related activities.

With Home to Fork, I approached form and function as two sides of the same coin. Every architectural decision, from the scale of the individual dwelling to the cluster, community, and group masterplan, was informed by and validated through research. This approach ensured that the project remained not only conceptually rigorous but also grounded

in practical strategies for enabling regenerative food systems through architecture. While research initially provided the broad framework for the conceptual design, the progression of the design itself began to shape the direction and specificity of further research. In retrospect, research served as the starting point for the design process, but as the project evolved, the boundary between research and design became increasingly fluid, with each continuously informing and refining the other.

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

Broadly speaking, I began by using video documentaries and a selection of books to build a foundational understanding of the global food system and its associated challenges. This general knowledge was then supplemented with region-specific data, sourced from academic journals and the Central Bureau of Statistics of the Netherlands, to ground the research within the Dutch context.

Once I had developed a clearer grasp of the theoretical frameworks and key issues within the food system, I turned to case studies of intentional and agrarian communities. After discovering that a significant number of such communities ultimately fail, I focused my research on identifying the characteristics of those that have succeeded and endured over time. By analyzing both their spatial organization and social composition, I aimed to understand the factors that contributed to their long-term viability. This led to an extended phase of demo-

graphic research, prompted by repeated evidence pointing to the crucial role of social composition in the success of sitopic communities. Using this data, I developed a hypothetical social makeup for the community, which directly informed the programmatic requirements. This included determining the appropriate dwelling sizes, their distribution, and the design and placement of spaces intended for social interaction.

Finally, the design of the individual dwellings was shaped by targeted online research into food-related strategies. These findings informed not only the form language of the dwellings but also the specific programmatic layout and circulation patterns at the level of the home, cluster, and broader community.

Throughout the duration of the project, I relied heavily on literature review as my primary research method. All primary sources were drawn from reputable institutions, including government organizations such as the Central Bureau of Statistics and the United Nations Commission. Secondary sources consisted largely of peer-reviewed academic papers accessed through platforms such as ResearchGate. In addition, I incorporated insights from documentaries produced by credible institutions, including Deutsche Welle, the BBC, and Wageningen University.

Initially, I had intended to conduct interviews to gain candid, firsthand insight into community gardens and various scales of agricultural communities. However, I encountered significant challenges in arranging these interviews and recognized that my limited ability to speak

Dutch would likely hinder meaningful communication. As a result, I made the decision to abandon this method early in the research process.

Instead, I chose to focus on my strengths, prioritizing a thorough review of material produced by experts in the field. By synthesizing this information, I was able to shape the design of my proposed sitopic community.

I am somewhat unsatisfied with my research methodology. I tend to cast a wide net, gathering as much information as possible, regardless of its immediate relevance to the project. As this was my first experience with research at this academic level, I am still uncertain whether this approach was an effective use of my time. However, I do believe there was value in engaging with a broad range of academic journals related to my topic. This was the only area of research that I felt certain would add meaningful decisions to the overall design.

At the same time, I recognize that the individual nature of this project placed certain limits on the development of more collaborative or interdisciplinary strategies. In hindsight, it would have been valuable to have had more opportunities to seek out perspectives from peers, architects, and professionals in related fields. Conversations with experts in agriculture, social planning, or environmental science could have offered additional layers of insight that would have helped refine and challenge my proposed concepts.

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

I believe my graduation project holds significant academic and societal value. Human impact on the environment and the fragile ecological balance of the planet has become the defining cause of my generation. For my grandparents, the existential threat was war and the fight for national independence. For my parents, it was economic collapse and the struggle for democracy. For us, it is the potential collapse of a habitable world.

Unfortunately, the horrors of the environmental crisis remain too abstract for many to grasp on a visceral level. A turtle may wear plastic around its neck, but how does that affect the average person? An oil spill may wipe out a coral reef, but this hardly registers as an inconvenience within the sheltered comfort of urban life. Nitrogen saturation may be killing plants and wildlife, but the tap water still runs clear and clean. Cities house the populations with the power to enact change, but the people within them are often too far removed from the consequences to feel the urgency.

Food insecurity, however, may be the bridge between environmental awareness and public engagement. Even in developed countries, memories of food scarcity are rarely more than a generation or two behind us. This is a crisis that is tangible, immediate, and personal. Simply put, food is easy to understand. Melting ice caps and endangered species may evoke concern, but not the same visceral alarm as the thought of an emp-

ty fridge or bare shelves at the grocery store. Might I remind the reader of how people behaved in grocery stores during the peak of the coronavirus pandemic, and that was only toilet paper! Food insecurity has the potential to cut across demographics, to reach not only the environmentally conscious but people of all backgrounds. It should not only serve as a tool for education and advocacy, but also be recognized as a central issue in its own right. I believe the core ideas explored in my graduation project have the potential to join others' to form a meaningful and necessary point of discussion in contemporary architecture.

