STANDING STILL WHILE MOVING

BALANCING TRADITION AND TRANSITION IN THE VALUED LANDSCAPE

STANDING STILL WHILE MOVING

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“LANDSCAPE OF ZEELAND”

BY VAN DE WEGE, 2004

ABSTRACT

In the Dutch province of Zeeland, the urgency of climate change alarms and therefore accelerated the implementation of renewable energy projects in a top-down manner. While these additions aim to address the broader environmental concerns, they often undermine the landscapes that deemed essential by local communities, threatening their cultural identity and jeopardizing spatial justice. Despite Zeeland's potential as a strategic player towards successful energy transition, it come at a cost – sacrificing the valued landscapes of local communities.

The central question was initiated: How can the energy transition in Zeeland proceed while achieve spatial justice through the protection of landscapes valued by transitional communities? The question emphasizes the importance of integrating community opinions into the transition process.

Through media analysis, surveys and interviews, a community-informed vision is developed to identify and categorize different types of valued landscapes. The vision, standing still while moving: 'standing still' reflects the community's wish of protecting the regional identity while 'moving' implies communities' awareness of the importance of the energy transition. By overlaying the valued landscape area with the current energy impact. We were able to developed the 'go-nogo' map that articulates the area of conflict and areas for potential. This map forms the foundation for conservation, mitigation and intervention, ensuring landscape and its associated qualities are respected and preserved.

The vision is later translated into a spatial strategy. The first step is investigating maximization scenarios, evaluating potential locations for new energy productions, that's in harmony with the existing infrastructure. Then, a toolbox embedded with the community's value is developed, and further implemented, allowing the vision to unfold and elaborate itself across different zones. Furthermore, policies are twinning with the proposed toolkit to better manage and regulate the spatial intervention.

Finally, a preferred scenario was proposed, detailed zoom-ins are provided to visualize the spatial qualities in the new vision. This strategy demonstrates in the following aspects: spatial interventions that remove conflicts (by removing energy that negatively impacted valued landscapes) and the bundling of energy production in areas that are outside the zones of interest (combine wave and solar energy on existing windfarm at sea). Energy corridors are outlined to guide the energy clusters and keep other landscapes clean of energy. SMR's (Small Modular Reactors) will be placed in industry areas to consolidate and minimize impact; emphasizing 'produce it where it is needed'. This structure offers a sustainable path forward for Zeeland; balancing tradition and transition while serving as a replicable model for other regions facing similar challenges.

KEYWORDS: energy transition, valued landscape, bottom-up, transitional community, spatial strategy, climate change, spatial injustice.

CONTENT

INTRODUCTION

CONTEXT TO THE PROJECT

The rural province of Zeeland has a rich history and culture, resulting in its own unique identity. Its relation to the water gave the province a strong geographical and economical position, recent developments in the energy transition have taken their toll. The identity of the people of Zeeland ‘Zeeuwen’ is under pressure, the communities are discontent with their influence on the transition and how it ruins the landscape.
Energy projects supporting the energy transition are essential but top down planning seems to do more harm than good, current planning and governance. This reduces their influence on the situation and leaves them feeling powerless.
In this project the transitional communities are the focal point of the regional energy strategy, acting as the missing link between current top-down plans and the valued landscape in order to preserve their identity.

The community’s identity is reflected in old plates that we subsequently utilize in various contexts. The original antique plate was sourced from family members, which facilitated the creation of new plates on wooden bases plates obtained from the Zeeuws Museum.

URGENCY

In an era defined by the escalating urgency of climate change, the global community finds itself at a crucial crossroads. The decisions made today will indelibly shape the future of our planet. (Yu et al., 2024)

The consumption of fossil fuels (coal, oil, and natural gas) is the primary driver of greenhouse gas emissions, which propel climate change and its multitude of destructive consequences. This is worldwide evident, from the melting of polar ice caps (which results in sea level rise) and increasing severity of extreme weather. (Yu et al., 2024)

To combat this climate change, renewable energy sources like solar, wind, hydro, and geothermal power will be used. However, the energy transition to renewable energy and climate change impacts are not distributed evenly. (Yu et al., 2024)

The Dutch province of Zeeland is surrounded by water and faces a high risk of flooding. Climate change poses a threat to the inhabitants of Zeeland. According to Pijpelink et al. (2021), streets in Zeeland are flooded after heavy rainfall, farmers and fruit growers suffer damage due to prolonged drought and a lack of fresh water, and Zeeland's natural environment is changing as the seasons shift. These climate effects will become increasingly extreme in the coming years. In short, there is an urgent need for action, and a transition is necessary.

"URGENCY OF CLIMATE CHANGE: WE ARE AT CRUCIAL CROSSROADS"

ZEELAND

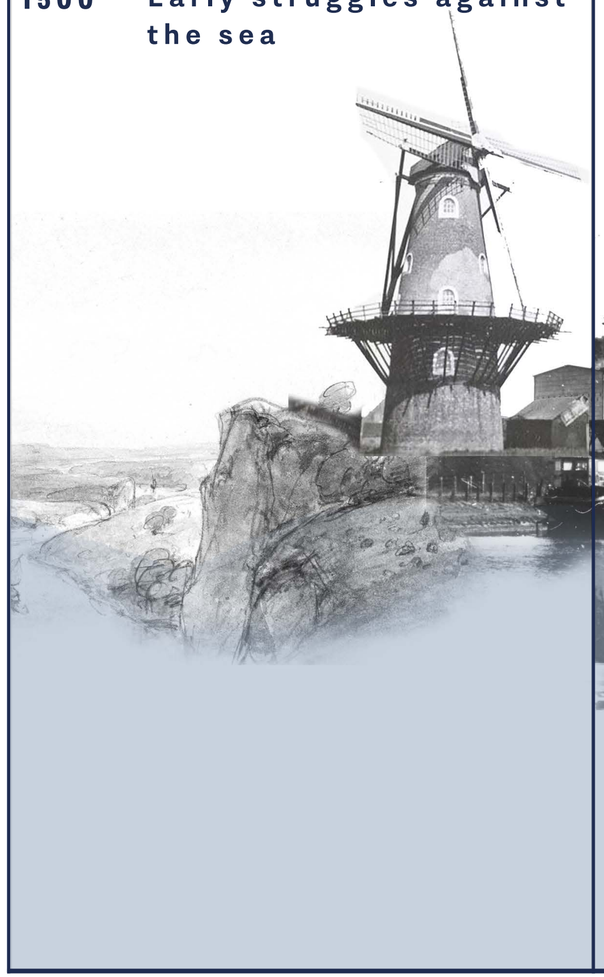
Zeeland is a coastal province in the southwest of the Netherlands, characterized by its peninsulas and (former) islands. The province and identity of its people are in great part shaped by its relation to the water, with the North Sea and its own two estuaries being the source of both prosperity and danger. The rural character, islands and small population make Zeeland a province that often feels disconnected from the rest of the Netherlands, especially the beating heart of the country, the Randstad. But in fact it plays a role on the interregional scale with its two main harbors Vlissingen and Terneuzen forming the North Sea Port together with Ghent. These harbors are strategically located between Antwerp and Rotterdam, two of the biggest harbors in Europe.

Apart from the concentrated sea related industries, Zeeland is known and valued for its pristine beaches, seascapes, grandiose landscapes, fishing industry and unique culture, attracting thousands of visitors each year. These important and valued characteristics areas of Zeeland are shaped by the islands relation with the water, but at the same time by its people and their energy needs.

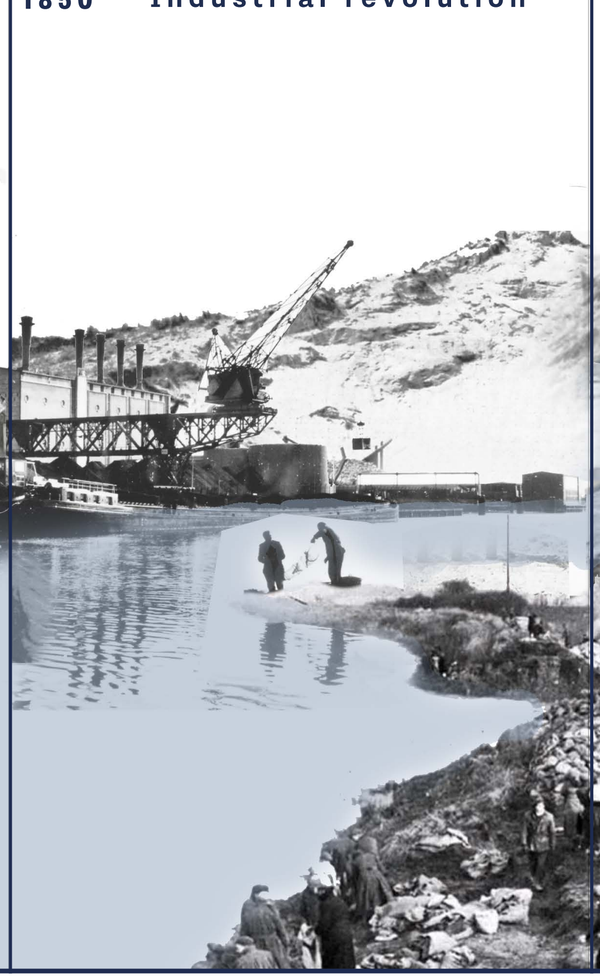
SHAPED BY THE WATER

‘LAND OF *SEA*’

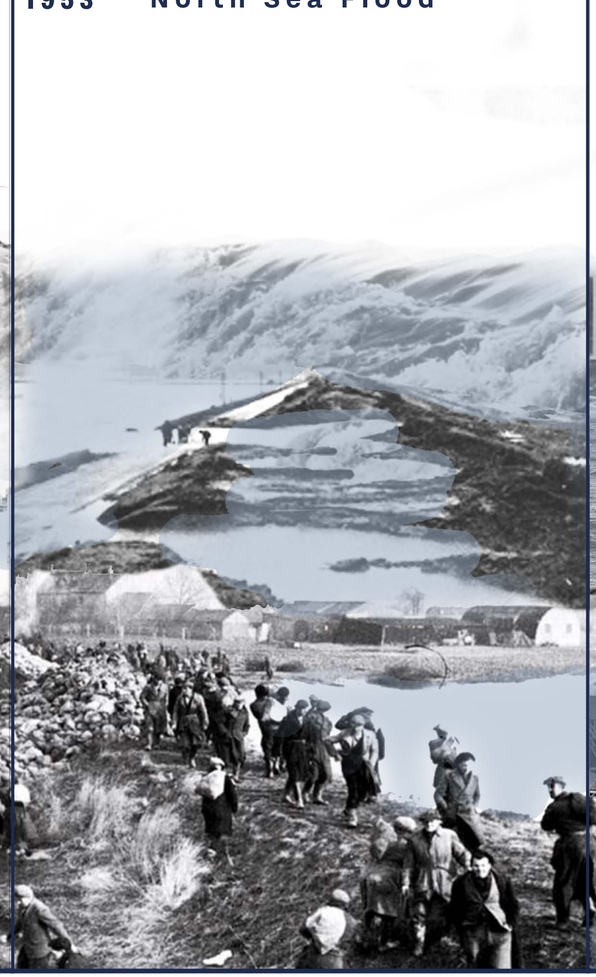
1500 Early struggles against the sea



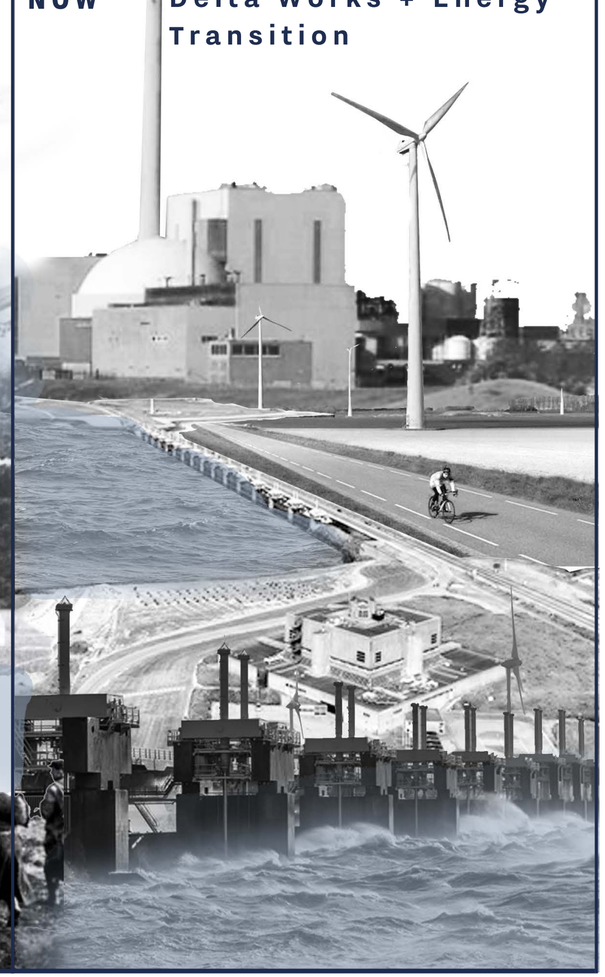
1850 Industrial revolution



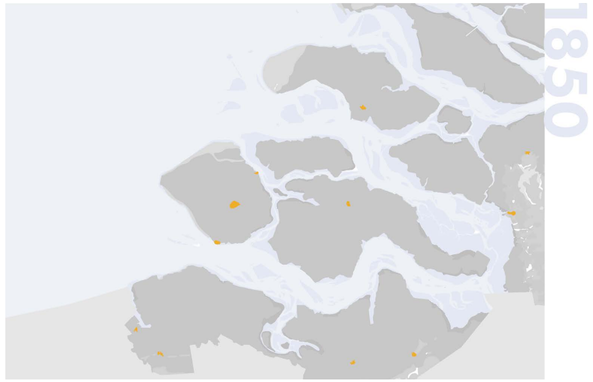
1953 North Sea Flood



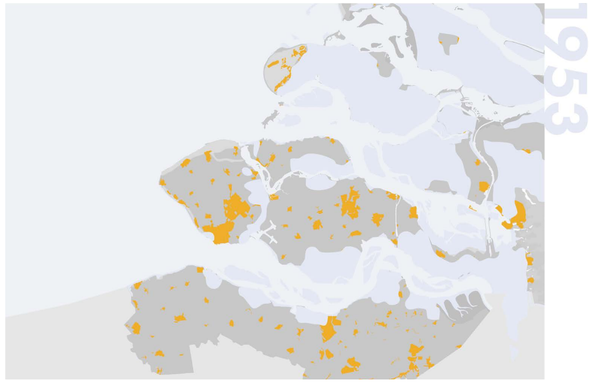
NOW Delta Works + Energy Transition



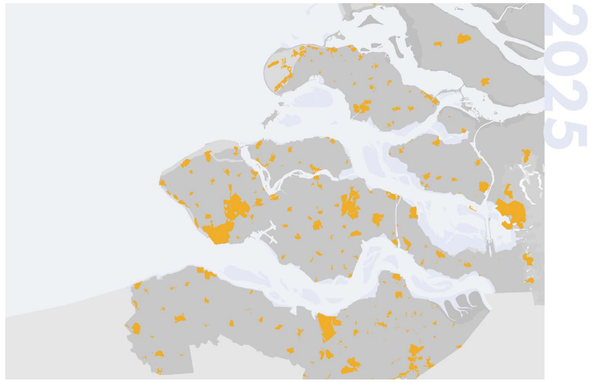
The water of both the North Sea and the estuaries of Zeeland , the Oosterschelde and Westerschelde, have shaped the physical appearance of the province. The water has historically proven to be a challenge to the people of Zeeland, often flooding the landscape, but the residents have proven to be resilient in their struggle. Throughout time the relation has changed, the people learned to protect themselves from the water and bend it to their will, building dikes and creating polders.



Zeeland is surrounded by water, making it easier for its inhabitants to protect themselves; forts were built along the coast. This also led to thriving trade, with Zierikzee serving as an important harbor at the time. Cities like Middelburg, Vlissingen, and Zierikzee were already quite large for that era. The impact of the Industrial Revolution is clearly visible.



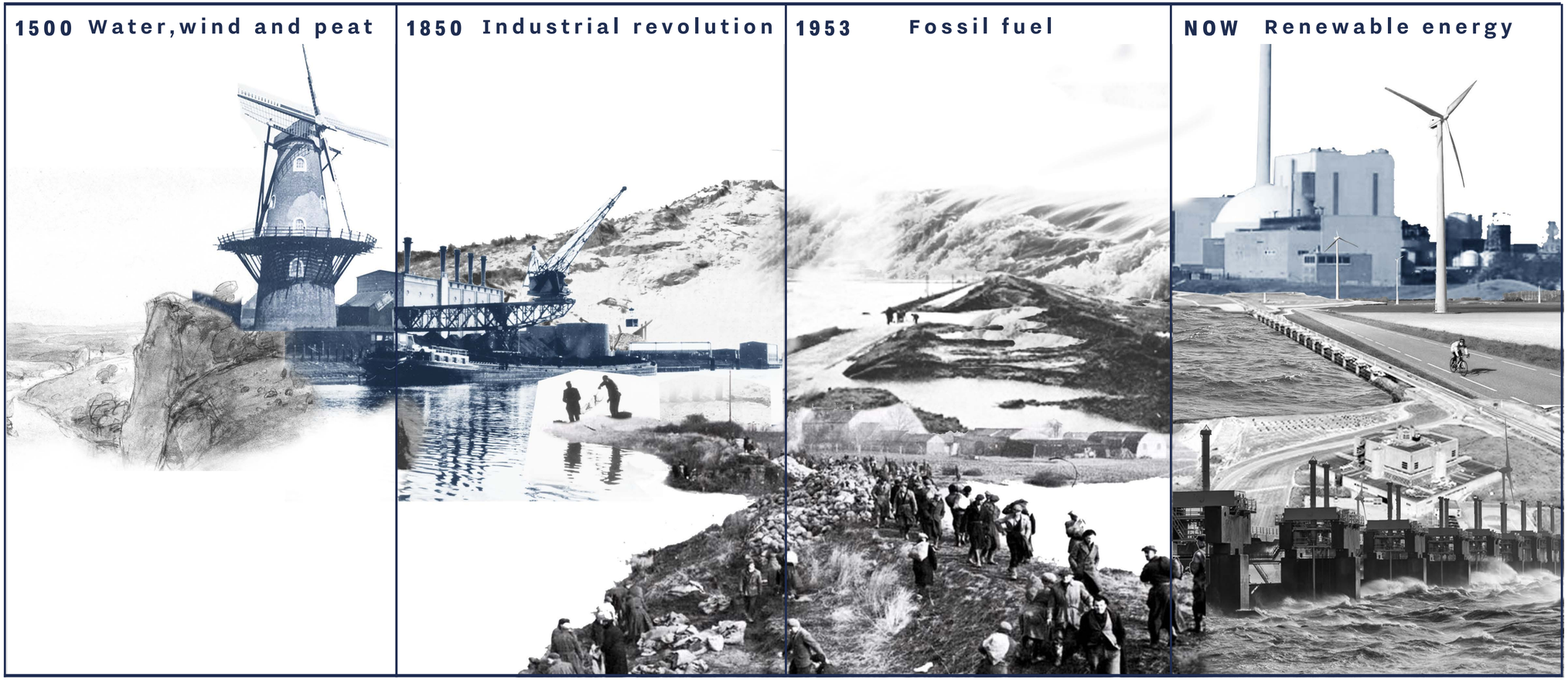
In later stages the people tamed the water, expanding on their vast knowledge of water management. They started the biggest delta engineering project in the world, the Delta works.



Now, 72 years later, the dikes need to be improved on again due to aging and rising sea levels. The fear of a dike breach is present again.

SHAPED BY THE ENERGY PRODUCTION

LANDSCAPE OF *'ENERGY'*



Energy has always been a part of the landscape of Zeeland, going back in time, people relied on energy sources such as wind, water and peat. Peat being a resource that shaped part of the landscape due to the nature of its extraction, resulting in unique peat landscapes where extraction patterns are still visible. The people also relied on the steady coastal winds and water to produce energy and create the first polders. Later on the industrial revolution took place, not greatly influencing Zeeland at first, as many developments such as the railway system would pass by the province until the 1870s. Most notable effects of the shift were the introduction of large scale production industry between Ghent and Terneuzen. After the industrial revolution the reliance on fossil fuels grew and the shift from coal to gas and oil took place. Around the same time the first Dutch nuclear plant was realized (1973). At last there is the current situation, in which renewable production is growing again, with Zeeland producing more and more wind and solar energy than ever before.

Peat

Windmil

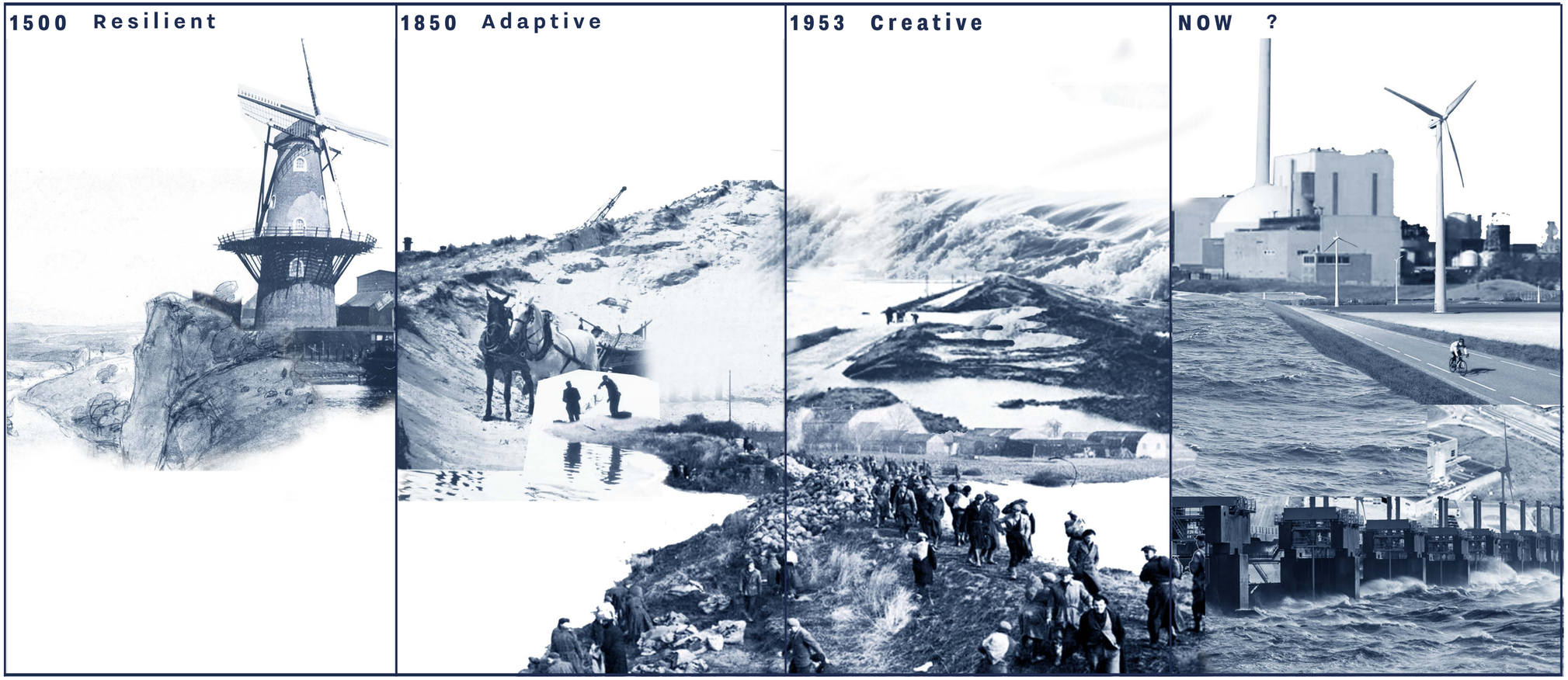
Windturbine

Fossil

Nuclear

IDENTITY OF ZEELAND

SHAPED BY NATURE.. ..AND ENERGY?

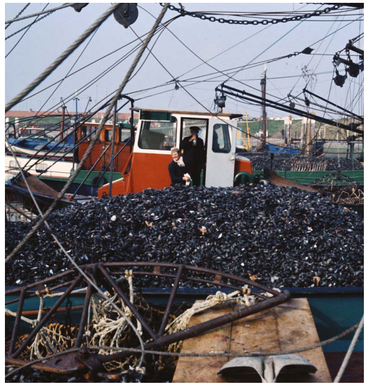


The people of Zeeland have always been resilient. Initially, their location by the water served as protection, and it was also home to harbors from which trade ships set sail. The Zeeuwen were powerful highly self-sufficient, and what they lacked, they traded for. The Industrial Revolution further strengthened their position. Zeeuwen are adaptive, constantly adjusting to new circumstances. This was evident even during the time of the North Sea Flood Disaster. They are creative and quick to recover. In no time, the Delta Works were built to protect their land from the water once again. They do not openly show their pain; they are reserved. Even today, they remain reserved. However, their identity is slowly being eroded. The energy transition is reshaping the landscape and, with it, the identity of Zeeland.

