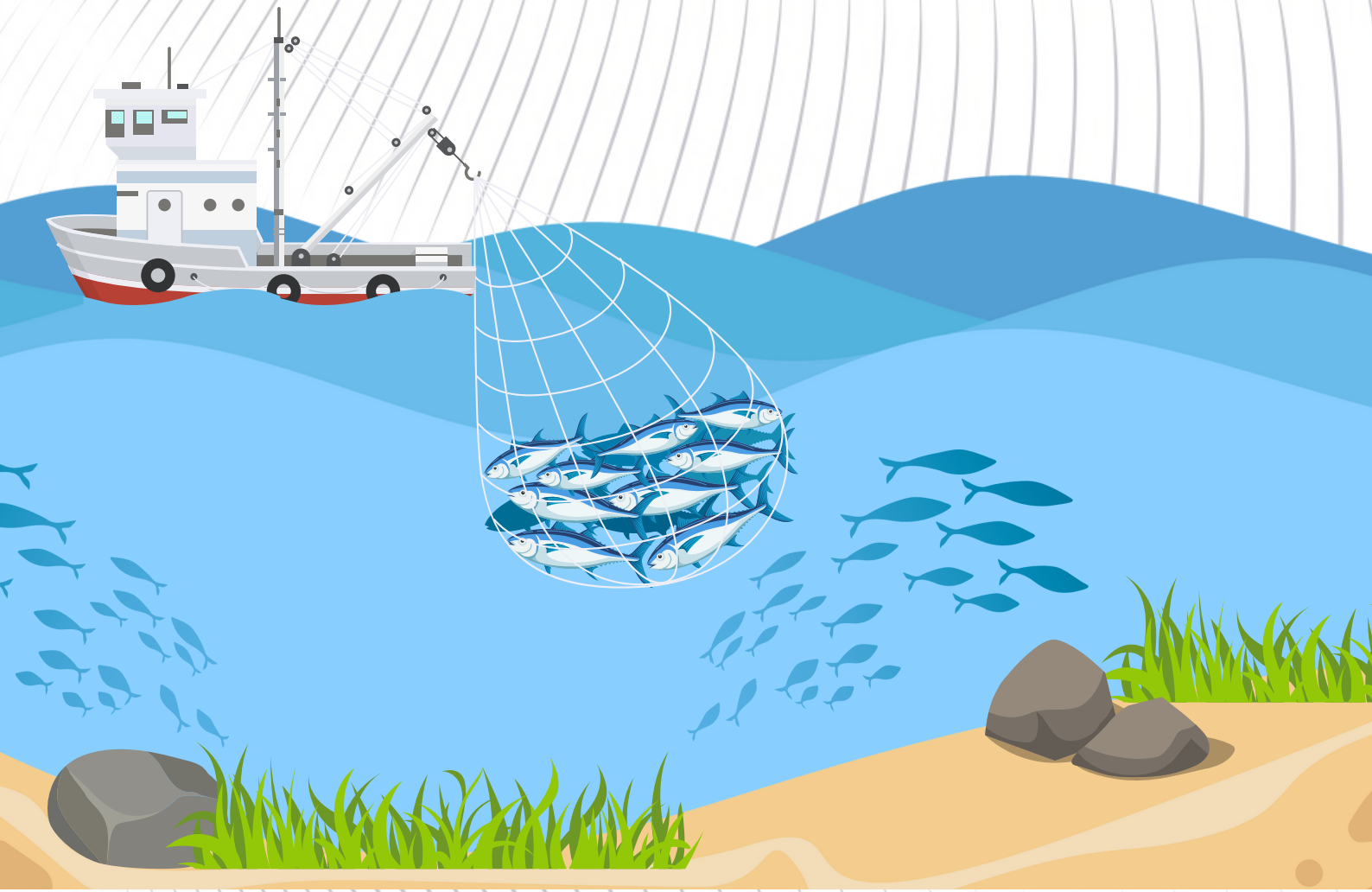
INTERVENTIONS TO SUPPORT CONTINUED FISHERY IN COASTAL COMMUNITIES

Master Thesis by Sabine Kristensen



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Abstract:

Fishery is conducted worldwide to secure a food source, and if fish is sustainably managed, it can provide a stable protein-rich source with a low environmental footprint. The fishery is, among others, conducted by small-scale inshore fishermen who are fishing to ensure their livelihood.
In Denmark, fisheries management is based on the framework outlined in the EU. It is then the National government's task to manage fisheries within this framework. Management in Denmark has contribute to a state, where fishermen in small-scale inshore fishery are leaving, and the small harbours are closing. To support the fishery, this thesis outlines the challenges fishermen from the coastal communities Bagenkop and Spodsbjerg identify, the scenarios that can be synthesised based on the challenges, and finally, which interventions could be implemented to support continued fishery. The main challenge the fishermen in Bagenkop identified is the potential ban on trawl as fishing gear because it would mean they are not allowed to fish near their homes. In Spodsbjerg, the primary challenge is predators destroying catches and a lacking collection and transport of the fish to the fish auctions. To accommodate these challenges, the government must re-evaluate the design of the ban on trawl, support the infrastructure monetarily, and look into opportunities to regulate predators.