While architecture may not offer a direct solution to the failings of the global food system, dwelling design can help reshape community values. This bottom-up approach offers an indirect yet powerful means of transforming our estranged relationship with food. Home to Fork addresses ethics by positioning the everyday moral decisions of occupants as meaningful contributions to a global cause. Not through laws or policies, but through the lived dissemination of values and sustainable habits that begin in the home and extend outward into the broader global community.

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

Home to Fork is based on the environmental, cultural, and spatial conditions of Midden-Delfland, but its central strategies of reconnecting food production with everyday life, embedding sustainability into dwelling design, and fostering community cohesion through food-relat-

ed practices can be applied elsewhere with appropriate adjustments.

One of the strongest indicators of the transferability of food-integrated dwelling design is historical precedent. For most of human history, across nearly all cultures, food production was closely tied to the home. It is only in the past few centuries, with the rise of industrialization and urbanization, that this relationship has been disrupted. In that sense, while Home to Fork may seem to propose an experimental way of living, it actually draws from long-standing vernacular traditions.

Key elements such as spatial zoning for social food-related activities, passive systems for collecting water and sunlight, and the thoughtful selection of materials suited to food production are not exclusive to the Dutch countryside. These strategies offer a flexible framework that can be adapted to urban, suburban, or rural settings, depending on local climate, available materials, and community dynamics.

Social food-related activities can take many forms, including production, preservation, distribution, and consumption. Among these, the social and communal elements offer the greatest potential for transferability. These activities can range from informal to more structured practices. For example, a volunteer-run kitchen like StadsOase Spinozahof invites participants to share a communal meal in exchange for helping with food preparation. On a more coordinated level, communities might organize seasonal preservation efforts, where certain foods are processed and stored in communal kitchens to last until the next harvest. As

highlighted in the project proposal, such practices not only strengthen local food resilience but also foster social bonds and shared responsibility, making them valuable models for implementation in a wide variety of contexts.

Several spatial strategies developed in Home to Fork are applicable across a wide range of housing types. These include the integration of double-height greenhouses as sitopic spaces, and the deliberate creation of multiple climate zones within the home to support food preservation and cultivation. These strategies are adaptable and can be implemented at various scales, from single-family homes to multi-unit housing developments. The double-height greenhouse, for instance, not only provides space for vertical growing systems and improved light penetration, but also creates opportunities for thermal regulation and visual connectivity between floors, enhancing both function and quality of life. Similarly, incorporating distinct climate zones within the home allows for year-round food-related activities, including cool storage, fermentation, drying, or sprouting, without relying entirely on energy-intensive mechanical systems. These spatial solutions can be integrated into existing housing typologies or inform the design of new ones, making them highly transferable.

Lastly, the idea that certain biodegradable materials can serve specific functions that support food production is also highly transferable across different contexts. This approach reflects a broader value system in which material choices are guided not only by structural or aesthetic considerations, but also by their

ecological roles during use and their potential contributions after disposal. Materials that decompose naturally, enrich soil, or assist in moisture retention can be strategically integrated into both building and landscape elements. This way of thinking encourages architects of sitopic communities to consider the full lifecycle of materials as part of a regenerative design process. Unfortunately, the use of these materials is limited to buildings that are around five stories tall or less due to the structural limits of biodegradable materials. Basements are also not advisable.

However, one of the key challenges to the transferability of this project lies in the ownership models of housing. Developments driven by profit-oriented corporations are unlikely to adopt sitopic strategies, as these often conflict with the objective of maximizing financial return. For a sitopic lifestyle to be viable in an urban context, it is essential to acknowledge the diversity of urban mindsets and lifestyles, and to offer low-barrier, low-expertise opportunities for food engagement. Simple activities such as attending a weekly market that offers locally grown sustainable food, participating in a non-profit community canteen, or harvesting herbs from a shared garden wall require minimal time and knowledge, yet can have meaningful social and ecological impact. These strategies create accessible entry points that are adaptable to a wide range of users and do not rely on large development budgets to be implemented in either urban or rural environments. While Home to Fork concentrates sitopic strategies at the scale of the dwelling and cluster, their application in cities would likely be more dispersed.

Instead of being contained within a single development, these strategies could form a layered urban network of food-related opportunities that weave through the public and semi-public fabric of the city.

Ultimately, the core principles of the project are transferable across a range of settings and contexts. As the proposed design is closely tied to the specific needs and characteristics of Midden-Delfland, its strategies may require significant adjustments to suit different scales, densities, and climates. Nonetheless, the project was not developed with the goal of replicating specific architectural elements, but rather to promote and share the sitopic lifestyle cultivated within the community. It is this way of living, grounded in a connection to the food system, social cohesion, and ecological awareness, that holds the greatest potential for wider application.