Beach

Landscape

Sea



Fishery

Culture

METHODOLOGY

METHODS THAT ARE USED FOR THE PROJECT

PROBLEM STATEMENT

As mentioned earlier, Zeeland has a unique identity, largely due to its enclosed character surrounded by water. The sea, the dunes, and the vast landscapes are all quintessentially Zeelandic. However, its location by the water also makes it highly suitable for energy generation. Offshore wind turbines produce significant amounts of energy, and Zeeland's high number of sunshine hours makes solar energy particularly attractive. The vast open landscapes offer ample space, making them a potential asset for the energy transition.

Zeeland is filled with energy production sites and energy highways large electricity networks with pylons, sometimes even four routes running parallel to each other. The energy transition has been approached primarily in a **top-down** manner. While the landscape has been considered, its value has only been recognized from a **top-down perspective**, focusing on **Natura 2000 areas** and **Cultural and Historical Landscapes (CHL)**.

However, Zeeland has many more **valued landscapes** than those officially designated. Many residents feel that the energy transition is **ruining the scenery and landscapes**. The issue addressed in this research is, therefore, the **lack of balance between the energy transition and valued landscapes**. This imbalance directly impacts the **communities living in these landscapes** or those economically dependent on them, such as **farmers and fishers**.

“The energy transition is not in balance with the community valued landscapes“

historical landscape plate

current landscape plate

RESEARCH QUESTION

“How can the energy transition in Zeeland continue, while ensuring spatial justice through protection of the transitional community valued landscapes?“

CONCEPTUAL FRAMEWORK

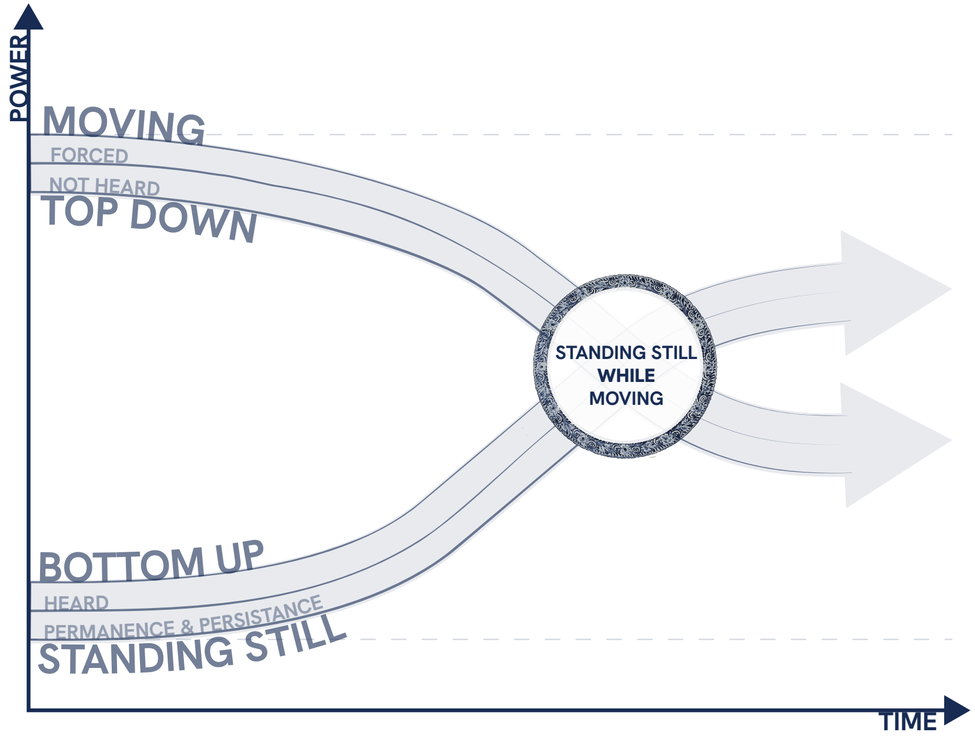
The conceptual framework provides an overview of the key concepts and their interrelationships, that together form the foundation of the research and design exploration.

The current situation shows the energy transition being dominated by the top down perspective, with the bottom up having little to no control. Here it is also shown that the top down perspective represents moving forward towards renewable production, while the bottom up perspective is about standing still and preserving the identity.

There is a clear difference between the two perspectives as the top down forces itself upon the landscape while the bottom up makes the community feel heard and represented.

When talking about the bottom up perspective (standing still), there is a clear duality between permanence and persistence. Where persistence addresses long-term survival of parts or the whole system, permanence also deals with the limits of growth for parts or the whole system (Thieme, 2000).

The power of the perspectives currently the dominant top-down narrative needs to shift to a bottom-up one. This change in narrative results in our vision of standing still while moving, taking the community and their identity into the future while making the energy transition happen.



METHODS

Method of research
In this research we use different methods of research and data gathering. In the beginning literature research was used to clarify the problem and to find the transition community. To find out the scale of the problem data analysis was used. To give the problem a human element street interviews and questionnaires were used. To design a vision and based on that a strategy the method research by design was a good way to visualize the problem and connect the scale and human element to the mix.

Positionality
Our position as planners is very important in the project and decision making. The role of the planners defines how the community is represented and how it is incorporated into the final strategy. In this project the planners act as facilitators of dialogue, to communicate their wishes to the other perspective and guarantee their role in the transition. Ethical dilemmas are generalized per type of intervention area, resulting from the Go-No-Go map.

Specification of research boundary
To make the report more focused we will be talking about four subjects which are to big to talk about. The reason is because every one of these subjects could be a research of its own. In this chapter you will be reading a short description of why we did not include them in this paper.

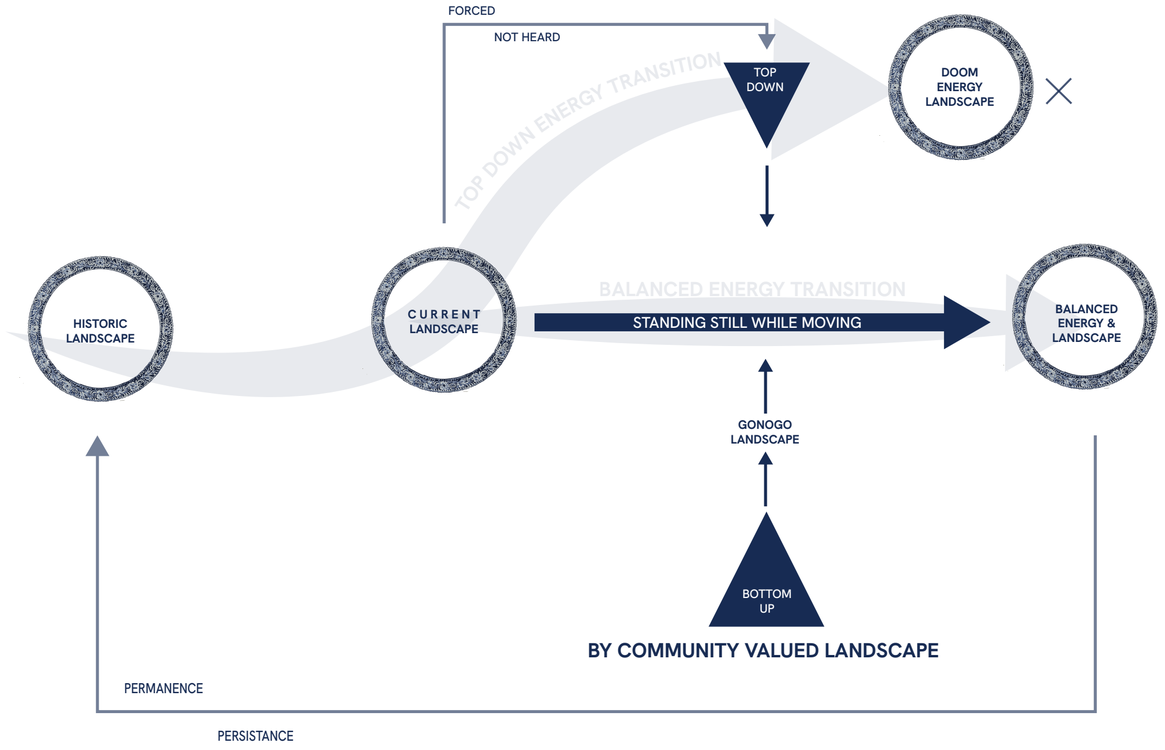
IN community
Addressing the IN community is a hard task, because of the scale of the problem and the OF and ON community are already a large group. Zeeland's ecosystems range from coastal wetlands to inland habitats, each species affected differently by energy developments. So to keep the scope of this project manageable we left the IN community out.

Storage
Energy storage is a key aspect of the energy transition, but current technologies, like batteries and hydrogen storage, are not yet efficient or scalable enough to make a significant impact. These solutions face challenges in terms of cost, efficiency, and implementation, limiting their effectiveness in addressing the intermittent nature of renewable energy sources. While new techniques may eventually improve storage, the industry is still developing, and widespread application remains a future goal.

Circulation
The grid is something we do talk about in our paper but this is a smaller piece of the larger puzzle. To talk about circulation is to talk about the production first. That is the piece of the puzzle we are trying to add to.

Usage
Consumer usage is a very techno-social topic which has more nuance that needs to be researched. Which does focus on community but would also be a report on its own.

Energy Losses
In the renewable energy landscape it's important to note that due to the losses when producing, storing, transporting and using there is the factor loss which could mean that a full focus on renewable energy would mean that double the production is needed to sustain the projected usage (World Energy Outlook 2020 – Analysis - IEA, 2020). The problem is that the loss of energy is in every process and would mean a deep dive on the subject of loss in every part of life. But with advancements in storage, production efficiency and consumer usage the 160PJ of energy production/usage can be sufficient.



TOP DOWN

FIRST LOOK AT THE TOP DOWN STRATEGY OF VALUED LANDSCAPES AND ENERGY TRANSITION

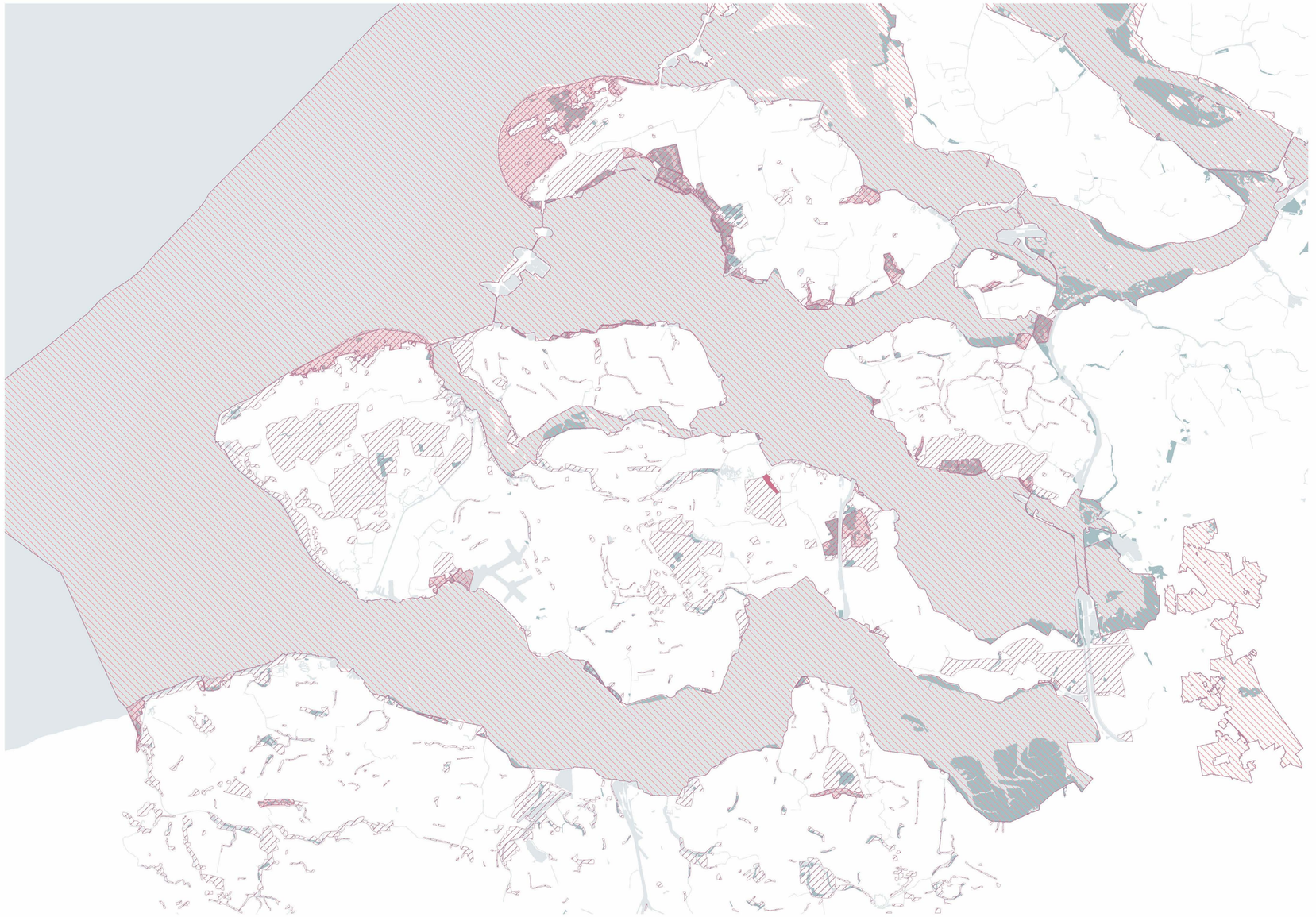
CURRENT PROCESS

PROTECTED LANDSCAPE

Many different governing bodies make plans to protect and expand landscapes that are deemed important, such as ecological or historical areas. These plans are made through a top-down approach, basing most of its decisions on scientific research, experts and the country's governing agencies.

The Dutch government and the European Union have made several plans to improve and protect ecological landscapes. One of such plans is the Natura2000 made by the EU. All EU member countries are required to define Natura 2000 sites to protect certain species and habitats of EU importance. In Zeeland there are 16 Natura2000 sites, covering almost all the water surfaces of the province and seven sites on land. This reaffirms the importance of the unique tidal landscapes of Zeeland to the province.

The province of Zeeland has also designated their own areas of importance, Cultural Historical Landscapes (CHL). These landscapes are deemed important based on geological values, seawalls and historical landscapes.



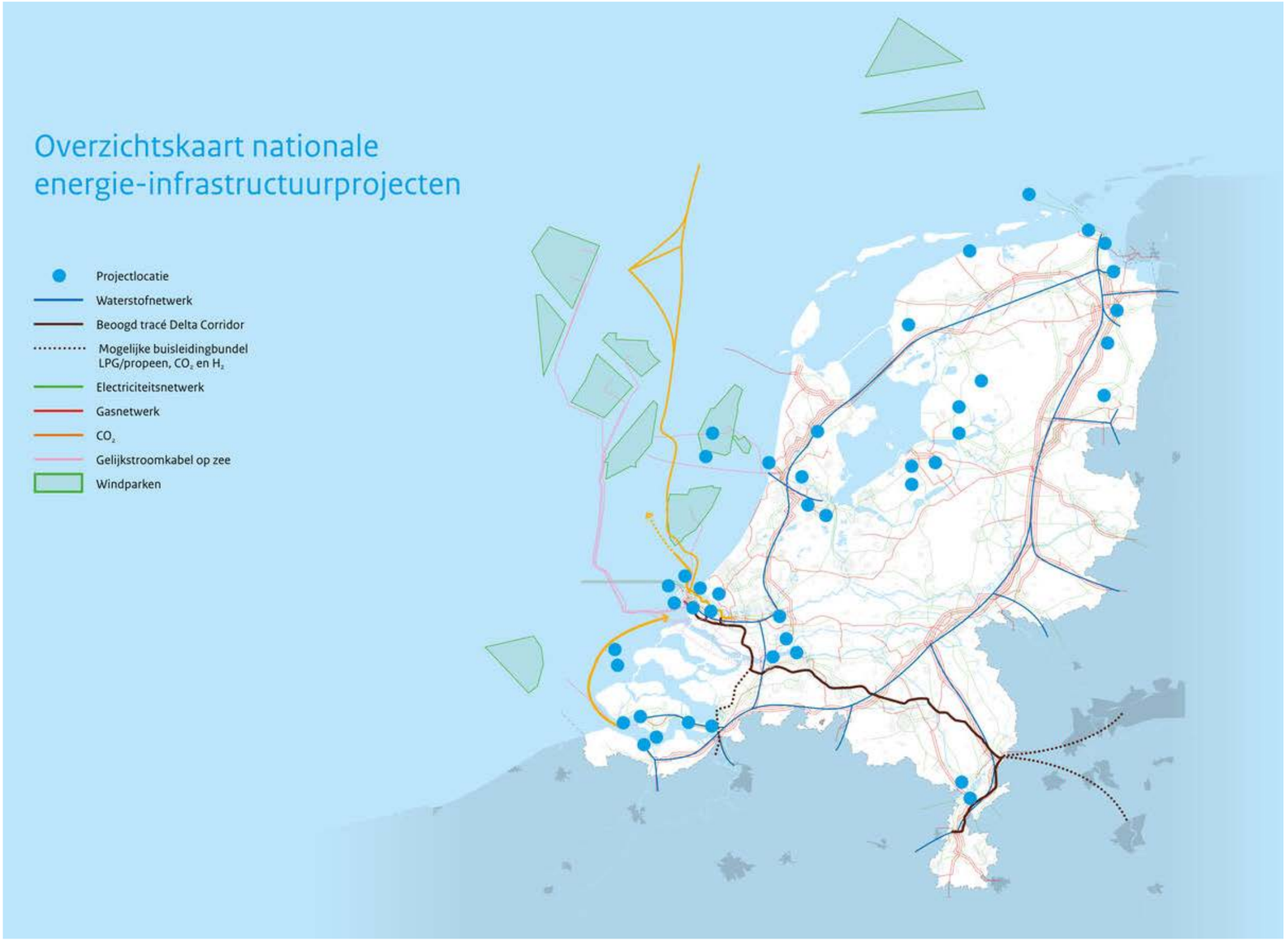
ENERGY PROJECTS

Transition projects

The energy transition is in full swing. Below is the national plan outlining energy and infrastructure projects. Notably, a significant portion of these projects is located in Zeeland. Additional energy production sites are being added, and the existing electricity grid must be expanded and strengthened. A hydrogen network is also being developed (Ministerie van Economische Zaken, Landbouw en Innovatie, 2024)

Below are two maps at the scale of Zeeland: one showing current energy projects and one showing future projects. The Borssele wind farm is being expanded, a large power hub will be installed to convert the energy generated by the wind turbines into electricity, and undersea cables will be laid, coming ashore in Borssele. Additionally, the electricity grid is being expanded and strengthened, spreading out from Borssele.(Ministerie van Economische Zaken, Landbouw en Innovatie, 2024)

Planned future projects are to connect the electricity network of Schouwen-Duivenland with Zuid-Beveland and to make a hydrogen network between Terneuzen and Rilland and also between Terneuzen and Antwerp (Belgium). There are also plans to expand the nuclear power plant in Borssele (Borssele 2 & 3). (Ministerie van Economische Zaken, Landbouw en Innovatie, 2024)



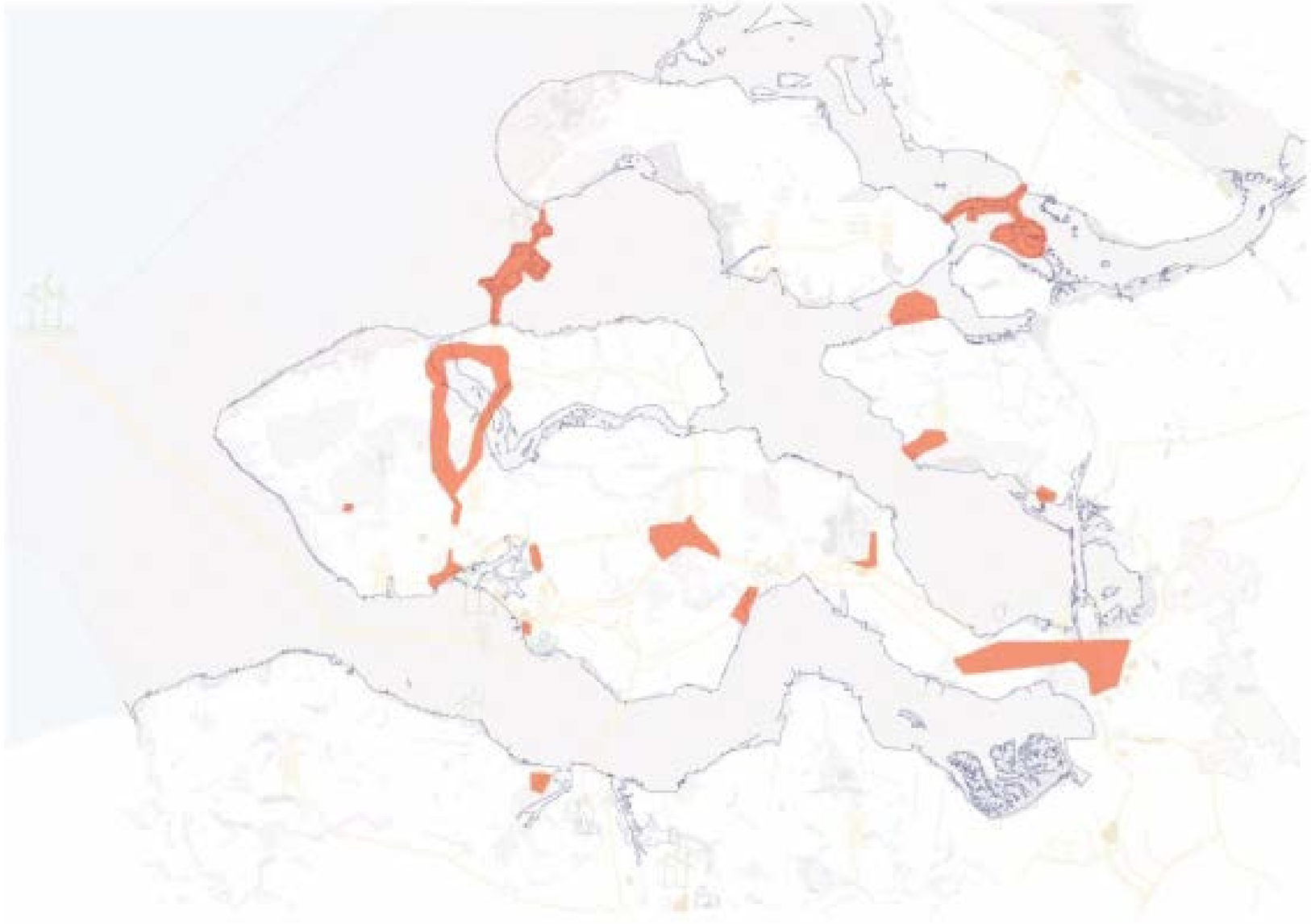
CURRENT ENERGY PROJECTS

FUTURE ENERGY PROJECTS

CONFLICT

When looking at the landscape and the energy transition together, it becomes clear that they do not always align. Valued landscapes are being impacted by the installation of pylons, wind turbines, or solar farms, reducing visual quality and impacting people's physical health and, in some areas, even hindering certain activities (for example, fishing is no longer possible in wind farm locations). When the landscape map and the energy project map are overlaid, conflict areas become visible. These areas are marked in red on the map.

The conflicts that result from the overlaying of these maps show that the current energy transition is not sustainable, the values of the people do not align with the physical interventions.



ENERGY PRODUCTION

Today, fossil fuels are still used to produce energy. Due to climate goals, fossil fuels need to be phased out. Renewable energy is becoming bigger and bigger. Also in Zeeland, there are a lot of innovations and projects to make the energy transition.