Resumé

Fiskeriet har potentiale til at blive en af de mest bæredygtig måder at skaffe proteinholdige fødevare på. Overalt i verden fiskes der fra små faretøjer fra kysten, hvor kystfiskere forsøger at opretholde deres levevilkår gennem fiskeri.

I dette speciale undersøges hvad der skal til for at fiskeriet i små kystsamfund kan fortsætte med at eksistere, med særligt fokus på to samfund på den danske ø Langeland. De undersøgte samfund er Bagenkop og Spodsbjerg. Fiskeri i Danmark er underlagt direktiver fra EU, hvor EU kort fortalt, fastsætter rammen for fiskeriets forvaltning, mens det er op til de enkelte medlemslande at forvalte deres nationale fiskeri inden for den ramme. Forvaltningen af fiskeriet har medvirket til at kystfiskere i små kystsamfund står i en svær situation hvor de grundet nedskæring og koncentrering af kvoter overvejer at forlade fiskeriet. Dette kan komme til at betyde at fiskeriet forsvinder fra de kystsamfund, som dets eksistens bidrager til. For at undersøge hvordan fiskeriet kan bibeholdes er man nødt til at forstå de udfordringer fiskere står overfor, og hvordan fiskere opfatter disse. Det er dog nødvendigt først at forstå hvem kystfiskerne er og det samfund hvorfra de fisker.

For at forstå hvem de respektive fiskere er og deres motiver, kategoriseres de i forhold til forskellige life-modes, samt deres udtalelser holdes op imod faktorer som henholdvis skubber og trækker dem ud af fiskeriet. Udover en kategorisering af fiskerne, analyseres de samfund som de befinder sig i. Kystsamfundene analyseres i forhold til deres afhængighed af fiskeriet og hvordan udvikling i fiskeriet kan påvirke hele samfundet. For at kortlægge de udfordringer kystfiskere står overfor gennemføres interviews med fiskere, og baseret på disse interviews syntetiseres scenarier. Scenarierne præsenterer de mulige rammer som eksisterer i fremtidens fiskeri, og danner baggrunden for nye interviews og samtaler. Ved disse interviews og samtaler diskuteres de forskellige rammer som fremtiden kunne bringe, med det formål at finde ud af hvilke ændringer, som har størst indflydelse på fiskerne og hvordan man kan imødegå disse, så fiskeriet kan bibeholdes i kystsamfundene. Udover interviews og samtaler gennemføres deltagende observationer med det formål at identificere og forstå de udfordringer som fiskerne ikke nødvendigvis tænker over under interviewsene.

Analyserne viser at de fiskere som fisker fra Bagenkop, er selvstændige og har fiskeriet som hovederhverv, mens fiskerne fra Spodsbjerg primært har ansættelse andetsteds, og har fiskeriet som bi-erhverv. Dog bruger fiskerne i Bagenkop det meste af året i Kattegat, mens fiskerne i Spodsbjerg

sejler ud fra Spodsbjerg på daglig basis. Det indikeres dermed at samfundenes afhængighed af fiskeriet er forskellig. Bagenkop har integreret fiskeriet som en del af den fortælling de præsenterer om deres by og bruger det til at tiltrække turister gennem arrangementer og events. Samfundet i Spodsbjerg udviser ikke den samme form for afhængighed, da fiskeriet i højere grad kun eksistere for fiskerne selv, og dem som har en relation til fiskerne. Udfordringerne hos fiskerne i de to samfund er også forskellige, idet de fisker med forskellige typer grej. I Bagenkop hvor de fisker med trawl, er det særligt det potentielle forbud mod brugen af trawl i Bælt Havet som er bekymrende, samt de kameraer de har om bord, som bruges til at overvåge fiskerne. I Spodsbjerg hvor fiskerne fisker med garn, er det særligt de eksterne påvirkninger, såsom rovdyr, der ødelægger deres fangster, og værdien af den forholdsvis lille mængde fisk de fanger, som bekymre. Fiskerne i begge samfund udpeger lave kvoter og lukkeperioder, uden monetær kompensations som nogle af de udfordringer som gør det svært for dem at leve af fiskeriet. Især når forvaltningen gennemføres på et årligt niveau, hvor fiskerne ikke kan vide sig sikre på om det ændre sig og i så fald hvornår.

For at imødegå disse udfordringer efterspørger fiskerne i Bagenkop at det potentielle trawl forbud genovervejes, og at man overvejer muligheden for at implementere en anden udformning af forbuddet. Hvis de store trawlere skulle forsvinde fra Bagenkop vil det desuden betyde at ishuset og afhentningen af fisk ikke ville være sikker, dermed skulle dette sikres gennem offentlig tildelte midler. Afhentningen af fisk er også en problematik i Spodsbjerg, hvor midler også kunne gavne. Havnen i Spodsbjerg er privat ejet og derfor har bestyrelsen længe søgt midler til diverse projekter i forbindelse med vedligehold af havnen, derudover efterspørger fiskerne i Spodsbjerg midler til at kunne forbedre deres både. Begge dele kunne imødegås ved at etablere en fond specifikt rettet mod kystfiskere, som fisker med garn. Ifølge fiskerne er det dog ligemeget hvilke initiativer der implementeres, hvis torskekvoterne holdes på det niveau de er nu, fordi de lave kvoter gør at der ikke er nogen rimelig omsætning i fiskeriet. Det ville dog være muligt at sikre en bedre omsætning for garnfiskerne på Langeland ved at undersøge mulighederne for at tildele dem en større andel af søtunger end de for nuværende har adgang til. Et forslag som både kunne sikre bedre vilkår for bestanden og potentielt flere fisk ville være at genindføre lukkeperioden i fiskenes rognperiode. Dog ville dette også kræve at fiskerne i mellemtiden bliver tildelt offentlige midler således at de stadig har en indkomst mens de ligger til kajs. Hvis ikke der skulle tildeles offentlige midler direkte til fiskerne, kunne man regulere de rovdyr som ødelægger fiskernes fangster. Hvis regulering af rovdyr viste sig at forbedre vilkårene for bestandene er der et potentiale for højere kvoter.

Preface

This Master Thesis is written by a student from the master's program Environmental Management and Sustainability Science at Aalborg University. The report was written during the fourth semester, which focuses on the 'Master's Thesis' - for this thesis, the research subject is fishery in coastal communities, and hit can be ensured. The research was carried out in the period 1 of February 2023 to 2 of June 2023.

Structural setting of the thesis

Unless otherwise stated in the captions underneath, the tables and figures in this thesis are of the author's production. Interviews are conducted throughout the research, and quotations from these will be used throughout the thesis. The quotations are based on transcriptions made of the interviews. The interviews were carried out in Danish, so the author has translated quotes in the following thesis. The transcriptions are accessible as attachments in an external appendix.

Acknowledgements

Thanks to curator Jeppe Jøhn Hørsholm at the Centre for local history on Langeland for immeasurable help regarding local knowledge development, material and contacts. Extended thanks are given to the participants who have contributed with insights and willingness to answer the posed questions. Without these, the research would not have reached the same level.

A special thanks are given to Troels. J. Hegland for letting the author of this thesis conduct this specific research. The supervision received during this research let the author dive into a subject area not accessible to everyone. In addition, Hegland has functioned as a sparring partner, contributing with vital considerations and knowledge.

Abbreviations

CFP	Common Fisheries Policy
EU	European Union
FAO	The Food and Agriculture Organization of the United Nations
ITQs	Individual Transferable Quotas
MPA	Marine Protected Area
MSY	Maximum Sustainable Yield
TAC	Total Allowable Catch

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Fishing from coastal communities in Denmark 1