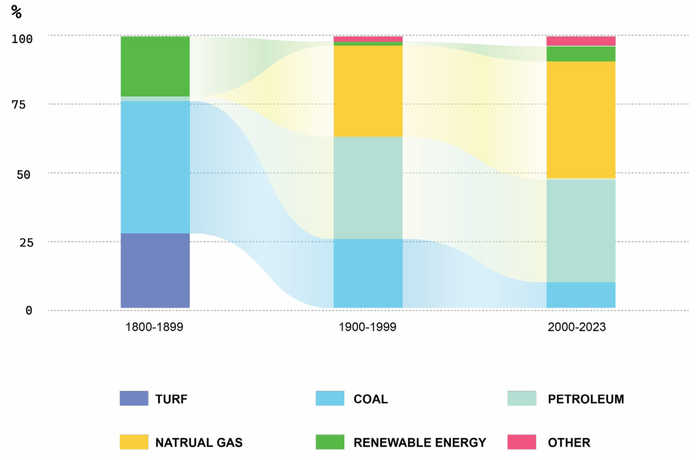
Let's first have a look at the current energy production in Zeeland. The calculation for the total current energy production is based on the following information. In an inventory 490 MW from Borssele nuclear plant (DeltaExpertise, n.d.), 400 MW from the WKC ELSTA station (DeltaExpertise, n.d.), 860 MW from the Sloe gas powerplant (DeltaExpertise, n.d.), 610 MW from wind on the land (RES 2.0, 2023), 687 MW from solar field (RES 2.0, 2023), 750 MW from wind at sea (RES 2.0, 2023).

The calculation for the total current production is:

490 + 400 + 860 + 610 + 687 + 750 = 3788 MW > 119,5 PJ per year.

The impact of an energy production method varies by type. In general, it can be stated that renewable energy sources require more space. To ensure that Zeeland can be supplied with energy in the future, a transition is necessary.

The first step is an analysis of the different energy production methods currently used or potentially applicable in Zeeland, in order to later evaluate which types are desirable in which locations.



NUCLEAR

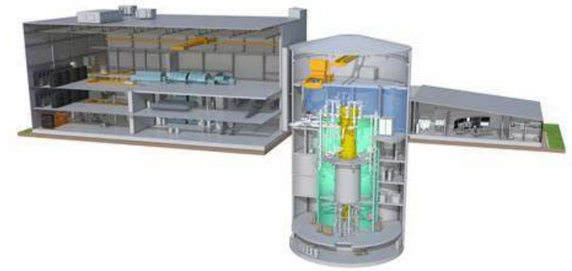
According to Vereniging Nucleair Nederland (2020), nuclear power is needed to reach the climate goals and to reduce CO2. Other Europe countries with high percentage of nuclear energy are doing great for reaching climate goals. For example, Sweden emits very little CO2 and generates 40% of its total energy production from nuclear power. Finland has an electricity production that is 80% low in CO2 emissions and generates 33% of its total energy production from nuclear power. France is also performing well and is leading in meeting climate goals, generating 72% of its total energy production from nuclear power. (Vereniging Nucleair Nederland, 2020)

An advantage of nuclear energy is that it requires relatively little space. It is also generally more appreciated than wind or solar energy because it is considered less "ugly". Additionally, it is a relatively clean way of generating energy, as it emits almost no CO2. The amount of residual waste is also relatively low. (Vereniging Nucleair Nederland, 2020)

In the Netherlands, there is a nuclear power plant in Borssele, called EPZ. This power plant produces 485 MW. It is set to close on the 31st of December 2033, but it is desirable to keep it operational for longer. (Over Ons - EPZ Kerncentrale Borssele, 2025)

Outside the Netherlands, there are also innovations in the field of nuclear energy, including small-scale nuclear power. This is known as a Small Modular Reactor (SMR). SMRs offer several advantages compared to large nuclear reactors. They are flexible, can be combined with hydrogen and residual heat (to reduce CO2 emissions even further), they are right-sized and cost effective. Also they have a short construction time: two to three years and less concrete is needed for the construction. ("SMALL MODULAR REACTORS", 2024) An example is the

Borssele Power Plant EPZ



Small Modular Reactor (SMR)

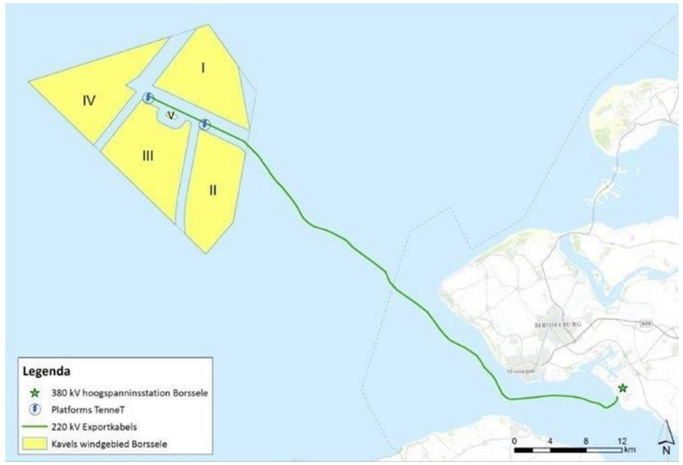
BWRX-300 small modular reactor, which produces 300 MW. (Sexstone, n.d.)
Currently there is a program approach in the Netherlands for SMR's. There are three program lines: simulate, anticipate, vision and goals. There is a wish to start energy production from SMR's around 2035. (Berenschot, n.d.)

WIND

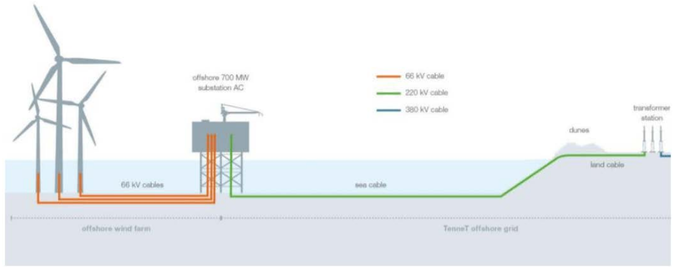
For wind energy, kinetic energy is converted of air in motion into electricity. In modern wind turbines, wind rotates the rotor blades, which convert kinetic energy into rotational energy. This rotational energy is transferred by a shaft which to the generator, thereby producing electrical energy. (Wind Energy, n.d.) Wind energy is possible both onshore and offshore. Offshore wind energy is more effective because, in general, wind speeds at sea are higher. There is a significant variation in the productivity of wind turbines. First, they come in different heights and sizes—the larger they are, the more energy they can produce. Second, there are many innovations in wind turbine technology, and the age of the turbine also plays an important role in its performance.

Zeeland has 255 onshore wind turbines (producing approximately 2 TWh of electricity) and 173 offshore turbines. The offshore turbines are clustered together at the Borssele Wind Farm, located about 24 km off the coast. The wind farm is split up into four parts and generates 1500 MW of electricity. (RES 2.0 - RES Zeeland, 2024)

The Borssele Wind Farm has two platforms and comes ashore at Borssele, as shown on the map. From this point, a 380V electricity grid is required to transport the electricity further inland. (Hermans et al, 2020)



Wind Farm Borssele



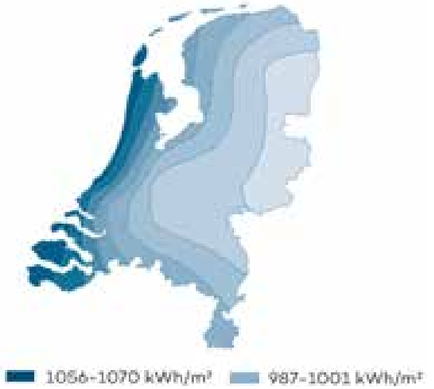
TenneT Electricity Wind Farm

SOLAR

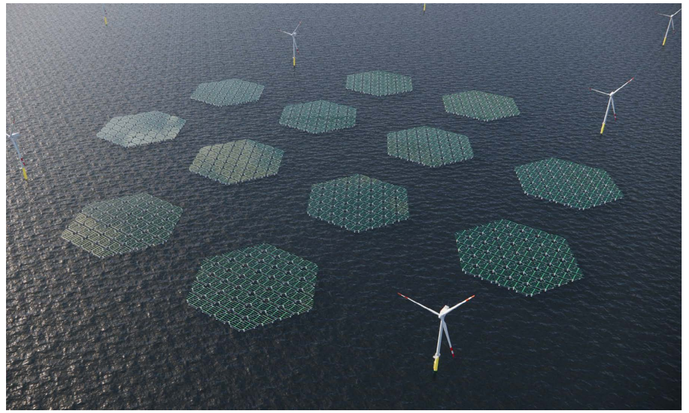
Zeeland offers great potential for solar energy. In 2023, Zeeland produced 687 MW of solar energy. Of this, 442 MW came from ground-mounted solar installations, and 245 MW from rooftop solar panels. (RES 2.0 - RES Zeeland, 2024)

There are also several ongoing studies on floating solar energy. One example is the pilot project SolarDuck Offshore Solar in the Hollandse Kust West (HKW) wind farm. This installation is planned for 2026 and will generate 5 MW. (Santos, 2022)

Various expansion possibilities have also been explored for the Borssele Wind Farm, as outlined by Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2020). The report states that solar energy could be implemented on plots 1 and 3, each capable of generating 1,000 MW, totaling 2,000 MW. These plots are located closest to the TenneT platforms, making them the preferred locations for development.



Solar potentials



Solar Duck: Floating solar farm

TIDAL

In the Netherlands, energy can be generated from water in several ways. One example is tidal currents, which involve underwater turbines that generate electricity through rotation caused by the movement of water. The areas around the Wadden Sea and the Delta region are the most suitable for this method. (EWA, 2022)

Another method is through tidal basins. In this system, floodwater is trapped behind a dam. Water is first collected in the dam, and once the highest tide level is reached, the sluice gates are closed. When the tide goes out and the water level difference becomes large enough, the gates are reopened, allowing the water to flow back to the sea through turbines. (EWA, 2022) An example of this is the Oosterscheldekering (Eastern Scheldt storm surge barrier), which generates 1.25 MW of electricity. (Omroep Zeeland, 2020)

A third method is wave energy, where the force of waves powers turbines. This form of energy generation is suitable for integration along the edges of offshore wind farms. (EWA, 2022)

Oosterscheldekering

Tidal Energy Turbines

BIOMASS

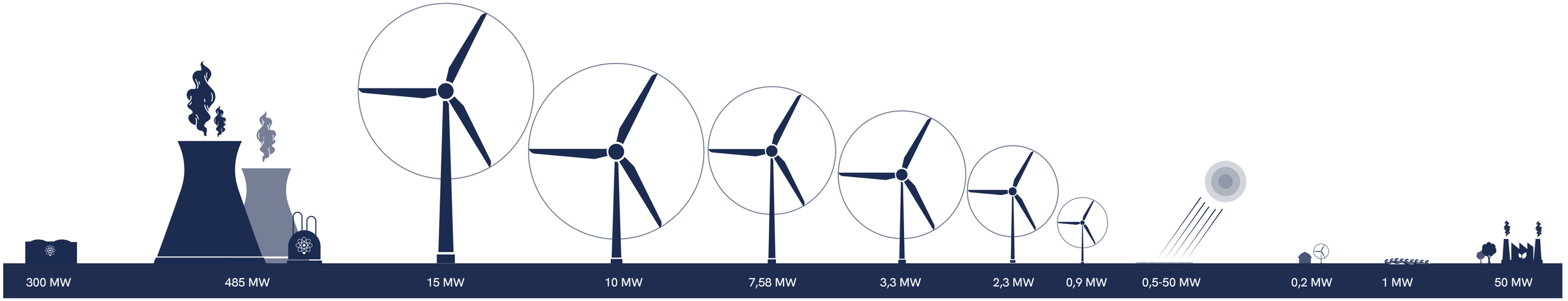
Biomass is a collective term for biological or organic waste, such as wood, vegetable and fruit scraps, or specially grown crops. Energy can be generated from this material in the form of heat, through combustion or fermentation. In 2015, biomass accounted for around 60 percent of the total renewable energy production. A large part of this comes from self-production, such as wood stoves or boilers, and this share continues to grow every year. (RES 1.0, 2020)

However, there is also concern about the use of biomass. The emission of fine particles and harmful substances causes nuisance and has been proven to negatively affect the health of both humans and ecosystems. This issue could potentially be addressed by implementing or mandating filters on chimneys. (RES 1.0, 2020)

Not all biomass is sustainable by definition. The production of biomass energy can be so energy-intensive that it offers no real CO2 advantage compared to fossil fuels. Additionally, biomass often competes with food production, and there is a significant risk of deforestation and loss of biodiversity due to logging. Biomass also requires a vast amount of space, which is available at sea where the production of seaweed can take place. Which could free up space on land for food production for people. (RES 1.0, 2020)

Biomass

ENERGY FOOTPRINT

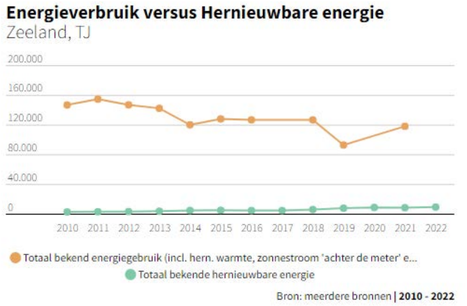


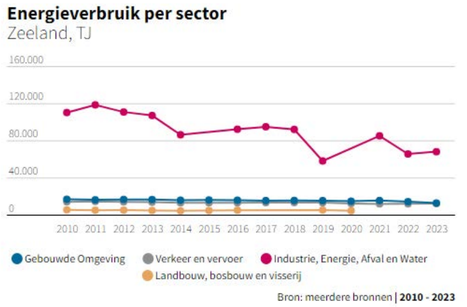
view appendix for more information

ENERGY CONSUMPTION

As previously mentioned, Zeeland currently produces 119.5 PJ of energy per year. When we look at the consumption side, the province amounted to 117.7 PJ in 2021 (Rijksoverheid, n.d.). This means that nearly all energy produced in the province is also consumed there.

However, when looking at consumption broken down by sector, it becomes clear that a large share is consumed by the industrial sector. In 2021, industry consumed 64.923 TJ, compared to 15.263 TJ for the built environment and 11.669 TJ for transportation. The fishery and agriculture sectors have, for years, consumed less energy than both the built environment and transportation—for example, 4.319 TJ in 2020. (Rijksoverheid, n.d.)





SPATIAL INJUSTICE

A large portion of the energy produced is therefore directed to the industrial sector. Additionally, there is a large electricity network, sometimes even four lanes wide (such as near Rilland). Many local residents experience nuisance from both the production and transport of energy, while they themselves only consume a small share of it, the result of this is spatial injustice. The people carry more burdens than benefits, leaving them unsatisfied in the transition.

This issue could be partially addressed by locating energy production closer to where it is most consumed, such as in industrial areas.

“RESIDENTS MOSTLY HAVE ONLY THE NEGATIVE SIDE OF THE TRANSITION “

doom landscape plate

OEMOEMENOE?

LOOKING AT IT FROM THE *COMMUNITY* PERSPECTIVE

‘OEMOEMENOE’ MEANS ‘WHAT DO WE HAVE TO DO NOW’ IN ZEELAND

COMMUNITY

COMMUNITY

LIVING **WITH** PROTECTED LANDSCAPE

LIVING **ON** THE PROTECTED LANDSCAPE

LIVING **OF** THE PROTECTED LANDSCAPE

PEOPLE THAT ARE **LIVING IN OR AROUND** THE PROTECTED LANDSCAPE

PEOPLE THAT ARE **WORKING WITH** THE PROTECTED LANDSCAPE

The transitional community is a group of people that are affected by the energy transition. In this project, the focus will be on the people living with the valued landscapes. These people that are related to the valued landscape are affected by the energy transition. The effects differ per person but two major subcommunities can be found within this group.

The **ON** community, is a group of people related to living in or around the landscapes valued by the greater community.

People living **OF** the land are defined by their working conditions being located in these landscapes.

WITH

ON

OF

VALUE CARDS

LANDSCAPES VALUED BY THE COMMUNITY

To visualize the different perspectives of the community living with the landscape, value cards have been created to support the process. These cards represent the perspectives of the community on each valued landscape type; landscape, beach, sea, fishery and culture. They also reflect the relevant subcommunity, being on, of or both.

The cards show the different characteristics at the top, with a quote beneath it from either the interviews or questionnaire about the landscape. These combined give an impression on how people view the different valued landscapes and also provide a base for spatializing these values. Finally an image from the Zeeland archive is shown, representing the valued landscape and their characteristics.

VALUE CARD
ZEELAND

BEACH (ON) (OF)

VALUED LANDSCAPE

- BEAUTIFUL PLACE FOR WALKING, CYCLING AND WATER SPORTS.
- PEACE AND QUIET, THE WATER IS RELAXING.
- ATTRACTS A LOT OF TOURISM.
- THE BEACH IS A PLACE TO VIEW THE HORIZON AND SEE THE SUN GO DOWN.

"THE PROXIMITY OF THE BEACH IS MENTIONED AS ONE OF ZEELAND'S GREATES ASSETS"

VALUE CARD
ZEELAND

SEA (ON) (OF)

VALUED LANDSCAPE

- UNLIMITED VIEW
- THE SANDBANKS WHERE WE CAN CHILL IN THE SUMMER
- THE SOUND OF THE WAVES AND THE SALTY AIR
- WATERSPORTS

"THE SEA IS ALWAYS AROUND THE CORNER IN ZEELAND"

VALUE CARD
ZEELAND

LANDSCAPE (ON) (OF)

VALUED LANDSCAPE

- VAST, OPEN LANDSCAPE
- SENSE OF FREEDOM
- RURAL
- TRANQUIL
- THE POLDERS, DIKES AND FRUIT CULTIVATION SHAPES THE LANDSCAPE OF ZEELAND

"PUT EVERYTHING UNDERGROUND TO KEEP THE WIDE AND OPEN LANDSCAPE"

VALUE CARD
ZEELAND

FISHERY (OF)

VALUED LANDSCAPE

- THE UNIQUE PRODUCTS THAT THE SEA GIVES.
- SEAWEED FARMS
- OYSTERS, MUSSELS, LOBSTERS
- FAMILY BUSINESS

"I DON'T WANT, BECAUSE THAN I CAN'T FISH ANYMORE"

VALUE CARD
ZEELAND

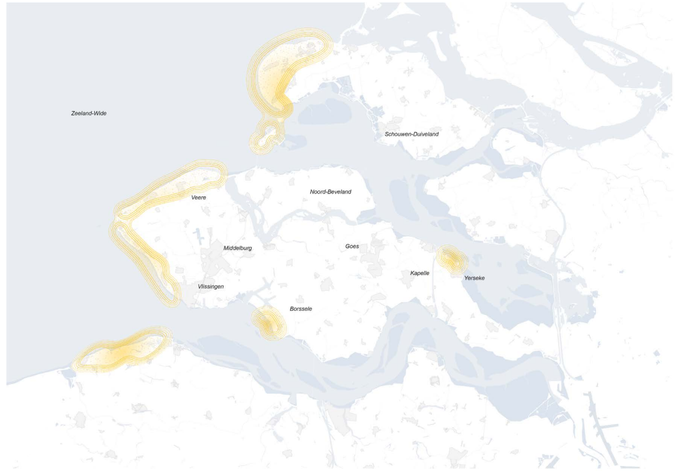
CULTURE (ON)

VALUED LANDSCAPE

- FESTIVALS
- TOURISM WHERE PEOPLE CAN ENJOY THE LANDSCAPE AND THE CULTURE
- ENJOY THE LOCAL FOOD
- VIEW THE DELTAWORKS

"I WANT TO KEEP IT THE WAY IT HAS ALWAYS BEEN"

VALUES OF THE LAND



BEACH

The beach is an important part of the identity for the community and subsequently assigned to be an area of value. Highlighted are the beach areas along the sea and around the estuaries.

SEA

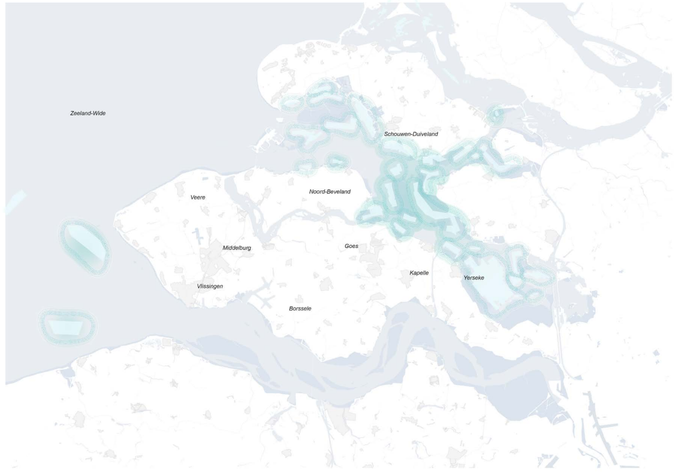
The sea is highly important value because it shaped Zeeland and is an integral part of everyday life. Areas highlighted show the open view of the North Sea as well as parts of the estuaries.

LANDSCAPE

Landscape areas are of high value, varying in characteristics, they are diverse and spread across the province. Ranging from tidal landscapes to agricultural landscapes with quaint dikes, the valued landscapes form a big part of the identity.

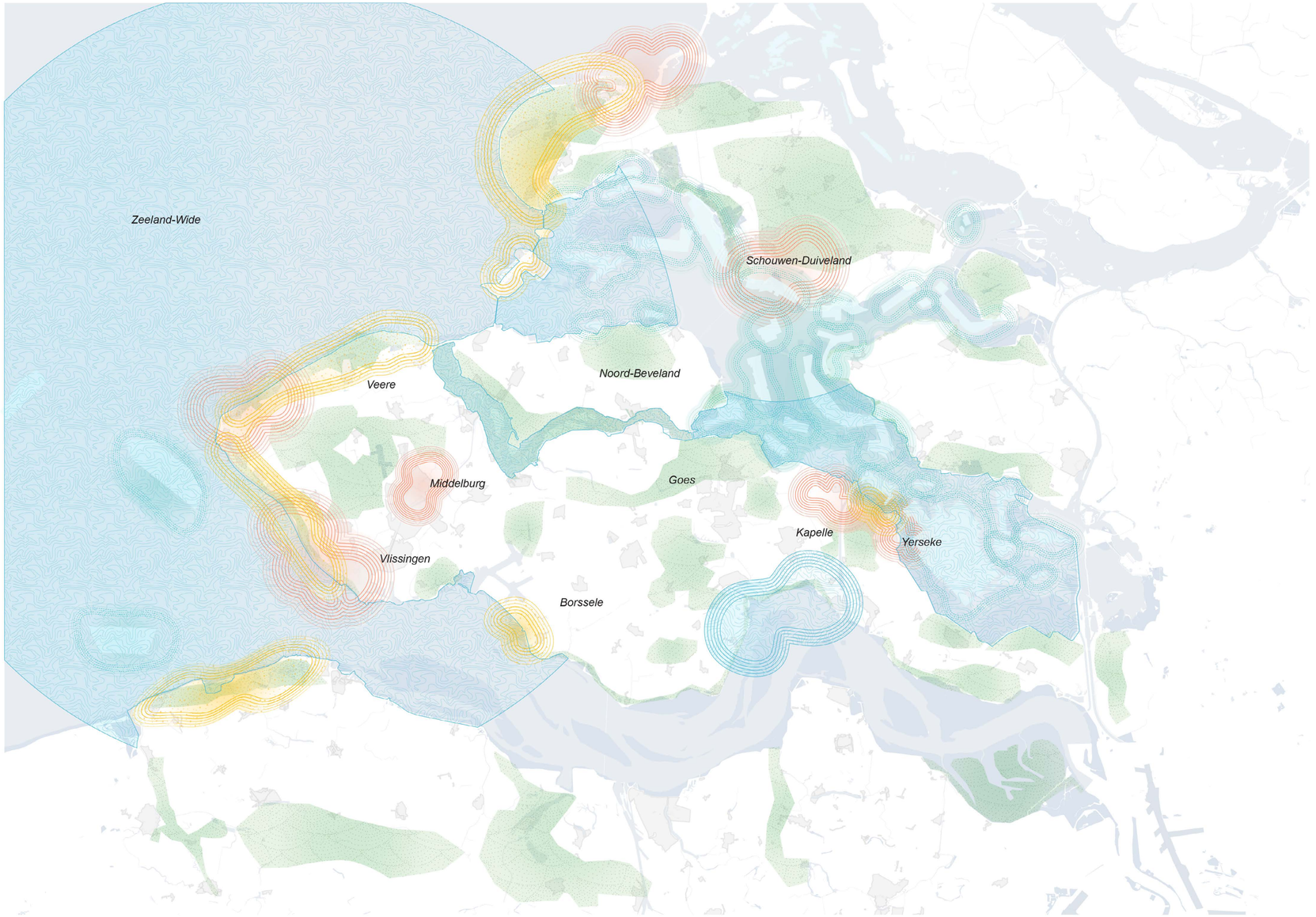
FISHERY

Located mostly around the Easter Scheld, fishery locations are a big part of the identity and livelihood of the people in Zeeland. Assigned locations vary in types of fishery, from lobsters to oysters, the province has it all.