1.1 Introduction

The first sight you see after hours of driving when you reach the last bridge is an isle that seems to stretch its land as far south and north as the eye can see. If you keep following the road straight ahead, you will reach a ferry terminal that can take you across the Strait of Langeland. Here, you also find yourself next to what is left of the industrial harbour in the small community of Spodsbjerg. Some activities are still ongoing, but not nearly with the same volume as ten years ago (The Danish Fisheries Agency, 2023c). Had you, instead of driving straight, turned right at the second intersection and continued the journey for another 30 minutes, a similar sight lay before you — this time in another small community named Bagenkop. The ferry to Germany has long since stopped sailing, and now the fishermen are the only people left of business in the harbour. The activity level in Bagenkop is slightly higher than in Spodsbjerg. Still, the development in the fisheries sector has also taken its toll here, with a declining number of outgoing vessels (The Danish Fisheries Agency, 2023c). As an adult, I find myself in a position where I understand how the island I once called my home is slowly dying. I believe that even though the policies in fisheries management intend to solve real problems, it has played a role, and maybe we need to carefully consider future management if we want to maintain fisheries in places such as Langeland. Many of the communities on Langeland are close to the coast because of the island's shape, which has made the fishery an important trade on the island. Now, the two mentioned coastal communities are the only ones with active fishing. In the two communities, one of the largest industries on Langeland is now only a shadow of what it once was. Most fishermen have found other employment or left the small community, and newcomers trying to make their living soon find themselves having to give up, even though the fishery is a trade that has been a family trade for generations. I have travelled to the Isle of Langeland to investigate what challenges and possibilities the local fishermen see in their future and how these are affected by the drastic quota cuts, economic support for vessel scrapping, and the proposed total ban on trawl fishing in the entire Belt Sea, which the Strait of Langeland is a part of.

1.2 Fish and fishing

To grasp what has happened on Langeland and explore possible scenarios for the future, it is initially necessary to broaden the perspective. A place to start could be establishing an overall understanding of the marine ecosystem and then move on to fish and fisheries.

1.2.1 The marine ecosystem

The marine ecosystem comprises all living and non-living components in the ocean. The components exist in a web of connected links, which includes animals, microorganisms, and plants that live in and around the ocean. The physical and chemical components of the water and seabed are also a part of the web that constitutes the ecosystem. The components are linked to each other by how they impact and are impacted by one another. The chemical compound of the ocean is also essential because it determines what animals, microorganisms, and plants can live in specific sites. Changes in, especially, salinity and temperature can create a shift in animals, microorganisms, and plants. Furthermore, is the marine ecosystem vital in, e.g. regulating Earth's climate and providing food and resources for humans (National Geographic Society, 2022; Boudreau et al., 2023).

The marine ecosystem is vulnerable and can be impacted by external factors. The ecosystem can be affected by humankind's direct inputs and take-outs, such as wastewater discharge, runoff water from agriculture, ship traffic, and fishing. Additionally, the system is impacted by global climate change, where the water is heating, acidifying, and deoxygenating. Over time, the impacts have developed from possible to likely, turning them into threats. This conclusion is reached based on the continued decline of fish stocks, which is considered a symptom of collapse of the entire system. Understanding how the ecosystem functions and how interactions between links affect the whole system has led to rising considerations of the ocean as a holistic ecosystem. Followed by an increasing interest in managing, among others, how fishing activities are conducted, and not only the caught amount of fish, in an effort to ensure that the impacts on the ecosystem are minimal. Management considerations are elaborated in Section 1.3 (Holm, 2022; Boudreau et al., 2023).

1.2.2 Fish

As a part of the marine ecosystem, fish are predators and prey; some feed on, e.g. algae and others on smaller fish. Thereby, fish is an important link in the entire food chain that is in the marine ecosystem. Fish depend on the salinity and temperature in specific sites, where changes can make them move (Boudreau et al., 2023). Fish is also a food source for the human population and has,

for that reason, been caught throughout the history of humankind. This has led to a situation where humans, at times, have overfished and caught too much of specific species, sometimes making it nearly impossible for them to replenish. Overfishing threatens the health of fish populations by reducing the reproduction ability, leaving only the smaller fish, and an increased vulnerability to disease and predation (Boudreau et al., 2023).

Following experiences with overfishing of fish entailed a growing need for management, and for management purposes, fish are classified into stocks. To define a fish stock, an authoritative source is the United Nations' Food and Agriculture Organization (FAO), which defines a fish stock as: "*a group of individuals in a species occupying a well defined spatial range independent of other stocks of the same species. Random dispersal and directed migrations due to seasonal or reproductive activity can occur. Such a group can be regarded as an entity for management or assessment purposes*" (FAO Term Portal, 2014). An example could be the Baltic cod stock. The Baltic cod lives in the Baltic Sea, where it, amongst many other species, constitutes a stock in that specific sea area.

1.2.3 Fishing

Activities conducted to catch fish are referred to as fishing. Fishing is by the FAO defined as: "*any activity, other than scientific research conducted by a scientific research vessel, that involves the catching, taking or harvesting of fish; or any attempt to do so; or any activity that can reasonably be expected to result in the catching, taking, or harvesting of fish and any operations at sea in support of it*" (FAO Term Portal, 2014). Briefly, any attempt to catch fish as an angler or as a fisherman trying to make a living, except for science purposes, is fishing. This definition shows that fishing can be conducted using different equipment such as gillnets, seines, trawls, or traps. The equipment used for fishing is typically referred to as gear types (FAO Term Portal, 2014). Fishing gear can be categorised based on its level of activity as either active or passive equipment. The passive equipment is placed in the water and left behind such that the net or trap catches the fish swimming into the equipment. On the other hand, active gear typically tows the nets after the vessel, catching the fish in the water at that time. The active gear can disturb the habitats they are used in, which can be highly consequential for the entire ecosystem (Gislason et al., 2021). Fishing with trawl is, among others, an active gear fishery. Another way to distinguish between different equipment is in terms of its position in the water; some equipment is not necessarily in contact with the bottom, whereas trawl nets are specifically towed on the seafloor (Gislason et al., 2021). To manage the conducted fishing activities, regulations are set on, for example, the amount of fish that may be caught and how it can be caught, cf. Section 1.3.

1.2.4 Fishing communities

Communities have historically often established themselves near the ocean because of the direct access to food resources. In some situations, small-scale inshore fishermen are fishing as a means to provide food for themselves and their families. In others, commercialised situations can stretch to a level where a complex industry is organised around the catches of fish by large, industrialised vessels operating in waters far from their affiliated harbour. For the last mentioned, an infrastructural setup is needed to bring the fish from the ocean to the consumer, principally anywhere in the world. The exact infrastructure exists in different forms. For example, the industry in Denmark typically consists of fishermen going out on vessels to catch fish that they chill onboard. Upon returning to the harbour, the fish are landed, stored, collected, and transported to a fish auction. Here, the fish is sold to wholesalers and companies, which often process the fish further to sell it to consumers in supermarkets. The fish is caught and cooled within a short time span, but the fish is rarely transported to the fish auctions immediately. Regardless of how commercialised the fishing activities are, there can be a social and economic dependency on the activities. Fishing can ensure that the community has food or provide them with job opportunities to secure an income within the fishing industry and supporting industries, which stimulates the local economy. Developing fishing management can impact communities with less access to fishing opportunities, making their livelihood vulnerable (Brookfield et al., 2005). The community can dependent on the fishery because of this fishery's roots here, and have a significant cultural meaning, where many locals identify themselves with fishery due to the significance it has had and have in the community. Many smaller fishing communities are experiencing challenges regarding the fishery since previous overfishing has entailed a declining fish stock, followed by increasingly tight management. Management can impact fishermen's access to the resource in efforts to make fishing sustainable, and management can affect different fishing communities disproportionally depending on how management is designed.

1.2.5 Sustainable fishing

Going back in history, there was a belief that the sea was inexhaustible regarding fish. Thus, the aim of fishing was once to catch as much fish as possible most efficiently. However, due to experiences with declining stocks and a new understanding of fishing activities' impact on the marine ecosystem, sustainable fishing has become an increasing focus, which means regulations are implemented regarding how high an amount of fish may be caught out of a stock, how it is caught, and to some extent where it is caught. According to the FAO, sustainable fishing is achieved when: "*fishing activities do not cause or lead to undesirable changes in the biological and economic*

productivity, biological diversity, or ecosystem structure and functioning from one human generation to the next" (FAO Term Portal, 2014). Thus, sustainable fishing depends on different aspects and the incorporation of different elements. A key example is sustaining biological productivity, in which scientific calculations are performed to determine the Maximum Sustainable Yield (MSY). The MSY is the maximum amount of fish that can be removed from a fish stock without affecting its reproductive capabilities, making it possible to catch the same amount each year.

Another element in the definition is the ecosystem structure, which includes the physical structure of the seafloor and the organisms and plants living there. To sustain the lowest level in the ecosystem structure, research is conducted to determine how different gear types for fishing activities impact, e.g., the seafloor, to better manage the gear types that change the seafloor and its structures, e.g., trawl nets. The definition also highlights economic productivity as an essential element; thus, whatever fishing activity is ongoing, it should be in a state where it can continue, keeping economic productivity at a specific level. An aspect that is often connected to sustainability is not present in this definition: social considerations. Fishing activity should enable people to attain social security by establishing jobs with fair working conditions and reasonable pay. These socioeconomic considerations are equally important in the fishery and are the particular focus of this thesis.

1.3 Fisheries management

On the political stage, collaborations exist between every country in the world through the United Nations to ensure that the agreements they reach are implemented globally and that every citizen is upholding them. For this research, looking into collaboration in the European Union (EU), where Denmark is a member state, is especially relevant. Within the union, fish is generally considered a shared resource, which means that the EU has a central role in managing the resource and takes charge of determining policies.