CULTURE

Assigned are cultural locations, representing different types of festivities, monuments and quaint villages, important to the identity of the region.



Valued landscape

- landscape
- community
- beach
- water
- fishery

COMMUNITY OPINIONS

Community opinions in the report have been compiled from media articles regarding the community, questionnaires about the landscape values and street interviews. These form a thorough understanding of the opinions from the community, which are of great importance to later be reflected on in the project.

‘Opinions may vary per area and are generalized through the mapping of the region in a birds eye view.’

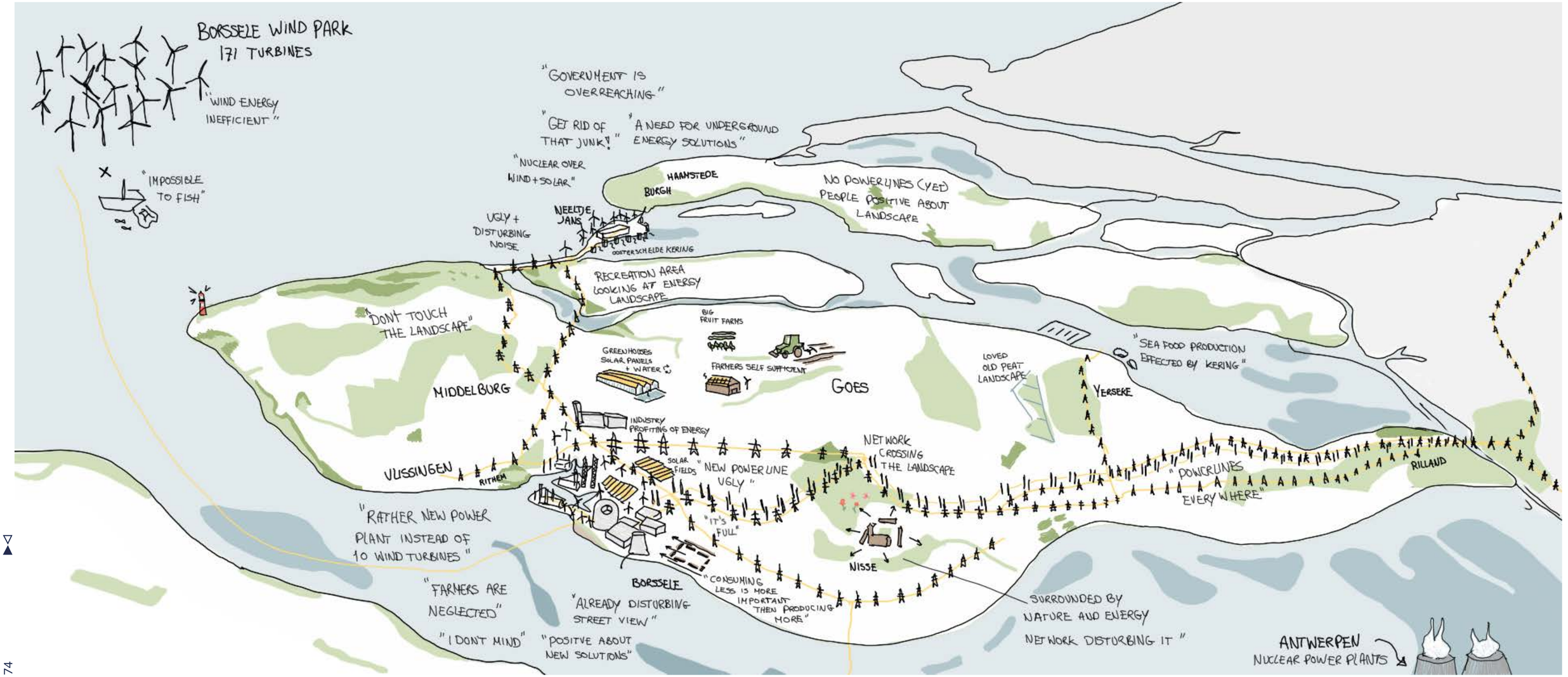
“IT’S UGLY“

“GET RID OF THAT JUNK!”

“I DON’T MIND”

“IF I DON’T SEE IT, IT DOES NOT BOTHER ME”

VISIONSCAPE



IMPACT OF ENERGY INFRASTRUCTURE

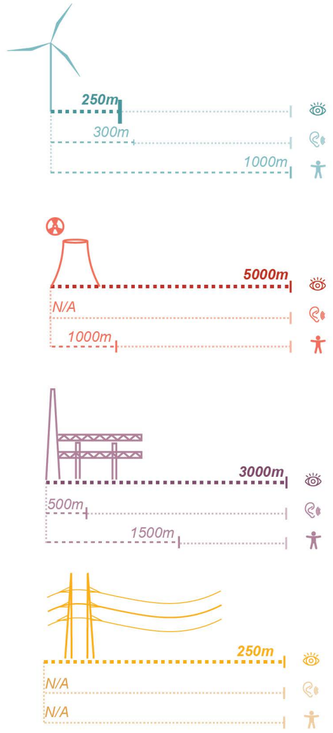
To understand the impact of energy production on the community, this research began by considering the six core human sensory experiences. Among these, three stood out as particularly relevant when mapping perceived disruptions in the landscape: sight, sound, and bodily sensation. These were not arbitrarily selected, but rather emerged through a close reading of community feedback gathered during our opinion research.

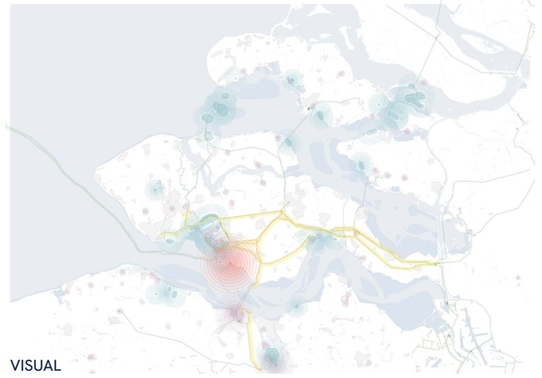
As we analysed public responses, certain phrases resonated strongly—statements like “Not in my backyard,” expressions of deep attachment to uninterrupted sea views, and vivid descriptions of physical discomfort. These voices from the community provided valuable insight into the types of experiences that shape their sense of place and well-being.

From this, we distilled three primary categories of impact that most directly affect the landscape the community holds dear: visual, auditory, and body awareness. Visual impact concerns the alteration or obstruction of valued views and scenic qualities. Auditory impact relates to persistent or intrusive noise that disrupts the acoustic environment. Body awareness encompasses physical sensations such as vibration, pressure, or even unease associated with proximity to large-scale energy infrastructure.

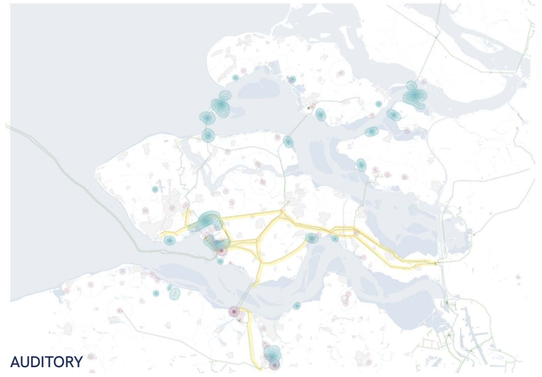
These three types of impact became the foundation for our mapping strategy, allowing us to assess and spatialize community sensitivities in relation to existing and future energy developments.

ENERGY INFRASTRUCTURE	VISUAL	AUDITORY	BODY AWARENESS
WIND TURBINE	250m. Visual impact zone; wind turbines prominent within 250-500m depending on height (Manomet Center for Conservation Sciences, 2013).	300m. Turbine noise levels drop to acceptable range (~35-45 dB) beyond 300m (U.S. Department of Energy, n.d.).	1000m. Shadow flicker/body perception can occur up to 1000m. Approx. 1:10 height-distance comfort ratio (~100m turbine height).
NUCLEAR	5000m. Nuclear plants visually intrusive up to 5km (U.S. Nuclear Regulatory Commission, n.d.).	N/A. Sound is minimal beyond plant boundary. Not applicable for auditory impact.	1000m. Minimum safety and evacuation zone is 1000m per NRC emergency planning (U.S. Nuclear Regulatory Commission, n.d.).
INDUSTRY	3000m. 3km buffer recommended in urban planning to reduce skyline and pollution impact (Urban planning guides).	500m. Noise from machinery/logistics typically dissipates by 500m (BAAQMD, 2020).	1500m. Air quality, dust, and safety buffer of 1500m standard in industrial siting (AIChE, 2023).
POWER LINES	250m. High-voltage lines (~50m tall) are visually dominant within 250m. Uses 1:5 height-distance ratio.	N/A. Auditory effect minimal; noise only under wet conditions. EMF not perceptible beyond ~10m. Not applicable.	N/A. EMF and vibration exposure negligible at public distances. Not applicable for body awareness.

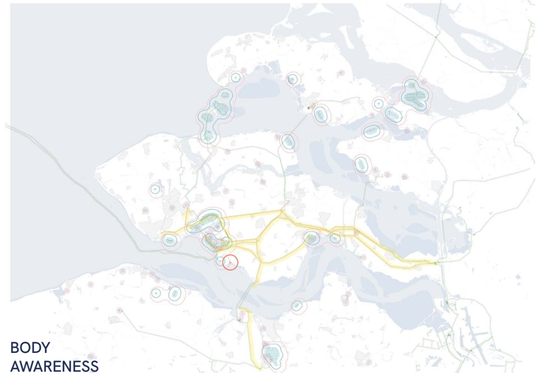




VISUAL

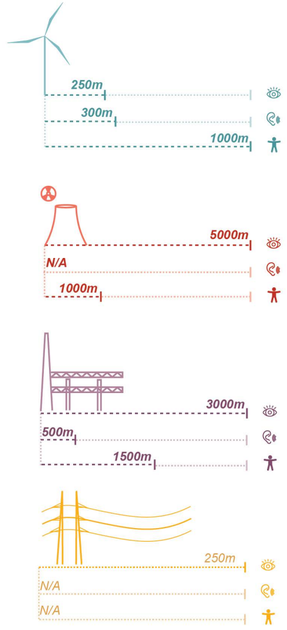


AUDITORY



BODY AWARENESS

ENERGY PROJECT IMPACT



Energy Production

- Wind Turbine
- Nuclear
- Industry (General)
- Power Station + Powerline (Aboveground)
- Power Line (Underground)

Visual

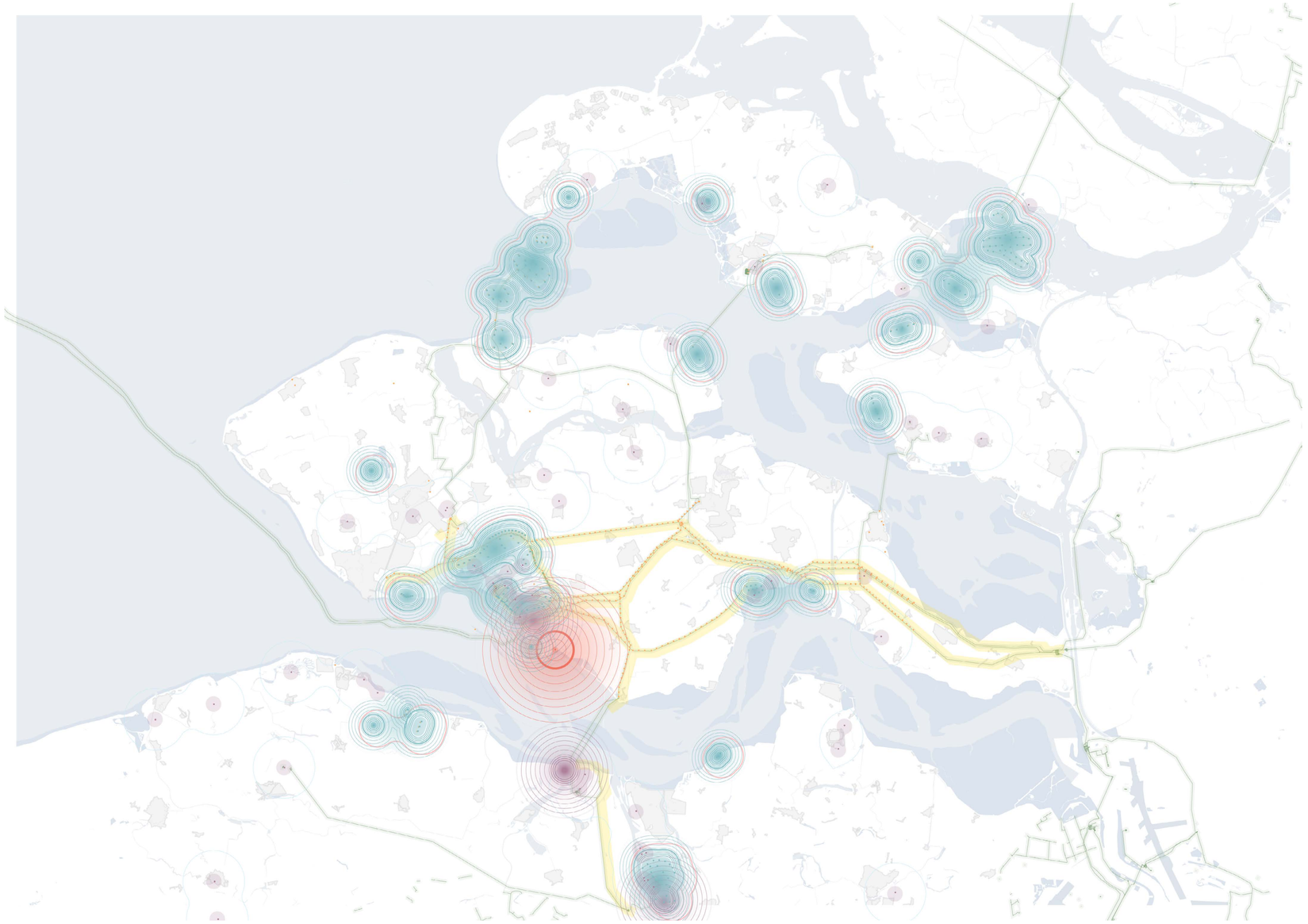
- Wind Turbine
- Nuclear
- Industry

Auditory

- Wind Turbine
- Industry

Body Awareness

- WindTurbine (Prominent > Influence)
- Nuclear



STAKEHOLDER ANALYSES

The selection of stakeholders in relation to the problem statement according to their power and interest gives important insight in their perspective and influence on the project. Certain stakeholders need to be empowered or require increased interest in the project to make the transition happen while protecting the community valued landscapes. This shift from top-down planning to bottom-up planning makes for a just transition that is accepted and supported by the people affected.

Subcommunities

When looking at the different subcommunities related to the transitional community living with the valued landscape, their power and interest are varied. The stakeholders living on the land have the same interest as the community living of the land. But in the decision-making process their power differs, as the of community has more financial power related to their field of work as well as overlapping interest being part of both communities gaining double the influence. Going forward, both communities will have the same amount of power and interest by assuring the same amount of input in the planning process.

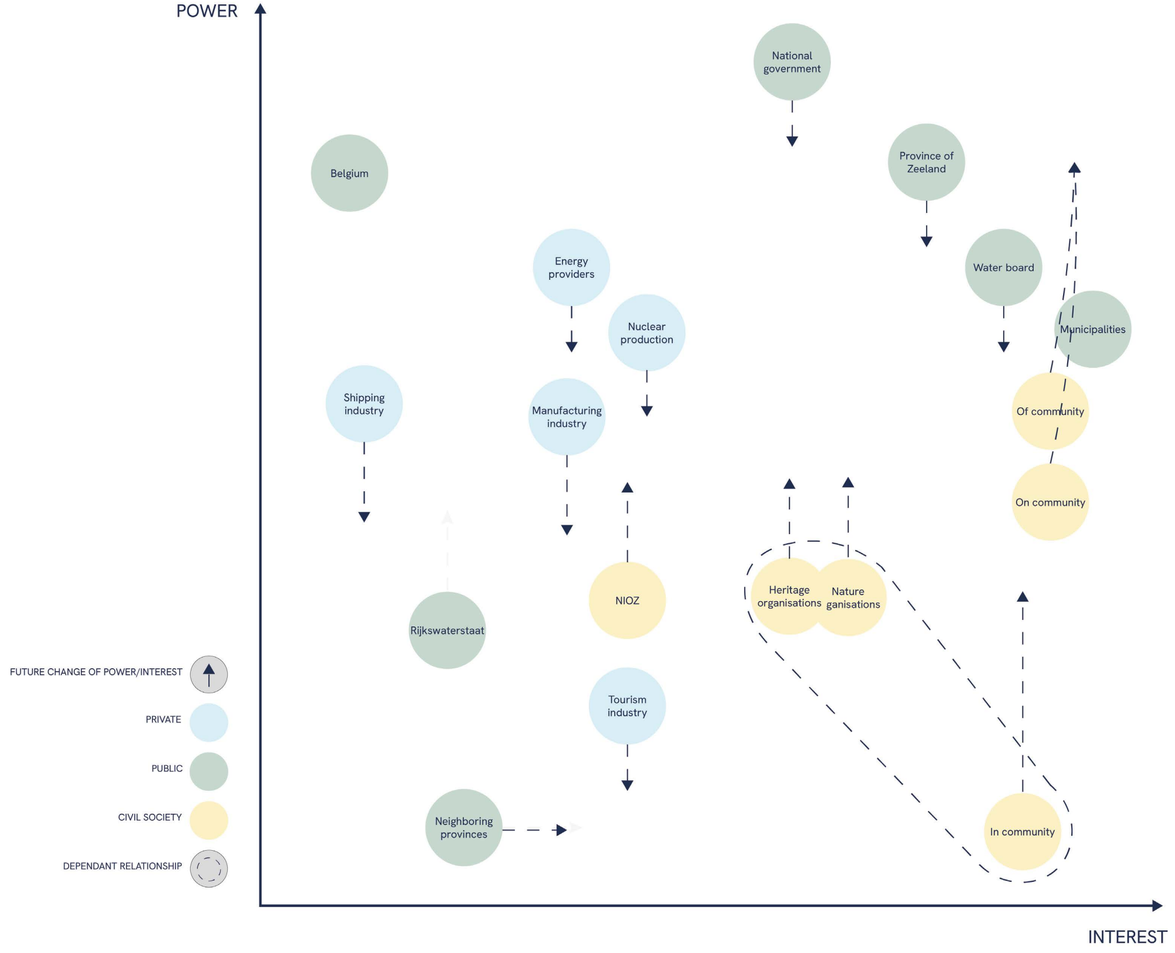
Lastly, the non-human community living in the land consists of nature and therefore has no voice recognized by all actors. This vulnerable stakeholder has no current voice and is therefore represented and dependent on other organizations. To improve this in the future scenario, there is the need to go further than nonanthropocentrism. To acknowledge the intrinsic value of nonhuman nature, there needs to be universal recognition and recognition of difference in organization-nature relationships as mentioned by Kortetmäki et al. (2022).

Energy sector

With the upcoming transition from fossil fuels to renewables, the energy providers need to invest in the transition which results in a looming threat of increasing their power. To counter this potential increase in power, the need for community led initiatives such as energy cooperations will be needed to bring back the voice of the community into the planning process. The voice of the people will be represented by their valued landscapes.

Private organizations

The private organizations currently hold a lot of power but do not have the same amount of interest as the civil stakeholders. This difference in power and interest creates an imbalance that results in the civil society being neglected in current decision-making processes. By giving the subcommunities more influence in future decision making, the power of private organizations is reduced.

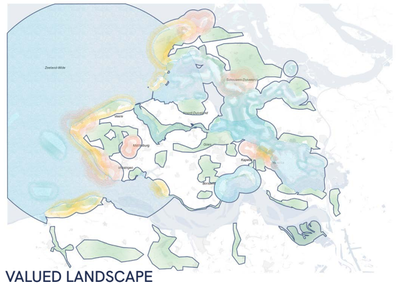


GONOGO

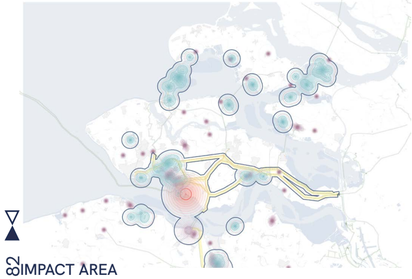
Two mapping approaches were adopted to analyze the zone of interest. The community's valued landscape was spatially located using information gathered during the research phase, which consists of bottom-up perspectives such as news articles, scholarly sources, surveys, and interviews. By overlaying this map with the 'impact area' map we translated this information into spatial terms, we overlaid the two maps to better understand the conflicts and potentials involved in the future energy transition. Four categories of areas were identified in this process.

Red indicates areas where current energy production affects the valued landscape, and therefore active mitigation measures are needed.
Yellow outlines areas where current production does not impact the valued landscape.
Green represents valued landscapes that have not yet been impacted and should be protected.
Off-white marks areas outside the community's identified interests.

This map represents a key step forward and serves as the foundation and guiding blueprint for our strategy promoting a vision that balances the inevitable energy transition with the need to prioritize community interests.