In the European Union

Management measures and fisheries policies are agreed upon and determined in the union to establish an even playing field where every fisherman plays by the same rules and has equal access. In 1983, when the Common Fisheries Policy (CFP) was ratified, the goal was to make the fishing fleet more effective. Since then, the CFP has developed into a science-based policy to adjust the size of the fleet, the caught amount of fish, how it is caught, and fishing activities' impacts on the marine ecosystem. The focus shifted in the CFP to ensure profitability in the fishery and regeneration of fish stocks, thereby making it sustainable. The focus is widely expressed through the establishment of fishing

quotas. A fish quota determines how much a fisherman is allowed to catch of a specific stock. These quotas are informed by the MSY, which is determined by scientific calculations and consultations, where a Total Allowable Catch (TAC) is determined for selected stocks - specific species in a particular sea area. This system is known as the TAC system. Under the TAC system, the total allowable catch for commercially important EU fish stocks is allocated between the member states annually based on the historical right known as relative stability. Thus, Denmark receives an amount of how much, e.g. Baltic cod, the national fishing fleet may catch within a year (Høst, 2014; Andersen and Ståhl, 2017). Since the TAC system was introduced, the total allowable amount of caught fish has declined because scientific calculations show that the world's fish stocks have declined, resulting in a scientific advisory to minimise the TAC for the stocks. As a result, some stocks have reached a reasonably stable level, while others, e.g. the Baltic cod, are still declining.

The TAC system is one of three elements in the CFP's conservation pillar. The second is setting national limits for the fleet capacity to ensure that the fleets cannot catch more than the stocks can persevere and remain biologically reproductive. Thirdly, the CFP determines some technical measures regarding how fishing activities should be conducted. Such measures include fixed mesh sizes and panels in the nets to ensure selectivity, rules for by-catches, and closing periods for fishing (Andersen and Ståhl, 2017). A newer example is the landing obligation, where it is required that every fish a fisherman catches, which they own quota for, should be broad to landing in the harbour.

The newest policy from the EU, which can impact fishery, is actually not a fisheries policy but an environmental policy. Due to a raised awareness of the ecosystem as a holistic system, environmental and fishery policies need to overlap. The new environmental policy focuses on biodiversity as a term for securing the health of humans and ecosystems. To ensure conservation and growth in biodiversity, the EU Biodiversity Strategy for 2030 by The European Commission (2020) focuses on protected areas and states, among others, that by 2030, 30% of the sea within the EU should be protected, and 1/3 of that, equating to 10%, should be strictly protected. In the protected areas, management is required to uphold specific standards. An example of such an area could be Natura 2000, where it is demanded that the environment is managed according to nature and not against it. Marine environments can be managed and protected through marine protected areas (MPAs). In these areas, fishing can be prohibited (strictly protected) or limited, depending on the equipment used on the vessels (protected). For example, The European Commission recommends banning trawls for strictly protected areas because of the high impact the equipment causes (The European Commission, 2023).

In Denmark

As a member state of the EU, Danish national policy must ratify the directives and policies outlined in the union. In terms of fisheries policy, shortly put, the EU is in charge of setting the framework for how much fish is caught and how fishing is conducted, while it is up to the national government to manage the fishing opportunities hereunder (Hegland, 2020). In Denmark, it was politically chosen to distribute the allocated TACs from the EU by establishing a system of individual transferable quotas (ITQs). The ITQs were determined based on the fishing vessel's history of catches and made it possible for fishermen to sell, buy, rent, and lease quotas from each other (Høst, 2014). The ITQs aimed to concentrate quotas on fewer hands by taking the least efficient vessel out of commission. Thereby ensuring better profitability for the remaining fishermen. Of course, within certain rules to avoid excessive quota concentration (Andersen and Ståhl, 2017). It is the Danish Fisheries Agency's task to keep taps on the fishermen's catches and sanction them if they do not uphold the regulations.

Some quotas from the allocated TACs were and are still not transferred into the ITQ-system. Instead, they are set aside in a pool for a Danish arrangement for small-scale inshore fishery (Kystfiskerordningen) (Andersen and Ståhl, 2017). Fishermen can choose to have their quotas in this arrangement, where they can acquire additional quotas. The two main requirements to be a part of this arrangement focus on the size of the vessel and the duration of the conducted fishing trips (The Danish Government, 2019). Fishermen can either choose to contribute their quotas for a limited time, making it possible for them to withdraw and sell the quotas outside of the arrangement, or they can bind the quotas in the arrangement, which means that they can only be sold within the arrangement henceforth. The fishermen can achieve additional quotas if the quotas are bound in the arrangement. Another way the fishermen can achieve additional quotas is through the equipment used on the vessel, where passive gear is favoured (The Danish Government, 2019; Nielsen and Nielsen, 2022). Overall the arrangement can give additional quotas if the quotas are bound in the arrangement, and the fishing is conducted with equipment that does not impact the environment, with a specific focus on the seafloor. The requirements and the following achievement of additional quotas show a political will to enhance focus on how fish are caught by nudging fishermen to use equipment that does not have the same impact. Thereby trying to take care of the ecosystem by minimising human activity's impact.