VALUED LANDSCAPE



IMPACT AREA

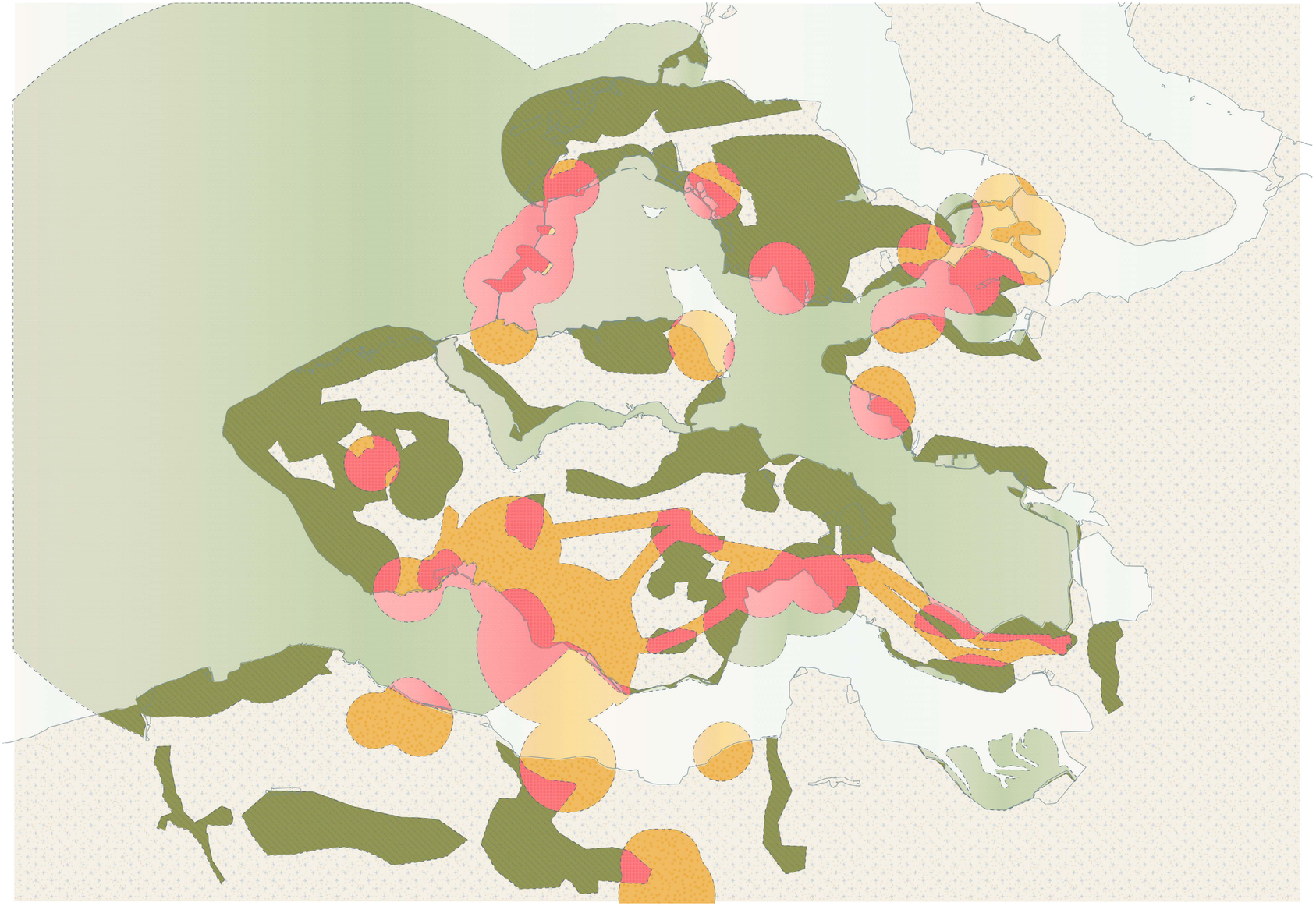
land sea

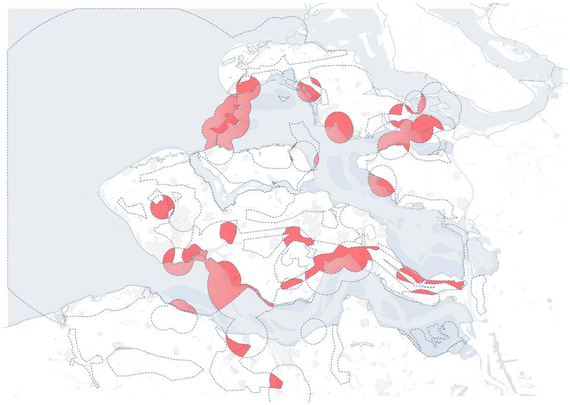
conflict

neutral

'no go'

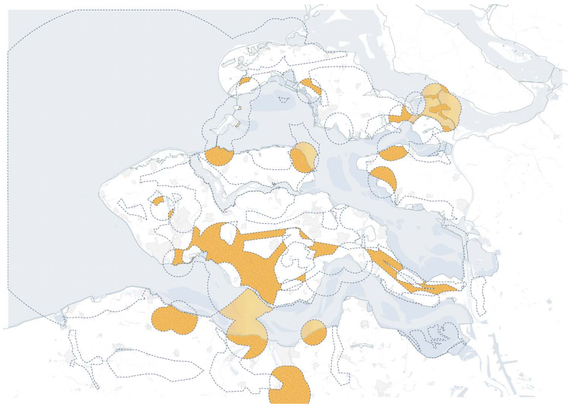
'go'





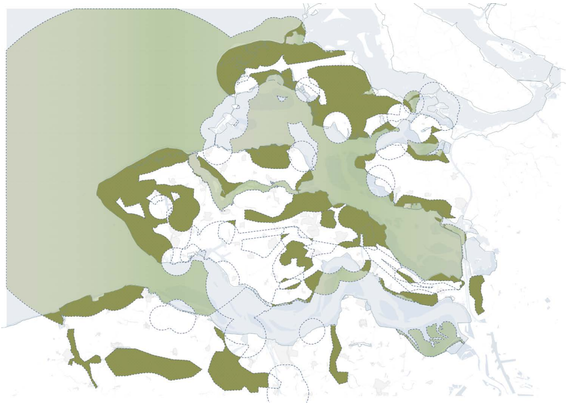
CONFLICT
PRODUCTION **IMPACTED** LANDACAPE

Current energy production has impacted valued landscapes; active measures should be taken to mitigate these effects.



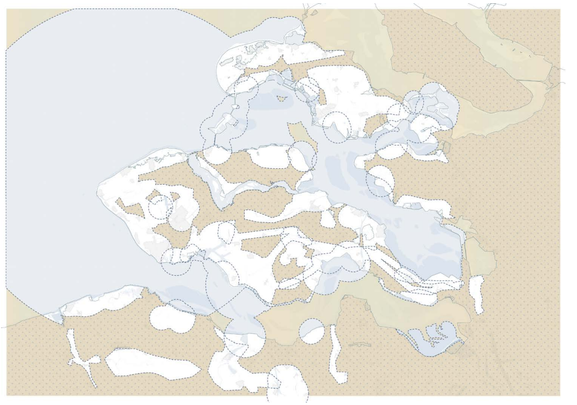
NEUTRAL
PRODUCTION **DOES NOT IMPACT** LANDACAPE

Current energy production affects areas not affiliated with valued landscapes. Therefore, new power plants can be strategically placed here without harming community interests. Only limited types of new implementations are permitted.



'NO GO'
SUBTRACTTED-VALUED LANDSCAPE

Community-valued landscapes that have not been impacted by energy production should follow the "do no harm" principle in future design and implementation phases.



'GO'
SAREA OUTSIDE PROTECTION

Potential areas for energy industry expansion: While power plants can be planned here with fewer limitations, future development must still avoid impacting valued landscapes.

HOPES & DREAMS

The hopes and dreams of the community have to be identified in order to fully understand what direction the transition has to be steered towards.
The hope of the transitional community is to be included into the spatial energy transition process to preserve the valued landscape that shapes their identity. Permanence of identity shows that certain aspects of the community have to change because of societal and climate change, this is not new to the identity of the people as they have changed because of external factors for hundreds of years.

HOPE: BEING INCLUDED INTO THE SPATIAL ENERGY TRANSITION PROCESS TO PRESERVE THE VALUED LANDSCAPE. 'PERMANENCE OF IDENTITY'

The dream of the people is to be a part of a local self-governed energy transition that respects the landscape valued by the community. Persistence of identity defines that almost all parts of the identity have to be preserved.

DREAM: A LOCAL SELF-GOVERNED ENERGY TRANSITION THAT RESPECTS THE LANDSCAPE VALUED BY THE COMMUNITY. 'PERSISTENCE OF IDENTITY'

VISION

The vision is based on the values and opinions of the community and media articles about the community, together with the impact of the energy infrastructure they form a spatial representation of their values and conflicts.

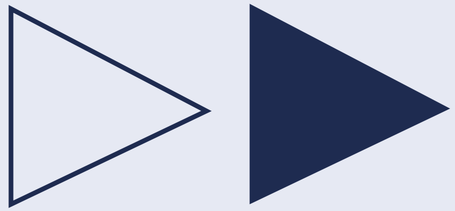
The aim of the vision is to protect the community valued areas that define their identity while enabling transition in non-valued areas. This is done by categorizing different types of landscapes each with different interventions based on their value expressed by the community. This results in certain areas being conserved and others receiving spatial interventions to either restore values or bundle energy infrastructure. With this vision the foundation for the regional strategy is formed.

"WE WANT TO KEEP AND PROTECT THE LANDSCAPE AND IDENTITY OF ZEELAND WHILE MAKING THE TRASISTION"

STANDING STILL WHILE MOVING

VISION

community vision plate



STRATEGIES

ZEELAND IN 2060 THROUGH THE EYES OF THE COMMUNITY

To achieve the vision—finding a balance between the energy transition and community valued landscapes—a strategy has been developed.

The goal is to let the community eventually live in their vision instead of looking at it from outside.

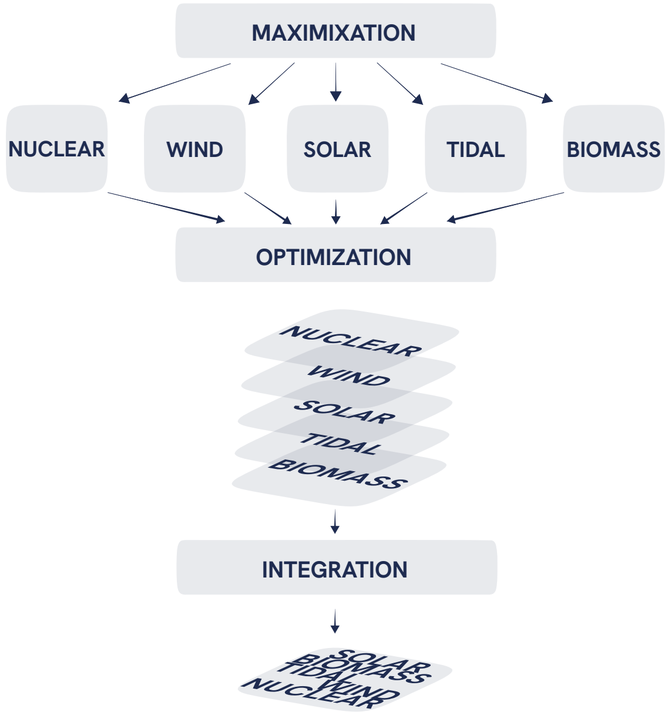
MAXIMIZATION METHOD

To achieve the vision—finding a balance between the energy transition and community valued landscapes—a strategy has been developed. This strategy is based on the maximization method and builds upon the GONOGO areas.

First, the different energy production types are maximized. All possible locations for a specific energy production system are mapped, considering only the technical requirements for each system.

In the second step, optimization is carried out from the community's perspective. The community's perception of a particular system is assessed, linked to the GONOGO framework, which represents the degree of landscape valuation. This assessment is based on previous bottom-up findings from various research methods such as questionnaires, media articles and interviews. For each system, the conditions under which the community would support its implementation in a specific area are identified. These conditions are then linked to interventions: how can certain systems be implemented in alignment with the community's preferences?

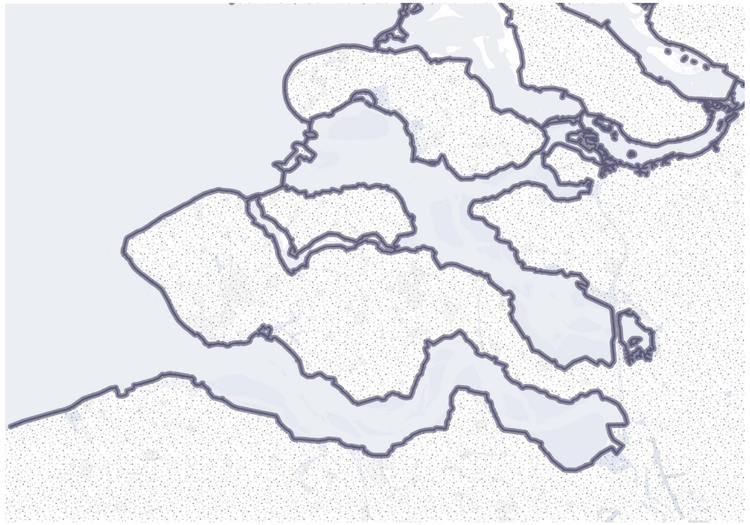
In step three, an integrated plan is developed. What is needed to supply Zeeland with sufficient energy by 2060? What existing energy infrastructure needs to be removed, what can remain, and what should be added? At this stage, the intervention toolbox and the relationship with the GONOGO framework are translated into a strategy map, representing the vision.



inspired by project:
AR0190 Introduction, page 3/18
N. Kerckhaert - A. Mooi - D. Radai - C. Rodrigo

STEP 1: MAXIMIZATION

Step 1: Maximization
In this step, the five previously mentioned energy generation systems (nuclear, wind, solar, tidal, and biomass) have been mapped using the maximization method. This means identifying all possible locations for each system without considering community preferences.
For example, a (large) nuclear power plant requires a location near water. Wind energy is feasible almost everywhere except in urban areas, with higher efficiency offshore. Solar energy could, in principle, be implemented anywhere, both on land and floating at sea. Tidal energy would be most suitable near the Oosterscheldekering, while wave energy would be viable a few kilometres off the coast and along the edges of the Borssele wind farm. Biomass energy can generally be implemented anywhere on land.



Maximization of nuclear

Large scale nuclear energy production is possible along the coast of the province to provide the plant with cooling possibilities. Next to that they need to avoid high-population and high-density areas (EPRI, 2022).
Small Modular Reactors (SMRs) are not restricted by cooling capacity and could be placed anywhere on land. Production on sea is not possible, except if the creation of nuclear islands is viable option.

Extreme nuclear

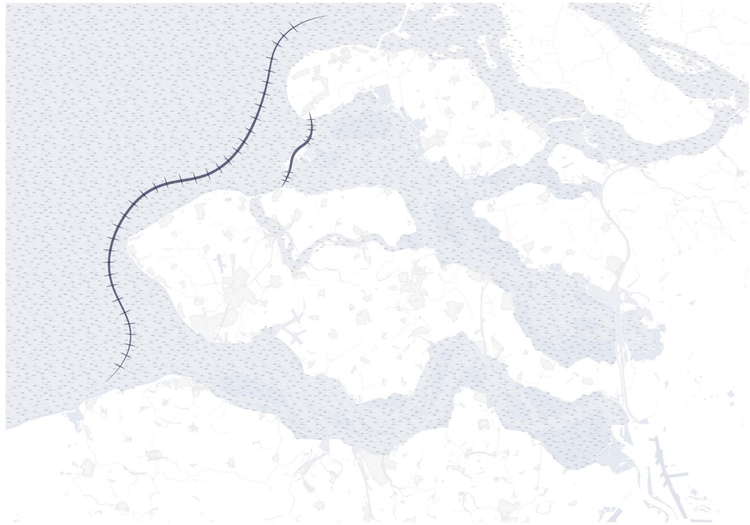
location big nuclear reactors
location SMR

Maximization of wind

Wind energy is viable both on and off land. Turbines on sea are more efficient off the coast and can be bigger in size, on land the main restrictions are built environments lessen windspeeds making turbines less efficient.

Extreme wind

- location windturbines land
- location windturbines (wind speed on sea)

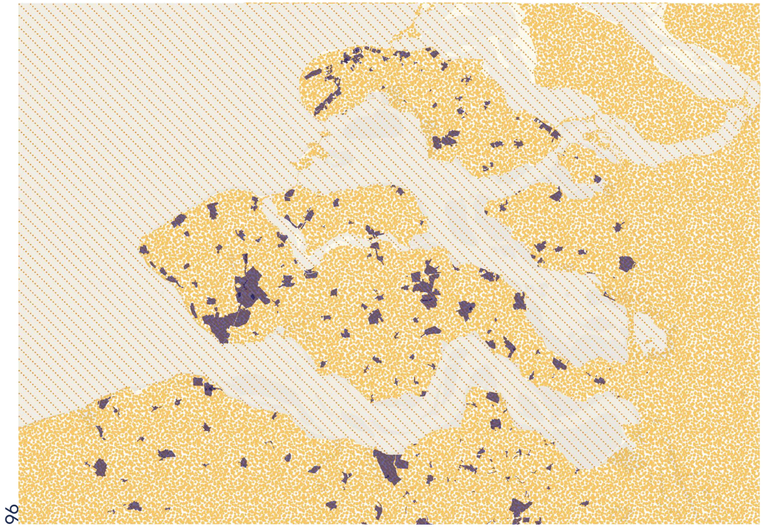


Maximization of tidal

Tidal energy is very dependent on a certain depth of water, resulting in viability along a line of the coast. On land it can be integrated into water barriers (for example the deltaworks).

Extreme tidal

- tidal dike
- wave energy



Maximization of solar

Solar production is viable everywhere but in different manners. In the built environment they can be integrated with the roofs, while on the rest of the land they can be made into solar fields. On sea there is the possibility to let them either float or to be integrated with wind turbines.

Extreme solar

- floating solar pannels
- sola pannels on roof
- solarfield

Maximization of biomass

Biomass energy production is divided into two categories, based on the source of biomass. Biomass from sea comes from seaweed farms and on land it can consist of any land grown sources or green waste. With its production, the built environment is excluded from the siting as they are restricted due to safety risks (Nederlands Instituut Publieke Veiligheid, 2023).

Extreme biomass

- biomass production sea
- biomass production land

STEP 2: OPTIMIZATION

At this stage, the community's opinion is taken into account. How does the community perceive each energy system? What is their attitude toward it? Under what conditions would they support a specific system?

These attitudes and conditions have been categorized into land-based and offshore applications, as shown in the matrix. This matrix serves as the foundation for developing spatial interventions for each energy system. These interventions are then mapped against each other in a matrix to determine where (based on the GONOGO framework) certain interventions are desirable.

For example:
Red zones indicate a conflict with valued landscapes, meaning the community does not want energy projects there. The appropriate intervention in these areas would be removal.

Orange zones already contain energy infrastructure but are not considered valued landscapes. Here, multiple interventions are possible.

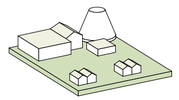
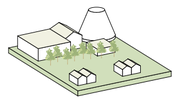
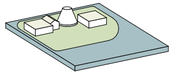
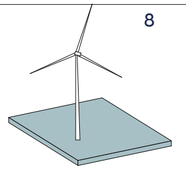
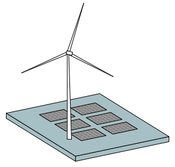
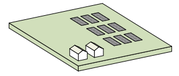
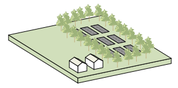
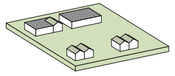
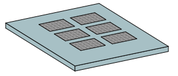
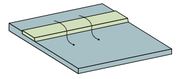
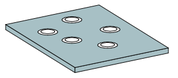
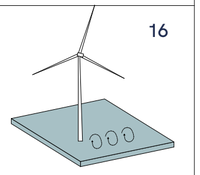
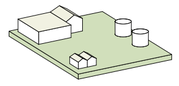
Neutral areas have neither existing energy infrastructure nor valued landscapes, making them suitable for new energy projects.

PRODUCTION TYPE	LAND	SEA
NUCLEAR	Yes if minimal cables, not too close to residential areas and respectful of nature	Yes if not visible from land and respectful of nature.
WIND	Yes if no impact on residents and not disturbing nature.	Yes in general if not in view.
SOLAR	Yes if on roofs (if possible) and not visible	Yes if not in view and does not disturbe shipping/fishing.
TIDAL / WAVE	-	Yes if not visable from land and respectful of nature.
BIOMASS	Yes if not visible or close to residential areas (smell).	-

Offshore, the focus is primarily on the existing wind park. Since it is no longer located in highly visible areas or Natura 2000 zones, interventions could be introduced there.

STEP 2: OPTIMIZATION

TYPE	LAND RED	LAND OFF-WHITE	LAND YELLOW	SEA RED	SEA OFF-WHITE	SEA YELLOW
NUCLEAR	1b, 3	2*, 3*	1a, 2, 3	4b	4a*	4a*
WIND	5b, 7	6*, 7*	5a, 6, 7	8b	9a*, 5*	8a*, 9
SOLAR	10b, 12	11*, 12*	10a, 11, 12	-	10a*	9, 13a*
TIDAL	-	-	-	15b	14a*, 15a* 16*	15a*, 16
BIOMASS	17b	18*	17a, 18	-	-	-

	Land * ADD Keep$_a$/Erase$_b$	Land * ADD Hide	Land * ADD Small/Local	Offshore * ADD Keep$_a$/Erase$_b$	Offshore * ADD Combine
Nuclear	1 	2 	3 	4 	
Wind	5 	6 	7 	8 	9 
Solar	10 	11 	12 	13 	
Tidal/ wave	14 			15 	16 
Bio- mass	17 	18 			

STEP 3: INTEGRATION

A step-by-step plan has been developed for the final strategy. The vision is to achieve a balance between the energy transition and valued landscapes, with a target year of 2060. To supply Zeeland with sufficient energy **by 2060**, an energy demand of **160 PJ** has been established. 160 PJ is introduced by Van Der Niet et al. (2020).

First, the current energy production is established together with the current production and infrastructure. Secondly, infrastructure and production is removed from the conflicting red areas. This is deducted from the current energy production. The third step is to make up the difference between the current energy after removal of conflicts with the desired demand by 2060. In step four, the general region wide implementations will be deducted from the difference. After this, in step five, the remaining energy demand is divided between big consumers and small scale consumers. Big consumers such as cities and industry require more energy which results in high density power production being viable in these areas. In more rural areas and smaller villages energy demand can be met with lower density solutions such as solar and wind.

A step by step calculation for Zeeland in 2060 is shown below.

Step 1: The current energy production is 133 PJ.

Step 2: Energy production in valued landscapes (red areas) is removed:
- Fossil fuels will be removed (**50 PJ**).
- Onshore wind energy is reduced by 90%, eliminating **6 PJ.**
- The Borssele nuclear plant is too large and has too much impact, creating a red area. It will be phased out. The EPC plant, which produces **15 PJ** (485 MW), will also be decommissioned.
- Solar farms in red areas will be removed, accounting for 25% of current production (**13 PJ**).
- Biomass in red areas will also be removed, reducing **2 PJ.**

After these reductions, the remaining energy production is: **133 - 50 - 6 - 15 - 13 - 2 = 47 PJ.** This means an additional **113 PJ** needs to be added (160 - 47 = 113 PJ).

Step 3: Adding New Energy Sources (Big scale)
Solar Panels on Rooftops:
Rooftops will be equipped with solar panels wherever possible. Local/private energy production is the most just solution. This contributes **10 PJ.**

Borssele Offshore Wind Park:
Located in a neutral area, out of sight, and already equipped with infrastructure (wind turbines, substations, sea cables, etc.). Solar farms will be added to Borssele I & III, generating **63 PJ** (2000 MW).
Studies show no additional grid infrastructure is needed, as wind and solar production complement each other. Wave energy will also be implemented along the edges of the wind park.

Remaining energy needed: **113 - 10 - 63 = 40 PJ.**

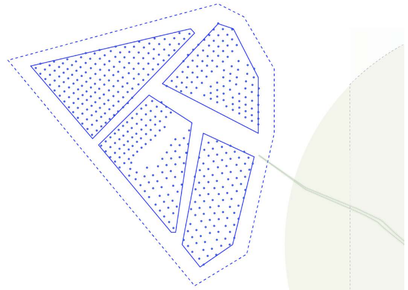
Step 4: Adding new energy sources → Energy corridor (Local scale)
Small Modular Reactors (SMRs):
Based on community preferences and energy footprint analysis, SMRs are considered a desirable system. They are relatively inconspicuous, require less space, and can be easily placed in industrial areas. This reduces spatial injustice, as energy is produced where it is needed. A 300 MW SMR produces **9 PJ**. To meet the 40 PJ shortfall, **4 SMRs are needed.** These will be strategically placed where demand is highest: Terneuzen, Borssele, Middelburg, and Zierikzee.The placement in Zierikzee ensures that Schouwen-Duiveland, which is surrounded by valued landscapes, can still receive energy efficiently.
Solar Farm
Noord-Beveland is also surrounded by green (valued) landscapes. To supply it with energy, a (hidden) local solar farm will be built, which will cover 2 PJ.
Energy Corridor
To supply all regions with energy, energy corridors will be used. These are placed on neutral areas (with focus on orange areas). This is to keep the green areas clean of energy.

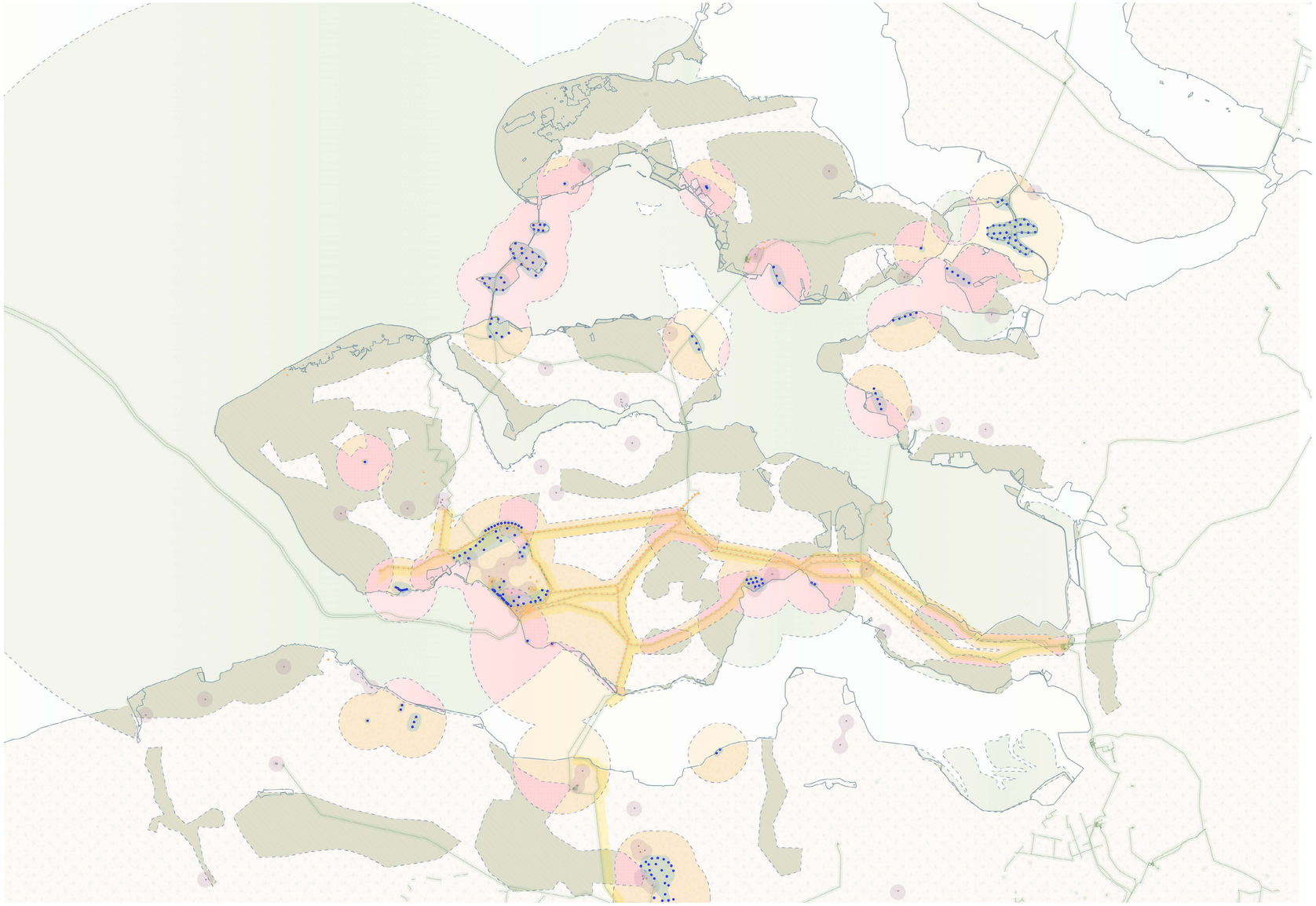
Small-Scale Energy Interventions Along Highways:
Additional small energy interventions will be implemented along highways to further support production. This will also cover 2 PJ.