The newest initiative in Danish policy is a proposed total ban on trawl fishing in the Belt Sea. The purposed area is visible in Figure 1.1. This ban is a means to protect the declining Baltic cod stock by protecting the seafloor in the area. The proposal of a total ban on trawl was first established and agreed upon on the premise that there are no significant administrative or economic consequences

for the fishermen fishing in the area. It should have been in effect since 01.01.2023 (The Ministry of Food, Agriculture and Fisheries, 2022). However, the current Danish government chose to annul the ban and postpone any further decisions until the end of 2023, awaiting advice from an expert group, the Fisheries Commission, set up in 2022 to advise on future fisheries management.

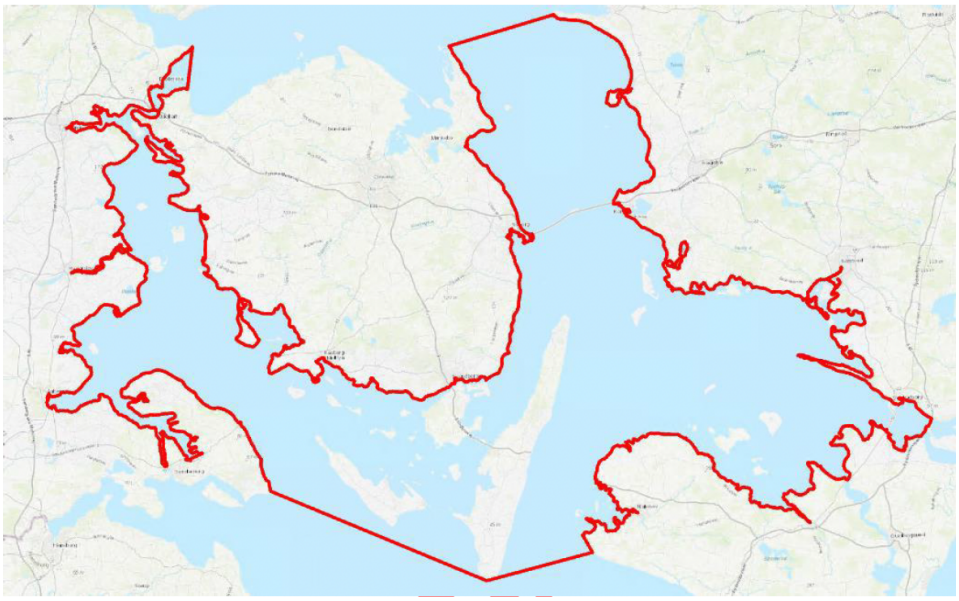


Figure 1.1. Visualisation of the area in which a ban on trawl as fishing is proposed, from (The Ministry of Food, Agriculture and Fisheries, 2022).

1.4 Development in Danish fishery

The shifted focus in and strengthening of fisheries management and policies have led to a descaling development in the Danish fishing fleet. Overall, key numbers such as the number of vessels, the amount of caught fish, and economic turnover, which is visible in figure 1.2, show the development. The oldest available data from The Danish Fisheries Agency (1999) include data from 1990 and 10 years forward.

The data shows that development has not steadily declined since 1990. On the contrary, the fleet increased until it reached a maximum of vessels in 1995. Since then, the descaling of the fishing fleet can be attributed to the ITQs and quota cuts, which have followed the minimisation of the TACs. Consequently, the amount of caught fish has changed alongside the changes in the number of vessels. However, compared on a yearly basis, significant variations in catches are highly influenced by the amount caught for industrial purposes (The Danish Fisheries Agency, 2023c). Despite the descaling, economic turnover has not followed the same rate.

In 1990 the Danish fishery had a turnover of 6.41 billion[1], in 1995 it was 5.04 billion[2], while it in 2022 was 2.97 billion (The Danish Fisheries Agency, 1999, 2023c). The numbers show a somewhat stable decrease, and even though the fleet was at its highest in 1995, it did not have the highest economic turnover. Overall, the Danish fishing fleet has decreased by 35%, catching 69% less fish, and lost 46 % of its value between 1990 and 2022.