Step 5: Conclusion
By 2060, 160 PJ will be achieved, focusing on non-visible areas or non-valued landscapes. Valued landscapes will remain free from energy infrastructure, ensuring the vision is realized: a balance between the energy transition and valued landscapes.

INTEGRATION

CURRENT ENERGY

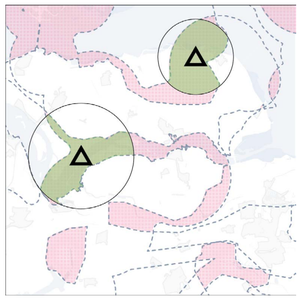


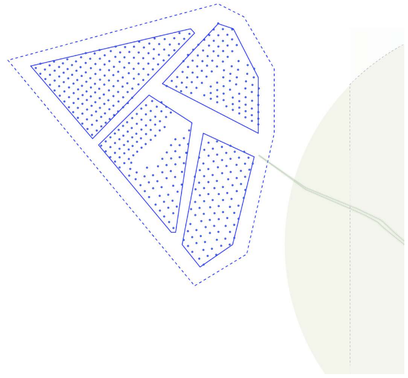


- Localized Wind Turbine
- Solar Production
- Small Nuclear Reactors
- Tidal Energy Production
- Current Production to Remain
- Underground Cables
- Removal of Wind Turbines
- Area Reclaimed_go zone
- Area Reclaimed_Protected Landscape
- Wind Turbine (Current)
- Wind Turbine (Current_to be removed)

INTEGRATION

INTERVENTION





Intervention

Localized Wind Turbine

Solar Production

Small Nuclear Reactors

Tidal Energy Production

Current Production to Remain

Underground Cables

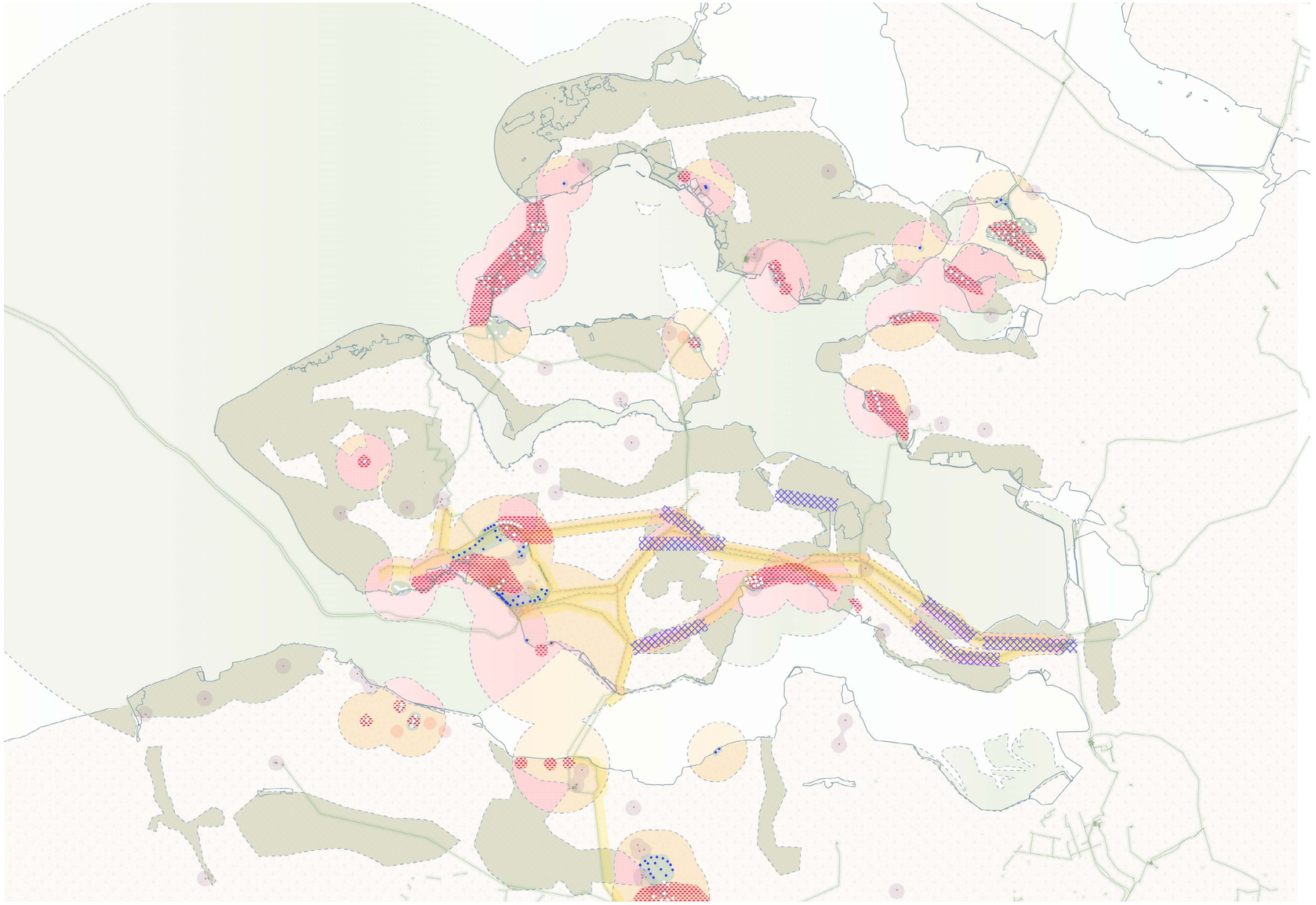
Removal of Wind Turbines

Area Reclaimed_go zone

Area Reclaimed_Protected Landscape

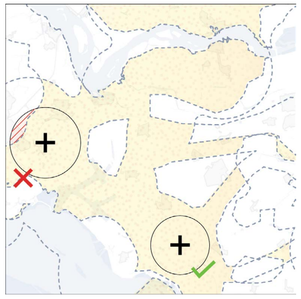
Wind Turbine (Current)

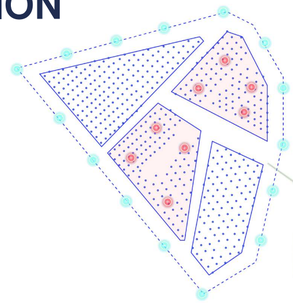
Wind Turbine (Current_to be removed)



INTEGRATION

RECLAIM + ADDITION





+ New energy project

Localized Wind Turbine

Solar Production

Small Nuclear Reactors

Tidal Energy Production

Current Production to Remain

Underground Cables

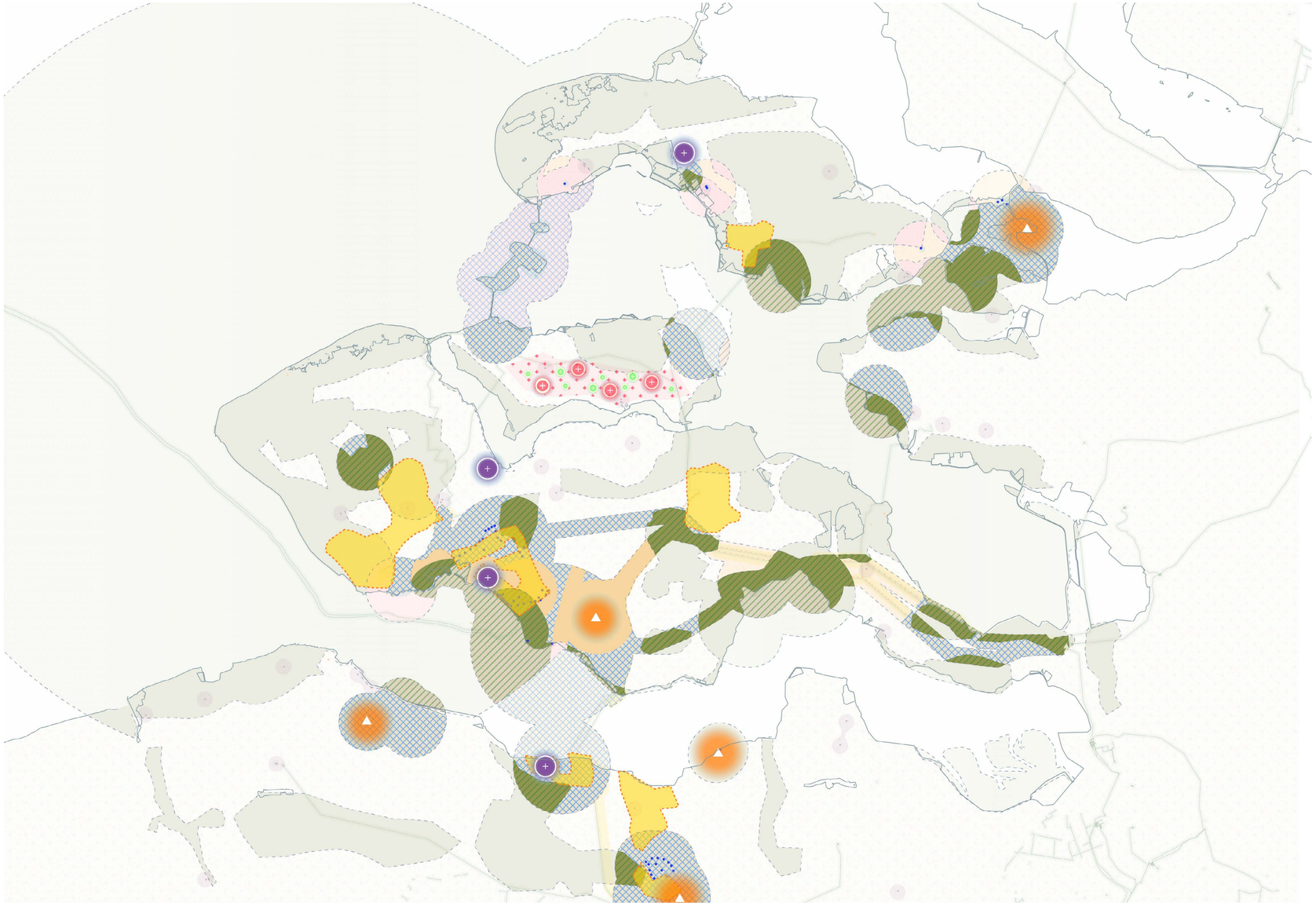
Removal of Wind Turbines

Area Reclaimed_go zone

Area Reclaimed_Protected Landscape

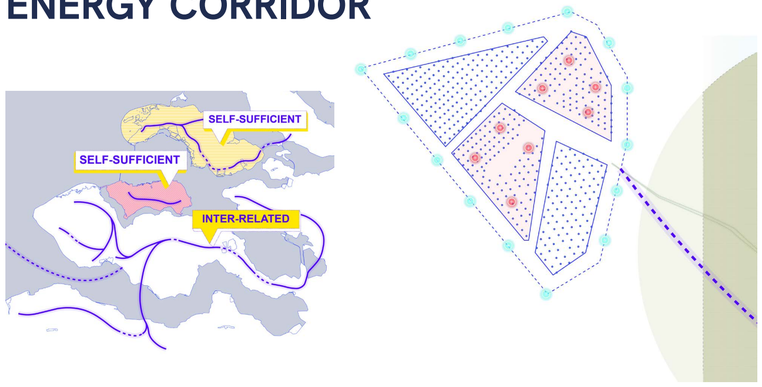
Wind Turbine (Current)

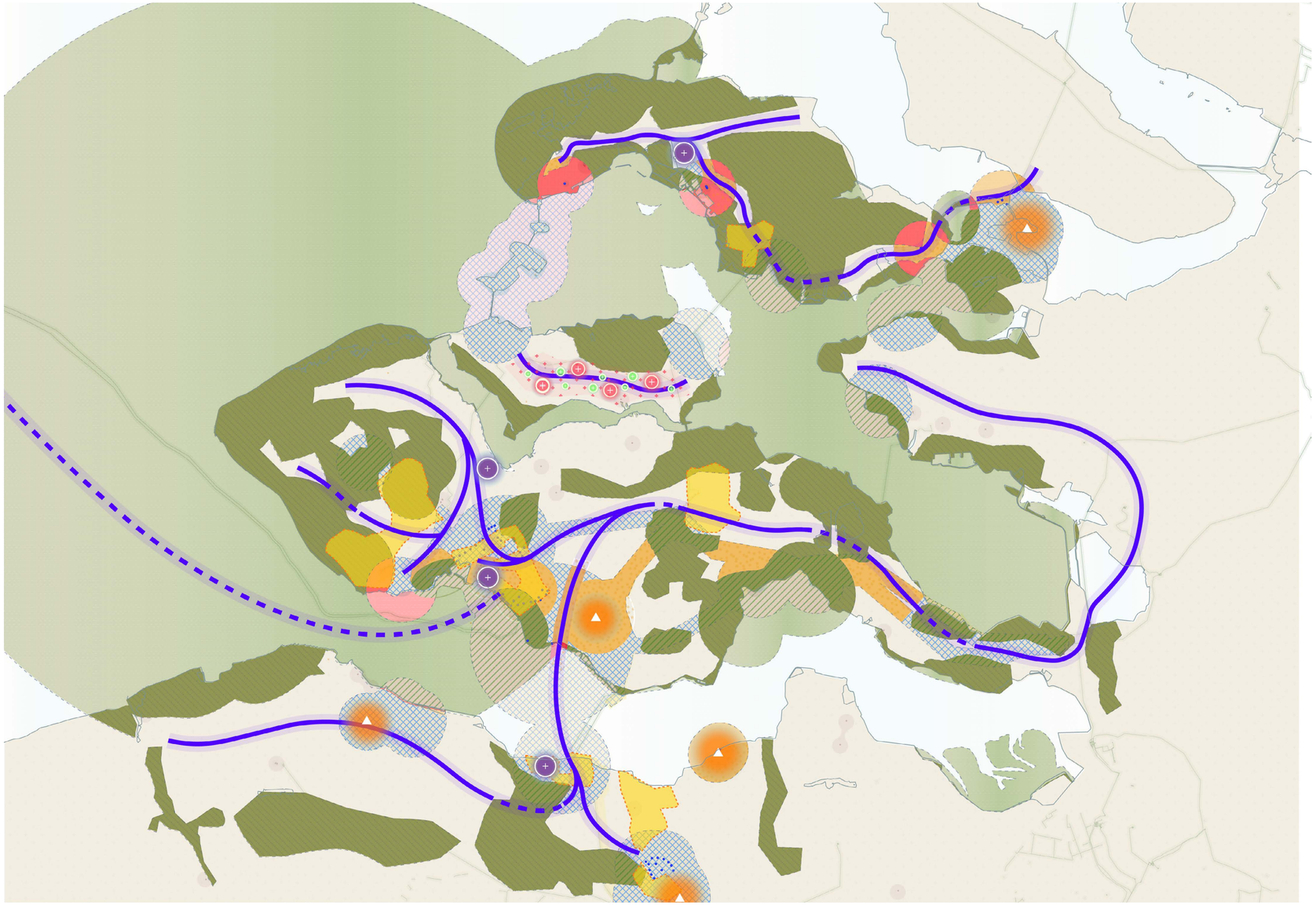
Wind Turbine (Current_to be removed)



INTEGRATION

ENERGY CORRIDOR





Localized Wind Turbine

Solar Production

Small Nuclear Reactors

Tidal Energy Production

Current Production to Remain

Underground Cables

Removal of Wind Turbines

Area Reclaimed_go zone

Area Reclaimed_Protected Landscape

Wind Turbine (Current)

Wind Turbine (Current_to be removed)

VISUAL REPRESENTATION

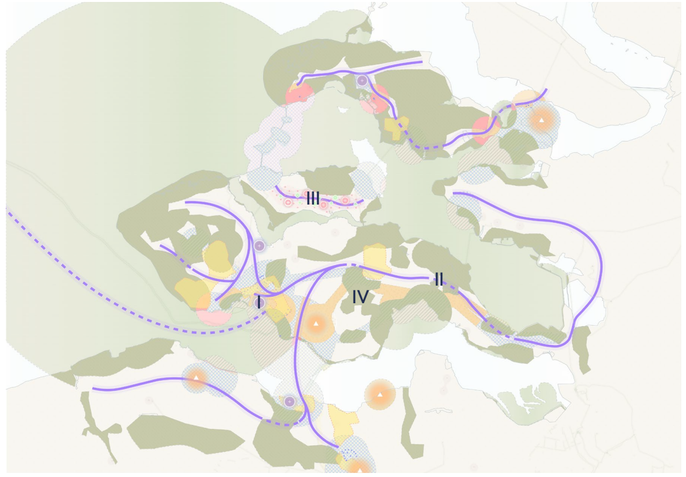
The collages represent the different zoom in locations where interventions take place. To show the visual implications, the following locations are highlighted:

Collage I
The industry next to Vlissingen (yellow zone)
Here a SMR is placed next to existing industry.

Collage II
Valued landscape (current red to future green zone)
High voltage powerlines go underground to preserve the valued landscape and preserve the characteristic vastness.

Collage III
Noord-Beveland (off-white zone)
This island is more viable to place solar fields and add small local wind turbines next to the farms for local energy production.

Collage IV
Landscape near Nisse (green zone)
The valued landscape is preserved and celebrated.



LOCATION OF THE ZOOM-IN

ZOOM-IN I

ZOOM-IN II

ZOOM-IN III

POLICY

The spatial interventions that have been introduced during the maximization process need to be supported by policy guidelines. The introduction of these policies will regulate the transition and protect both the on and of communities in preserving their valued landscapes.

The policy matrix divides the implemented rules into three types (red excluded) of areas introduced by the Go-No Go map; red being a conflict thus meaning the removal of existing energy production, green a no go area, yellow a go area and off white neutral. This matrix will include policy about size restrictions of the implementations, required research and mandatory improvements.

In addition to zone related policy, there is also a need for overarching general policy. The transition requires a policy to phase in nuclear and renewables before 2050 and to phase out fossil energy. Zeeland has its own Regional Energy Strategy (RES), which includes a goal achieve zero emissions by 2050 (RES Zeeland, 2024) .

By 2100 high-density energy solutions are required or a complete shift from nuclear to renewables. This top-down approach is required to transition, if fully supported by input from the community. This type of governance is required for the transition to grant spatial justice to all communities.

A policy to simplify and subsidize community led initiatives enables small and local scale energy production such as energy cooperations to be more prominent. In these processes, parties such as Rijkswaterstaat should be included into the conversation to realize the bundling of new energy infrastructure with existing infrastructure. After policy there is the need to improve zoning law, ensuring the protection of the created (energy) landscapes. Making the energy transition and its process robust to the ever changing (political) landscape and ensuring a bottom up process.

	GREEN	OFF-WHITE	YELLOW
NUCLEAR	**ON LAND** *No nuclear power plants or SMRs allowed. *Existing plants must be phased out. **AT SEA** *No offshore nuclear facilities allowed.	**ON LAND** Limited nuclear deployment: *Only SMRs and GEN III+ reactors are permitted. *Maximum of X km from residential areas and protected landscapes. *Public consultations required before approval. *No permanent nuclear waste storage-must be transported to Blue Zone facilities. **AT SEA** If in the future possible: *SMRs allowed under strict environmental impact assessments. *Maritime research is mandatory to minimize ecological impact. *Cannot interfere with major shipping routes.	**ON LAND** *SMRs and GEN III+ reactors can be built. *Fast*track approval for nuclear projects. *Financial incentives available for development and innovation. *Nuclear waste storage and recycling facilities permitted. **AT SEA** If in the future possible: *Offshore SMRs allowed with environmental protections in place. *Must coordinate with maritime safety and ecological research. *Cannot interfere with major shipping lanes.
WIND	**ON LAND** * Maximum of 15 meter high wind turbines can be built *Only private initiatives are allowed. *Phase out existing large wind turbine areas **AT SEA** No wind turbines in red zones AT SEA.	**ON LAND** * Maximum of 100-meter (axle height) wind turbines can be built *Maximum of 50% density. *>200 m from landscapescape. *>400 m from residential areas. *Round table conversations to plan and gather concerns of residents in the area*. **AT SEA** No height limit limitations are based on: *Maritime ecology research is mandatory, and measures should be taken to minimize the impact on the eco system. * Cannot interfere with shipping lanes. *Floating wind farms allowed under pilot programs.	**ON LAND** *Wind turbines up to 100 meters (axle height) can be built. *Flexibility to maximize wind potential if agreed with residents. *No density restrictions—large wind farms allowed. **AT SEA** *No height restrictions. *Integration with other energy sources (e.g., offshore solar or hydrogen production) encouraged. *Research on advanced turbine technology and environmental impact mitigation required. *Cannot interfere with major shipping lanes.

	GREEN	OFF-WHITE	YELLOW
SOLAR	**ON LAND** *Mandatory roof coverage for persional use *Only energy communities or private initiatives allowed. *Solar panels must adhere to strict landscape and heritage preservation rules *Reduce size of existing solar fields that exceed the size of one hectare *hide with foliage when solar field within 500 m of residents **AT SEA** *Minimize visual impact by allowing placement of <5000m2 solar patches 10 km off the coast.	**ON LAND** *Mandatory roof coverage *Medium-sized solar farms allowed, with a maximum land-use limit of 50% per area. *Dual-use solar encouraged (e.g., agrivoltaics—solar panels integrated with agriculture). *Fast track approval process for utility scale solar farms *Public consultation required for large-scale projects. *200 meters from protected landscapes and residential areas. **AT SEA** *Floating solar farms permitted with no land-use restrictions *Maritime research required to access ecological impact *Cannot interfere with major shipping lanes	**ON LAND** *Mandatory roof coverage *Large scale solar farms are permitted with no restrictions *Incentives for solar projects with other land use *Fast track approval process for utility scale solar farms *hide with foliage when within 200 m of residents **AT SEA** *Integrated offshore renewable energy hubs (solar + wind) encouraged. *Must comply with maritime safety and environmental protection regulations. *No restrictions on floating solar farms.
TIDAL	**ON LAND** (shoreline) *No tidal energy infrastructure allowed. *Coastal ecosystems and marine biodiversity protection take priority. **AT SEA** *No tidal energy installations permitted in marine protected areas or critical ecosystems. *Only small-scale research projects allowed under strict environmental supervision.	**ON LAND** (shoreline) *Limited tidal energy infrastructure allowed in designated coastal areas. *5000 meters from protected shorelines. *Public consultation required before project approval. *Hybrid coastal protection solutions (e.g., tidal barrages integrated with flood prevention) encouraged. **AT SEA** *Tidal energy projects allowed with strict environmental impact assessments. *Projects must not disrupt key maritime industries. *Research grants for long term impact on marine environment.	**ON LAND** (shoreline) *Full deployment of tidal energy infrastructure permitted in designated coastal zones. *Integration with existing infrastructure (e.g., ports, flood barriers) encouraged. *Fast-track approval for tidal energy projects in industrial or energy-focused zones. **AT SEA** *No restrictions on tidal energy farms, provided they comply with maritime safety regulations. *Large-scale projects encouraged, with grants. *Integration with offshore wind and floating solar farms supported.
BIOMASS	**ON LAND** *No biomass facilities *No biomass production *Food- and agriwaste can be exported to Yellow/Blue zone. **AT SEA** *No biomass production allowed	**ON LAND** *Biomass project locations at former industrial sites or agricultural zones in Zeeland. *Biomass power plants should prioritize utilizing waste biomass over dedicated crops. *Active consultation with local farming and energy communities. **AT SEA** *Pilot projects to explore sustainable seaweed farming and algae-based biomass. *Projects must focus on ecosystem sustainability and avoid disruption of fishing- and tourism industry.	**ON LAND** *Large-scale biomass facilities to be located near existing industrial areas. *Biomass facilities to be integrated with waste-to-energy plants to utilize urban organic waste. *Encourage agroforestry practices where trees are grown alongside crops for both biomass and carbon sequestration. **AT SEA** *Large-scale seaweed farming to be explored in the North Sea. *Biomass extraction from algae to contribute to local energy needs.

TIMELINE

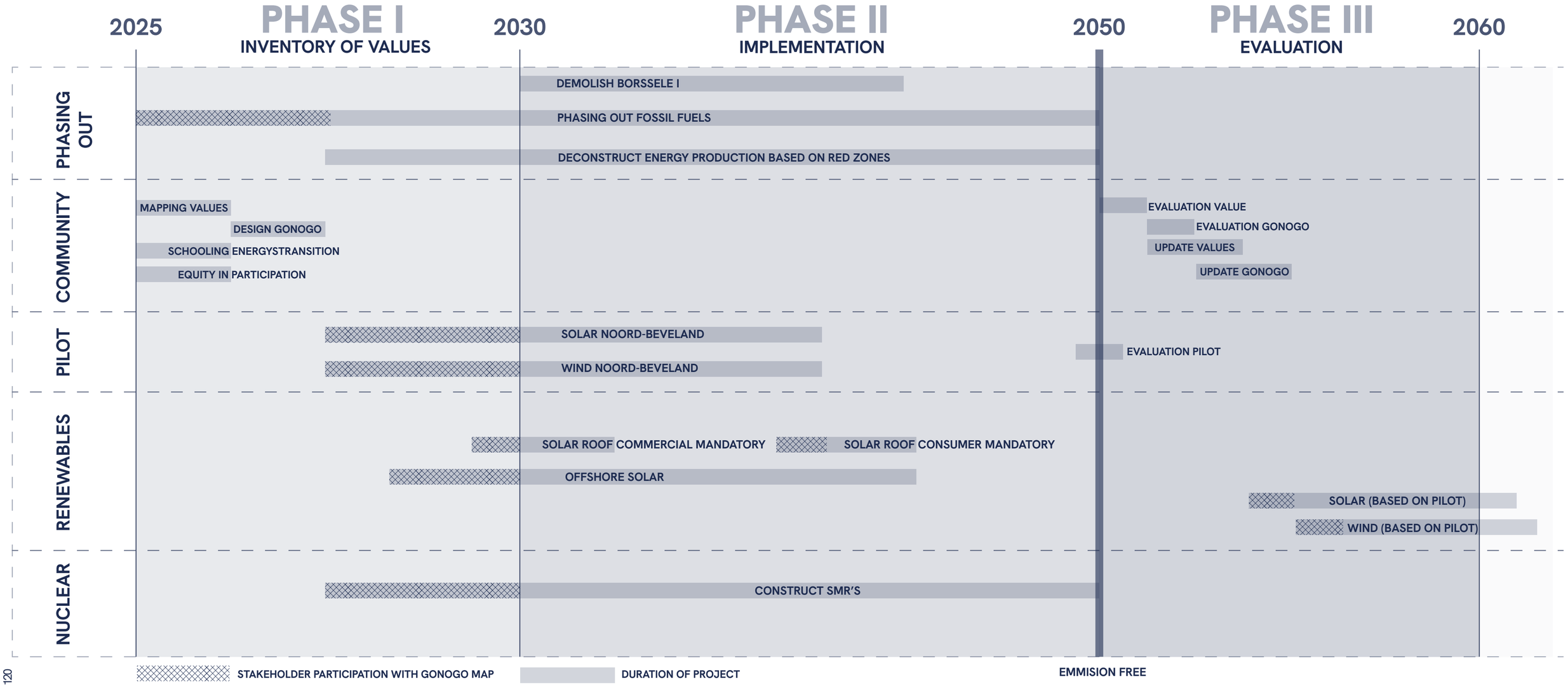
The timeline is divided into three phases; inventory of values, implementation, evaluation. This phasing aims to make the transition more organised and give a more structured view for the community.

In ‘Phase I’ community talks, identifying the values of the transitional community will be held. Following these values, a map with spatial zones for conservation and intervention, the Go-No-Go map, takes shape. During these sessions the community is educated on the topic of energy transition and made aware and involved with upcoming projects. The self-sufficient project in Noord-Beveland is the first one that uses the Go-No-Go map. After ten years of its completion the pilot project for the independent energy network is evaluated, this is to form the foundation for future projects that will eventually phase out nuclear energy. In this phase it’s important to note that spatial interventions will not yet be made. The planning process of both the phasing out of fossil fuels and the phasing in of renewable energy production is started.

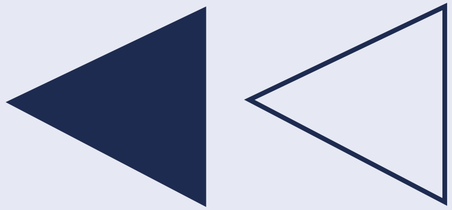
The spatial implementation starts in ‘Phase II’. The first local steps in this transition is the introduction of mandatory solar production on viable roofs, at first in industry and later with residents. Somewhat later offshore solar project is started inside the Borsele 1 and 2 to maximize the production at sea. To balance the phasing out of fossil and deconstruction projects in the red zones small modular reactors will be used because at this point the production from renewable sources is yet not enough. The second Phase will end with the goal to have an emission free Zeeland.

In ‘Phase III’ the evaluation of values and the Go No-Go map (established in 2025) lays the basis for a framework that lasts past 2060. Here the community in the red zones will notice no effect of any energy infrastructure. While phasing out fossil fuels was a goal in 2050 the new goal will be to fully phase out nuclear and replace it with wind- and solar energy based on the updated Go No-Go map.

TIMELINE


2025
PHASE I
INVENTORY OF VALUES
2030
PHASE II
IMPLEMENTATION
2050
PHASE III
EVALUATION
2060
PHASING OUT
COMMUNITY
PILOT
RENEWABLES
NUCLEAR
DEMOLISH BORSSELE I
PHASING OUT FOSSIL FUELS
DECONSTRUCT ENERGY PRODUCTION BASED ON RED ZONES
MAPPING VALUES
DESIGN GONOGO
SCHOOLING ENERGYSTRANSITION
EQUITY IN PARTICIPATION
EVALUATION VALUE
EVALUATION GONOGO
UPDATE VALUES
UPDATE GONOGO
SOLAR NOORD-BEVELAND
WIND NOORD-BEVELAND
EVALUATION PILOT
SOLAR ROOF COMMERCIAL MANDATORY
SOLAR ROOF CONSUMER MANDATORY
OFFSHORE SOLAR
SOLAR (BASED ON PILOT)
WIND (BASED ON PILOT)
CONSTRUCT SMR'S
STAKEHOLDER PARTICIPATION WITH GONOGO MAP
DURATION OF PROJECT
EMMISION FREE

ZOOM-IN IV



CONCLUSION & REFLECTION

EVALUATION

By spatializing the values of the transitional community and integrating them into the regional energy strategy, the project ensures that energy transition does not come at the cost of the community identity. Social sustainability is realized by prioritizing the community opinion and regional identity, while environmental sustainability is addressed by protecting and restoring valued landscapes as a result of valuation. Economically, the strategy promotes long-term sustainability by enabling distributed and local energy production, reducing dependency on distant or large-scale systems.

These sustainability pillars are integrated into the strategy and reflect a shift to renewables. This is evident in the categorization of landscape types and specialized interventions, which balance preservation with innovation. Generational justice is guaranteed through evaluation which is stated in the long term timeline and results in an updated version of the Go-No-Go map.

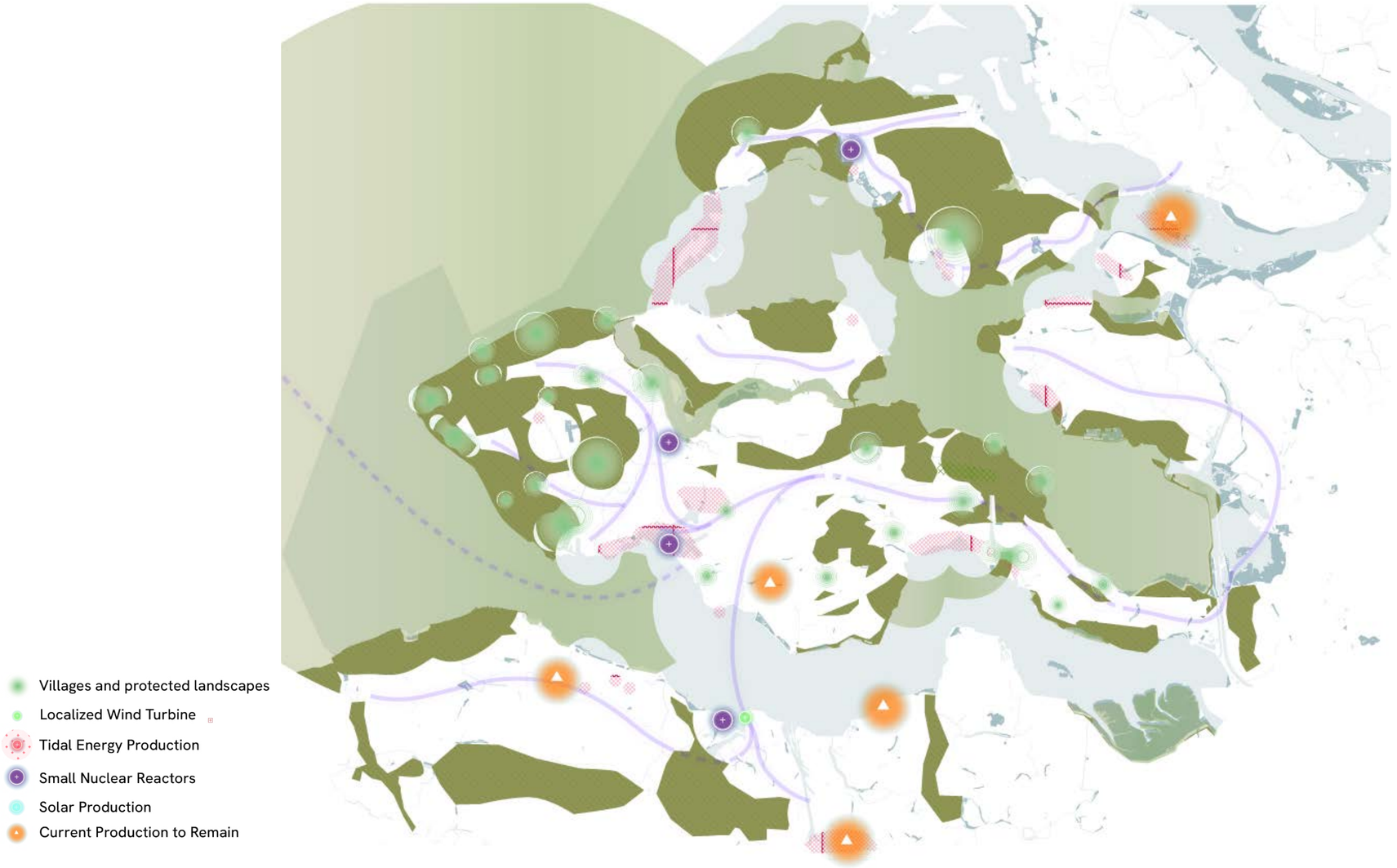
Spatial justice is one of the main goals within the project. Recognitional justice is visualized through the community layered values, while procedural justice is enacted via the bottom-up development process, ensuring that spatial decisions are not top down but made with the community and for the community.

The public goods that were addressed during the project are that of the valued landscapes, energy and the regional identity. These goods need to be acknowledged and preserved, this is done in part by creating the No-Go areas and spatial intervention of removal in conflict areas.

The project also aligns with and enhances several Sustainable Development Goals. Most notably:

- SDG 7 (Affordable and Clean Energy): through the integration of renewable and localized energy sources.
- SDG 11 (Sustainable Cities and Communities): by preserving regional identity and fostering inclusive planning.
- SDG 13 (Climate Action): by enabling a low-carbon energy future grounded in spatial justice.
- SDG 15 (Life on Land): through conservation and restoration of landscape ecologies.

In conclusion, the project offers a robust and replicable model for planning energy transitions that do not overlook the complex social and spatial values. By aligning community values with spatial and infrastructural planning, it presents a strategy for equitable and sustainable transformation, where energy, identity, and justice come together.



CONCLUSION

This research addresses the importance of the role of transitional communities in the energy transition in order to preserve regional identity through creation of durable and valued landscapes. For this the values of the chosen community are spatialized.

The main research question: **'How can the energy transition in Zeeland continue, while ensuring spatial justice through protection of the transitional community valued landscapes?'** reveals the different challenges in spatializing and interpreting community values together with assigning new energy production sites.

The vision, the protection of valued areas while enabling transition in non valued areas, categorizes different types of landscapes each with different interventions based on their value expressed by the community. This results in certain areas being conserved and others receiving spatial interventions to either restore values or bundle energy infrastructure. With this vision the foundation for the regional strategy is formed.

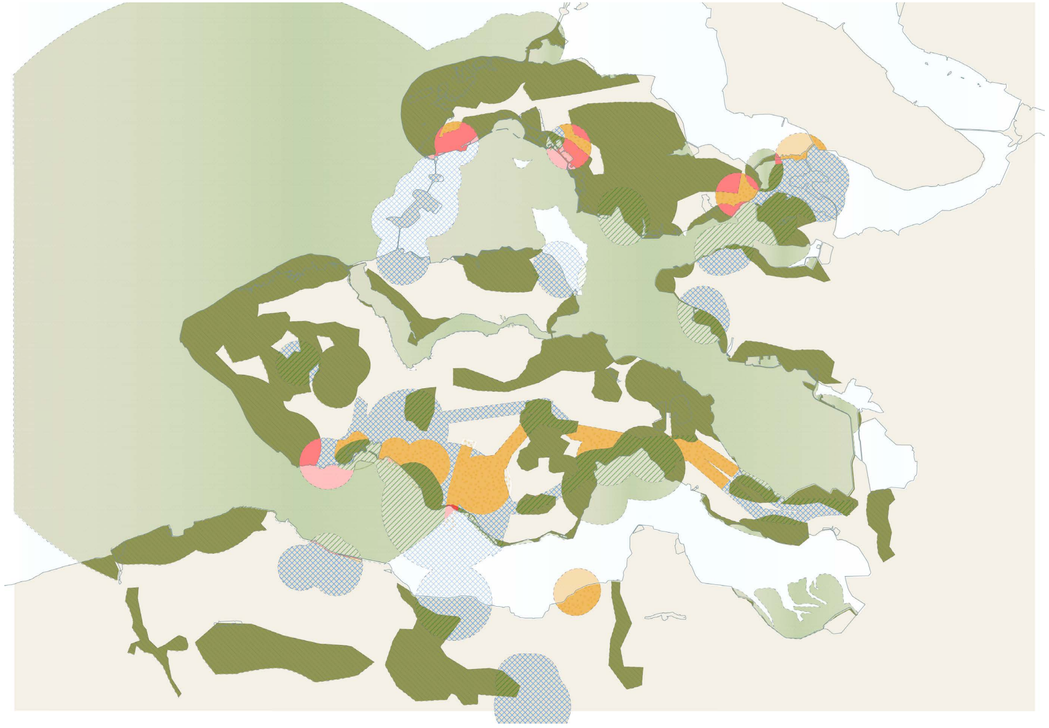
Through maximization, evaluating all viable energy production locations per type, a strategy is formed that allows for spatialization of community wishes which are based on a toolbox of interventions. Valued landscapes are preserved and conflict areas are restored, while areas of no particular value and existing infrastructure give the option to bundle and/or scale infrastructure and production.

With a projected demand of 160 PJ in 2060, the project would successfully supply the demand through add-ons to the existing offshore wind park (Borssele 1 and 2) and multiple SMRs supplying energy to local towns and industry. Lastly fulfilling the demand with local energy production methods.

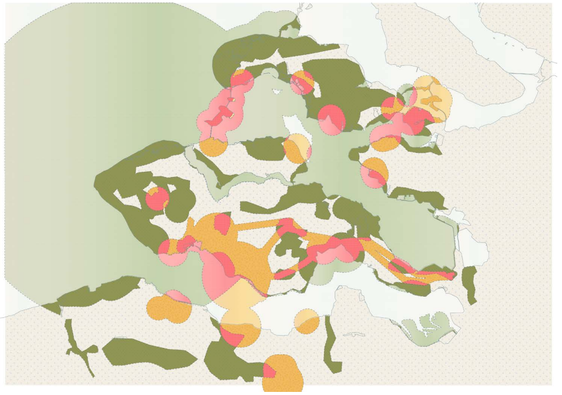
Spatial justice is granted by executing a bottom up strategy, that protects the community valued landscapes. The community values translate the wishes of the community into spatial interventions and policy. This regional energy strategy ensures the future energy demand through conservation and restoration of the spatial quality of valued landscapes, keeping the regional identity of the transitional community alive.

This strategic approach to protection of identity through valued landscapes in the energy transition can function as a tool to improve the planning process in other regions on different scales in the Netherlands.

AFTER



BEFORE



DISCUSSION

Generalization
The research strategy is designed to be applicable beyond the province of Zeeland, thanks to its clearly outlined step-by-step approach. The toolbox ensures that standard solutions are both practical and adaptable, for other scenarios this toolbox can be expanded on. While the strategy leans toward the use of small modular reactors, due to their low spatial footprint, this technology remains largely unproven and should be used with the consideration that nuclear is still not a zero waste production type.

Ethical considerations
Climate change presents a complex landscape of values, with a wide range of public opinions. Even if a strategy aligns with broadly accepted community values, certain groups may still feel excluded. Especially those who live in areas deemed as neutral. In the current strategy these areas are less regulated. Ensuring their inclusion is important to avoid marginalization.

Societal considerations
The strategy starts with the shift to renewable energy while maintaining regional identity. This dual focus places human wellbeing at the centre of spatial planning. Additionally, the strategy aligns with governmental and international targets, such as the United Nations' Sustainable Development Goals (SDGs). By addressing these goals, the strategy contributes to long-term sustainability and improved living conditions through the reduction of fossil fuel dependence.

Relevance
Analysing the role of communities in energy transition projects gives insight on how local values intersect with spatial planning. This insight is crucial for making transitions more equitable and less disruptive, particularly for those most affected by changes in their regional landscapes.

Recommendations
In order to ensure that the zoning is accurate, more inventory is needed on community values. In case of storage the research and spatial interventions need to be an addendum to the existing strategy. There are figures that give some insight but still have not been implemented on a larger scale.

When taking energy loss into account 'the devil is in the details'. Energy loss occurs on all scales from production to usage. To increase the accuracy, loss should be included and needs research on its own to give more credibility to the report.

Decreasing energy usage is a social- and economical change which is less concrete and depends more on policy. Since the strategy is focused on production and spatial interventions, energy saving measures are a different topic which goes hand in hand with the strategy mentioned above.

REFELCTION

REFLECTION ARRA

At the beginning of this quarter, I was fully aware that regional strategy was not my strong suit. With this in mind, I view this course as a valuable opportunity to push myself beyond the neighborhood scale I was more familiar with. I was genuinely eager to expand my design thinking and embrace the challenges that come with working at a regional level.

Our group chose to focus on community perspectives, as a crucial steps towards understanding how we can integrate community vision into the regional strategy, we decided to look through the lens of landscape. Aiming to spatially map out areas of impact and value through a combination of methods, including bottom-up data collection and community opinion research.

As a result, we have 2 critical maps translated the community value landscape and industry impact into spatial manner. Experimenting lineweights, hatching and gradient to differentiate each layer of impact are the challenges in the process of making the map, at the end I found the product quite commendable.

However, I consider the final outcomes remained somewhat conceptual, with limited consideration of the broader regional and national context. If there's future opportunity to look further into this topic, I believe the project would have benefitted from a stronger positioning of Zeeland in relation to surrounding cities and the wider Netherlands, especially in terms of energy transition dynamics and infrastructural networks. For example, to consider questions like, how this regional strategy would brand Zeeland as a new precedent for energy transition, and how this new type of energy cluster could assert positive influence to surrounding area, to better connect with the surrounding area, how the energy industry could organically binding with education, worker's living hub, regional transportation network (or even national, promoting international collaboration), can our community priority approach be implemented in other cities facing the same challenges.

One of the challenges that our final vision remains conceptual, in my view, was that our final Go/No-Go map remained largely schematic. While it served as a useful framework for conversation, its applicability as a practical spatial strategy was limited. The mapping stayed at a level of abstraction that made it difficult to envision how interventions might unfold in real-world, iterative scenarios. Yet I understand that the mapping of community values is in itself abstract and possess a certain level of ambiguity. The complexity of spatial implementation—where each action inevitably generates ripple effects—was not fully addressed. Our design approach tended to lean toward an "all-at-once", "one-size fits all" vision, rather than engaging with a more staged, negotiable, and adaptive process. This raised concerns for me about the feasibility and long-term resilience of the proposed strategy. However, given the limited time and the profound realm of energy transition, I acknowledge that more research, study and effort must be devoted into the process in order to achieve my expectation. I sincerely hope that I could carry over the knowledge I gain during this course and develop it further in the future projects.

In a project where balancing stakeholder interests and negotiating between power structures is crucial, I believe greater emphasis could have been placed on engaging with these dynamics. Structured in-class exercises—such as role-playing negotiations between municipalities, energy providers, and citizens—might have deepened our understanding of how real decisions are made and could have brought more clarity to the complexities of implementation.

Reflecting on my own contribution, I recognize that I didn't push myself as far as I initially intended. Our project leaned more toward a conceptual and narrative-driven approach. While I appreciated the creativity and openness this brought to our work. The emphasis on creativity occasionally came at the expense of analytical depth and strategic clarity. As a master's-level course, I had hoped for a stronger balance between imaginative thinking and critical, systems-based analysis.

REFLECTION FINN

The regional design project for the province of Zeeland taught me a lot about what it means to be a regional designer. One of the biggest lessons was how important it is to create a clear and shared vision at the start of the process. Without it, it's easy to get lost in all the details, especially when dealing with such a large and complex area. I had only worked on small-scale projects before, so working at a regional level was a big change. The scale was much bigger, which meant I/we had to think differently and consider a wider range of people, landscapes, and systems.

Our group decided to focus on an inclusive energy transition one that not only founded in new ener-gy systems but also respected Zeeland's unique identity and landscape. Instead of placing wind turbines and solar panels randomly, we looked for ways to fit them into the existing environment. We used data to help us decide where they would make the most sense. The SDS lecture on story-telling was really helpful for this. It taught us how to build a strong narrative and to think of our de-sign as a story, one that includes local people as active participants. This helped us move beyond technical thinking and focus more on values, relationships, and the long-term impact.

Personally, I found the policy side of the project very interesting. I realized how much laws and rules shape what is possible in regional design. At first, I saw policies as limitations, but I came to under-stand that they also protect the build environment like natural areas or public interests. For exam-ple, rules that protect green zones might make energy projects harder to build, but they also make sure we don't damage valuable landscapes or ignore community values. So, there is a balance be-tween design freedom and responsibility.

One of the harder parts of the project was working in a group with different ideas, methods, and working styles. Sometimes we didn't agree, and our meetings could be long and messy. But over time, we learned to listen better and find common ground. We used sketch sessions and open dis-cussions to bring our ideas together. Even though this took extra time, our final maps and plans were much better because they reflected everyone's input.

This project changed the way I think about regional design. I used to think its easy to make deci-sions on this large a scale because the eventual product is so abstract there is not one community, 'you cant win'. I now see the role of the regional designer as someone who translates big ideas into practical steps, and who builds a strategy that connects people, places, and goals. It makes me think to maybe shift my interests to the larger scales.

REFLECTION FLOOR

In Q3, the assignment was to create a regional plan (vision and strategy) based on a selected community. Before starting Q3, I expected that I would find working on the regional scale challenging. I often choose topics that are too broad, which makes it difficult for me to make the research concrete. I was placed in the energy production group, with the landscape as our assigned perspective. This immediately sparked inspiration—especially after receiving a Delft blue plate with a historic landscape on it that same weekend. That quickly became a guiding element for the project. The idea of expressing our vision through a series of plates gave us a strong foundation and helped us focus our research.

This Q3 research addresses the urgency of climate change and how the energy transition is necessary in that context. While it has a positive impact on the climate, it also has negative effects on the environment and well-being. Renewable energy requires a lot of space, impacts ecosystems, and often obstructs views. There needs to be a balance between climate and environmental concerns, but also a balance between top-down and bottom-up approaches. It is important to include input from the people, since the plan is being designed for them and their living environment. To go even further, it would be good to give nature a voice in the process as well. Too often, plans are driven by economic interests, raising the question: how can we plan from the perspective of the community?

I believe this requires a multi-layered research approach. First, it's important to gain a general understanding of the situation through literature review, incorporating both top-down and bottom-up perspectives. This should be followed by empirical research, including surveys (to reach a broader audience) and personal interviews for deeper insights. Applying a mix of qualitative research methods is essential for creating a well-grounded foundation. I believe this is something that is often lacking in projects, as such research takes a lot of time and money. Therefore, the social and ecological aspects should be better balanced with economic ones, following the 4P approach. Looking back at our research, I think our approach was solid, but there was not enough time. To get an even clearer picture, we would have needed to conduct more interviews. It would also have been helpful to receive the interview lessons earlier, since we had already conducted the interviews by the time the lessons were given, making them less useful.

The research resulted in value maps, which then led to a GONOGO map. This map served as the basis for developing the vision and corresponding strategy. The community-desired interventions were generalized because the GONOGO areas were generalized as well. This means the outcomes deviate slightly from reality, since in practice, an intervention might be appropriate in one part of an area but not in another. For a more detailed plan, interventions would need to be assessed location by location. Overall, I believe the final plan is concrete and has a clear narrative, and I would like to carry this focus on storytelling into future projects as well.

REFLECTION RUTH

Standing Still While Moving represents the culmination of a project that prioritizes our selected community— people living ON and OF the valued landscape. This initiative was conducted as part of the studio Spatial Strategies for the Global Metropolis of Quarter 3 in the Master Urbanism. As this was my first project of such scale, I was a bit anxious to start, but at the same time exited.

In collaboration with my group, we engaged in discussions to identify a community that could serve as the focal point of our project. Ultimately, we identified a suitable community within the province of Zeeland. By thoroughly exploring their perspectives, hopes, and dreams, we were able to formulate a comprehensive vision. I believe that developing a vision through the lens of the selected community significantly enhances the overall design proposal and development strategy, providing a solid foundation for these components. Absent the community's vision, the design would merely reflect personal opinions; however, this project emphasizes the centrality of community input.

This project provided valuable insights into the significance of amplifying community voices. Communities often recognize the necessity of transitioning; however, adopting a bottom-up approach, rather than a top-down one, facilitates the development of a project that fosters collective participation. In our initiative, this approach resulted in the development of a community opinion-based GONOGO map, which accommodates both bottom-up input and the implementation of certain top-down projects.

I believe it is both feasible and essential to grasp the hopes and dreams of a community when designing regional initiatives. Ignoring these hopes and dreams, in my view, would hinder the development of a project that encourages widespread participation. While it may not always be possible to fully realize their vision in every transition, seeking inspiration from their aspirations is a valuable starting point. Despite the diversity among communities, there are often resemblances that emerge. Listening to every voice on a regional scale can be challenging, yet it is crucial to engage with a significant portion of the community. For our project, we visited various villages and conducted interviews with individuals from diverse backgrounds within our community, looked at different provincial surveys and news articles. Although we may have generalized some opinions, we endeavored to gain a comprehensive understanding of our community during the nine weeks we had available. This eventually led, in my opinion, to a community based design.

REFLECTION YOURI

The regional energy strategy is something new to me, but also something I am very excited about. It is a critical subject and ties in with a lot of my interests, such as community perspectives and infrastructure. The perspective of a transitional community makes for a very interesting project that redefines the planning process.

During the lectures, I was particularly intrigued by the way S+H+N dealt with the integration of energy production and infrastructure in the landscape. For me this was an eye opener of the possibilities available when transitioning but still preserving the quality of the landscape. I think this can also be seen when looking at the final vision that expresses the value of the landscape and prioritizes the community perspective in handling the interventions.

Working on the project with a group is something I looked forward to after individual projects, we got on very well and promoted creativity amongst each other in ways of visualizing perspectives and values. I really wanted to push my understanding of the community, something I think we did very well when looking back at the project. We went on multiple location visits, talked with the local community and familiarized ourselves with everything 'Zeeuws'. I think the highlight of this understanding is seen in the plates, reflecting the different scenarios we proposed for our narrative. These plates also expressed the importance of the community in the process of the energy transition and eventually got translated into a GO-No Go map, which provided an understanding of how to take on the strategy part of the project. Another important result of the whole strategy for me is its relevance for other regions facing the same issues, with its step by step plan and easy to integrate toolbox it might be part of the solution.

During the project we had lots of discussions, as there should be, but I often found myself holding on too tight to my opinion and not opening up enough to other people's opinions and input. And after the midterm reflection on our group and individual performance, I concluded that I wanted to create more end products. I started the project with making simple maps but over time I worked more on the narrative of the project and after the midterm I continued to, writing primarily texts for the report. This is something I regret, but maybe also something bound to happen when working in a group. Overall I am pretty happy with our story, I think our narrative is good and we put great emphasis on how the community can influence the physical appearance of their own part of the world. Maybe the aspect of how community identity is preserved and protected when other people listen and value their perspective is not only relevant for the energy transition but group work too.

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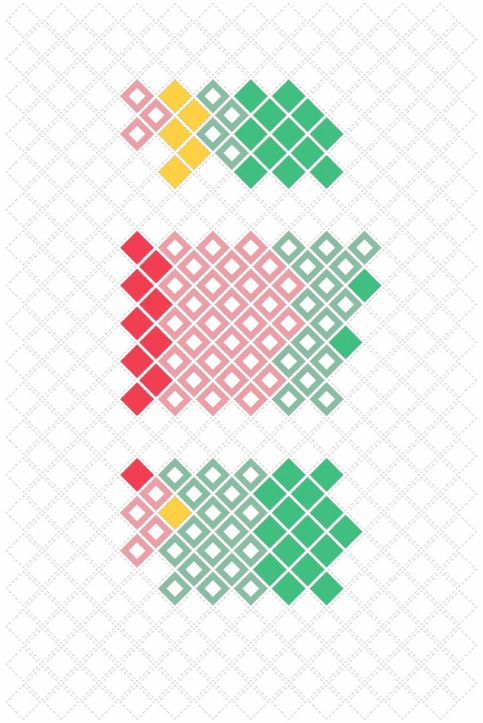
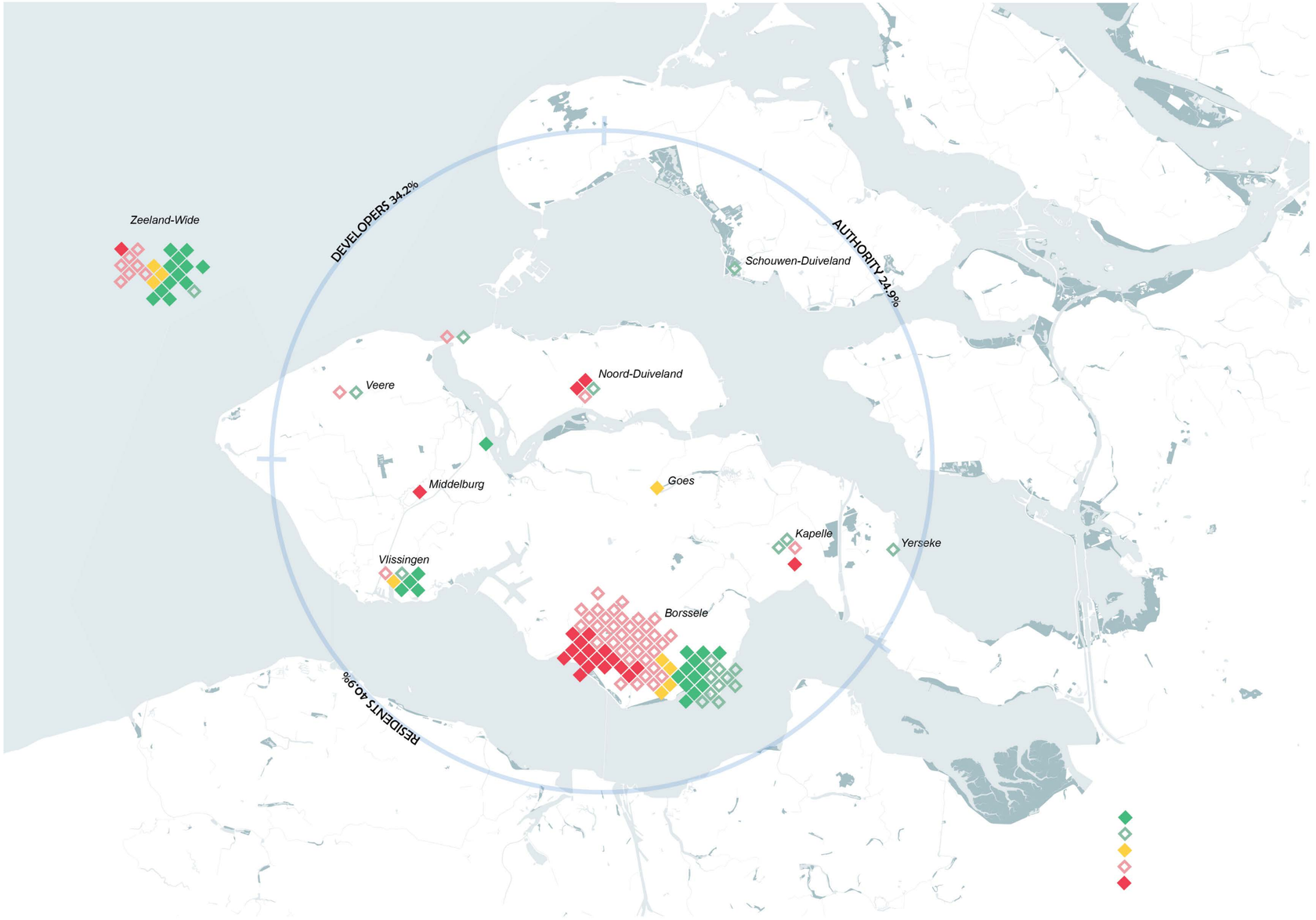
APPENDIX

APPENDIX 1/

OPINION MAP





Note: Please refer to citation list for references

APPENDIX 2/

OPINION MAP SOURCE

Title	Summary	Date	Type	Location	Community	OpinionFromArticle	Related Links	Info > Energy Transition	Opinion_Developer	Opinion_Residence	Opinion_Authority
Duizendste laadpaal voor AgriSnellaad	AgriSnellaad installed its thousandth charging station in the Zeeland municipality of Schouwen-Duiveland, marking a milestone in the electrification of rural areas. The company aims to provide modern charging infrastructure in smaller villages and help in the transition to electric transportation. AgriSnellaad plans to expand its charging network beyond Zeeland to other regions in the Netherlands. The initiative shows that the energy transition towards sustainability is not limited to urban areas, but rural regions also play a crucial role.	2024-11-18	On-Site	Borssele	Energy Developers(AgriSnellaad)	Kinda Positive	https://agrisnellaad.nl/locaties/	AgriSnellaad: **installed a thousand charging station in Zeeland** (in the Zeeland municipality of schouwen-Duiveland)	AgriSnellaad:The company wants to commit to future expansion of the charging network, not only Zeeland but also other rural area.	NA	municipality: more and **more residents are switching to electric driving**, and the municipality has made plan to realize good charging infrastructure.
Eemshaven hotspot voor windparken	The article discusses the Northern Netherlands Offshore Wind Innovation Centre (OWIC) in Eemshaven, focusing on cables, bolts, maintenance, recycling, and energy generation in the wind industry. OWIC aims to attract companies to Eemshaven, supporting innovations and training in offshore wind. The Eemshaven is becoming a key hub for wind farms in Europe, with increasing interest and investment in the sector.	2021-05-28	Not Relevant	Borssele		Positive					
Een kernreactor ontmantelen, dat duurt dus ruim 17 jaar_ en zo hebben ze er bij Doel straks drie	The decommissioning of the Doel Nuclear Power Plant in Belgium will take over 17 years, with the dismantling of three reactors (Doel 1, 2, and 3). The process includes five years of shutdown, ten years of dismantling radioactive parts, and two years of conventional demolition. Engie Electrabel, the plant operator, has set aside 15 billion for nuclear waste storage and processing. While the Belgian government had planned a full nuclear phase-out, an agreement with Engie extended the lifespan of Doel 4 and Tihange 3 until 2035, ensuring electricity supply amid energy security concerns following the war in Ukraine. The dismantling of Doel 3 will begin in 2027, requiring robotic cutting of radioactive materials, with full site clearance by 2040. Meanwhile, Scandinavian countries are leading in permanent nuclear waste storage, with Sweden building an underground repository for radioactive waste.	2025-02-09	Nearby	Borssele	Government (Belgium Government), Energy Developers (Doel Energy Plants)	Kinda Complaining (about the challenges)		**Doel Nuclear Power Plant in Belgium is being decommissioned over 17+ years.** Process Breakdown: **5 years** for reactor shutdown. **10 years** for dismantling radioactive components. **2 years** for conventional demolition. Nuclear Waste Management: 15 billion allocated for nuclear waste storage and processing. Nuclear waste will be stored in air-cooled containers before eventual underground disposal. Energy Policy Adjustments: Doel 4 and Tihange 3 will remain operational until 2035, instead of shutting down as planned. The Belgian government reversed its nuclear phase-out decision, citing energy security concerns. Future of the Doel Site: **Doel 3 dismantling begins in 2027, site to be cleared by 2040.** Robots will be used to cut radioactive materials remotely.	Peter Moens (Director, Engie Electrabel): Stresses that nuclear decommissioning is highly complex and requires long-term planning. Emphasizes that nuclear plants cannot simply be "turned off like a coffee machine". Engie Electrabel (Operator of Doel Plant): Notes that Doel 4 will remain operational longer than planned, requiring additional inspections and maintenance. Highlights safety measures for nuclear waste storage, ensuring fire and aircraft impact resistance.		Belgian Government: Reversed full nuclear phase-out, extending Doel 4 and Tihange 3's operation to ensure electricity stability. Justifies nuclear energy as a zero-CO2 source contributing to the energy transition. Prime Minister Bart De Wever: Has suggested keeping some reactors open until 2045, though no formal decision has been made. Regulatory Agencies & Researchers: Conduct extensive safety evaluations, requiring 732 technical documents and consultations across Europe before extending reactor lifespans.
Energy Transition Documents	The documents focus on the Netherlands' energy transition, particularly nuclear power and industrial sustainability. The first article covers a visit by Dutch Parliament members to Borssele, where they met local stakeholders to discuss nuclear power projects. The second article highlights **strong public opposition to nuclear plants** planned in Zeeland and the Maasvlakte, with 1,355 objections filed. Rotterdam's government and port authorities express concerns over nuclear development in the Maasvlakte, **favoring alternative energy projects like hydrogen and offshore wind**. The third article reveals that Dutch industry has lowered its sustainability ambitions, reducing its planned CO2 emissions cuts from 26 to 19 megatons by 2030. Challenges include high electricity prices, slow permitting, and weak investment in hydrogen. The Netherlands Environmental Assessment Agency (PBL) warns that the industry's green plans are insufficient to meet national climate targets, urging government intervention to provide clarity and infrastructure support.	2024-04-09	On-Site, Nearby	Borssele	Uncategorized	Negative		The Dutch Parliament visited Borssele to assess nuclear power and energy transition projects. **1,355 objections were filed against nuclear plants planned in Zeeland and Maasvlakte.** **Rotterdam's Port Authority and city government prefer alternative energy projects (wind, hydrogen) over nuclear.** (moor large seagoing vessels are very scare. The Dutch industry reduced its planned CO2 reduction from 26 to 19 megatons by 2030. Hydrogen demand for 2030 is estimated at 11 GW, but only 1.5 GW is expected to be available. Financial uncertainty, high electricity prices, and slow permitting delay sustainability projects. An ammonia factory in the europort was approved in Maasvlakte. The Netherlands Environmental Assessment Agency (PBL) states the industry's sustainability efforts are inadequate. The Dutch government must decide on prioritizing energy	Chemelot, Tata Steel, and other industries: *Hesitant* about green investment due to high costs and unclear business cases. ArcelorMittal (Steel Manufacturer): *Paused its "green steel" plans due to a lack of profitability.* PBL (Netherlands Environmental Assessment Agency): Warns that the industry's energy transition is failing and requires government intervention.	Residents of Borssele and Rotterdam: Filed 1,355 objections against nuclear power plants, citing environmental and safety concerns. Vaarne aan Zee Municipality: Supports research into nuclear power but insists on evaluating impacts on local communities. Henk Compter (Chairman, Association of Concerned Citizens of Vaarne): Criticized the lack of public consultation and inconsistent government policies on industrial projects. Borssele Mayor (Gerben Dijksterhuis): Maintains neutrality but emphasizes that all voices should be heard in the decision-making process.	**Rotterdam** Port Authority: Opposes nuclear power in the Maasvlakte, favoring hydrogen and wind projects. Also speaks about **Small Modular Reactors (SMRs) potentials.**
E-truck pilot helpt bij verduurzaming logistiek vervoer	The **E-truck pilot project**, launched by Dek Opleidingen in collaboration with Zeeland Connect, Impuls Zeeland, and the Province of Zeeland, aims to make logistics transport more sustainable. The initiative provides companies and drivers with hands-on experience using electric trucks, addressing barriers such as lack of knowledge and confidence in transitioning to emission-free transport. The project includes driving lessons, refresher training, truck rental for businesses, and public demonstrations at events. Zeeland's provincial government is financially supporting the initiative as part of broader energy transition efforts. Impuls Zeeland assists in project development and financing strategies, while Dek Opleidingen emphasizes the importance of preparing for stricter regulations and increasing customer demand for sustainable logistics. The project promotes both technological adoption and social innovation, aiming to set a new industry standard by making the transition to electric transport more accessible to companies in the region.	2025-02-19	On-Site	Borssele	Industry Developers	Hesitate	Key developments in energy transition in Dek Opleidingen, Zeeland Connect, involving Dek Opleidingen, Zeeland Connect, focusing on unspecified projects.	**E-truck pilot project launched** on February 1, 2025, in Zeeland, Netherlands. **Goal: Promote sustainable logistics by encouraging electric truck adoption.** Initiators: Dek Opleidingen, Zeeland Connect, Impuls Zeeland, Province of Zeeland. Support: Zeeland's provincial government provides financial backing. Project components: CE driving lessons for electric trucks. Refresher training (Code 95) for existing drivers. Truck rental for companies to integrate electric trucks into their operations. Public events to showcase electric transport technology. Challenges Addressed: Lack of industry experience with electric trucks, high upfront costs, and skepticism about operational efficiency. Context: The project aligns with stricter regulations and increasing customer demand for sustainable transport.	Dek Opleidingen (Project Lead): Believes electric transport is critical for an emission-free future and that companies must prepare for regulatory and market changes. Impuls Zeeland (Project Development & Financing): Supports the initiative by facilitating project funding and strategic development to enable businesses to transition smoothly. Zeeland Connect: Focuses on knowledge-sharing and social innovation, ensuring that companies and drivers are educated on electric transport benefits. Province of Zeeland (Government): Sees the project as an essential step in the region's energy transition, financially backing the initiative to promote sustainability.	Logistics Companies & Drivers: Face **hesitation and uncertainty about switching to electric transport due to high costs, range anxiety, and lack of knowledge.** The pilot aims to make the shift easier by offering a low-risk trial experience. General Public & Industry Observers: Likely to benefit indirectly from reduced emissions, cleaner transportation, and a more sustainable logistics network.	

APPENDIX 3/

THREATS MAP

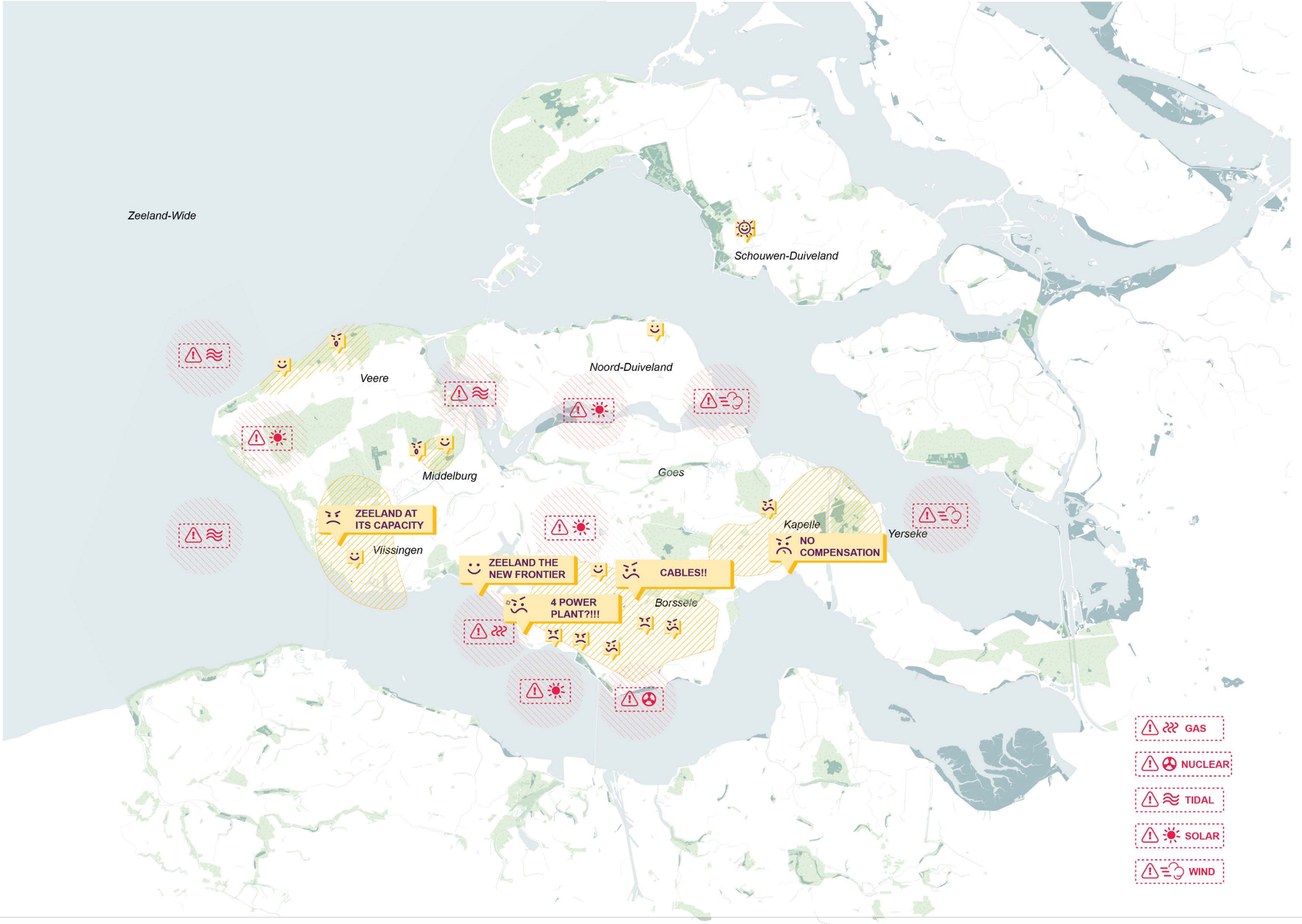
GAS

TIDAL

SOLAR

WIND

NUCLEAR



APPENDIX 4/

INTERVIEWS

Number of People Interviewed: 7
Questions for the interviews:

- Wat is uw naam?
- Wat is uw leeftijd?
- Wat is uw beroep?
- Hoe definieert u het Zeeuwse landschap? Welke waarde hecht u aan het landschap?
- In welk landschap komt u graag?
- Wat is uw relatie met het landschap?
- Wat stoort u aan het huidige landschap?
- Hoe beïnvloedt de energie transitie in uw ogen het landschap?
- Hoe ziet uw ideale landschap er uit?
- Hoe denkt u de energietransitie er in de toekomst uit moet zien?
- Lokaal energie
- Regionale energie – Zeeland produceert meer dan ze gebruikt, niet voor de Zeelander.

"As long as it doesn't look so ugly."

"Get rid of that junk!"

"Old power lines look better anyway."

"The Netherlands is full."

"Consuming less is more important than producing more."

"The housing shortage is severe!"