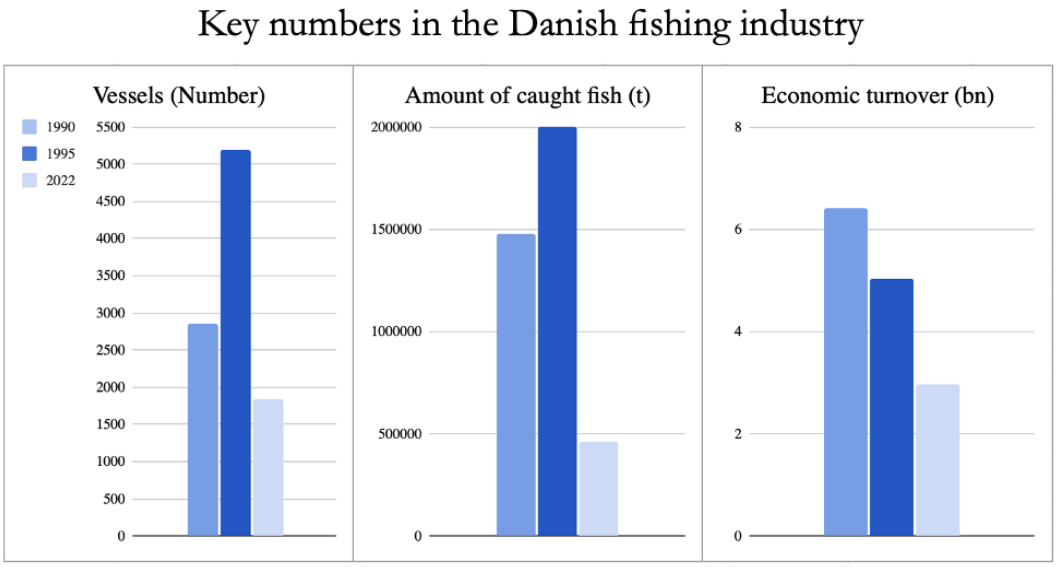


Figure 1.2. Key numbers from the Danish fishing industry during the development between 1990 and 2022 (The Danish Fisheries Agency, 1999, 2023c).

The crucial detail to remember is the fact that descaling has mostly occurred in the small-scale inshore fishing industry, where many fishermen chose to stop fishing. It is possible that fishery was not economically feasible for the fishermen before the ITQs, and introducing the saleable ITQs gave them a way out without financial ruin. However, it is also possible that it was not economically feasible for them to continue fishing because they could not make a living based on the quotas they were given after the introduction of the ITQs. When these quotas were sold, they were typically sold to fishermen in larger harbours with higher purchasing power. This meant a concentration of quotas in the larger harbours, which had the side-effect of fisheries closing in many small harbours. In the time since, the quotas have been cut, following the minimisation in the TACs, so now fishermen are considering stopping. Additionally, with help from the EU, the Danish government provides economic support to those who want to scrap their vessels. This meant that fish quotas were sold

[1]Due to inflation the value from 1990 needs to be multiplied by 1.8, the original value was 3.48 billion (Danmarks Statistisk, 2023; The Danish Fisheries Agency, 1999).

[2]Due to inflation the value from 1995 needs to be multiplied by 1.6, the original value was 3.02 billion (Danmarks Statistisk, 2023; The Danish Fisheries Agency, 1999).

out of the small coastal communities and concentrated in the larger harbours, where decreasing fishery has followed in the small harbours around the country (Høst, 2014).

The increasing focus on sustainable fishing alongside the perception of the marine ecosystem as a holistic system, where fish is a component, has increased the focus on how fish are caught. How fish is caught should not impact the ecosystem, which put pressure on the fishermen who fish with trawl because of how the equipment affects the seafloor. Additionally, fishermen have for a long time been very alone in the competition of who can use and have access to the space in the ocean and on the sea. Still, other players, like offshore wind turbines, are now making an entrance. The area might be furthermore limited to fishermen due to the plans of protection agreed upon in the EU.

The development can be summarised in the following bullets:

- Quota cuts
- Quota concentration
- Closing of small harbours
- Pressure on trawl as equipment
- Other players operating on the sea

Based on these bullets, it is clear that the initial quota cuts have entailed a concentration of quotas in the big harbours, closing the small harbours, which has left small-scale inshore fishery in a fragile state. The rising awareness of holistic ecosystem perspectives is now pressuring the remaining fishermen, particularly those who use trawl as fishing gear. Meanwhile, other players are entering the sea, laying claim on specific sites, which might impact smaller vessels that fish with passive gears and have a limited operating range.

1.5 Research question & research design

The cuts and concentration of quotas have put small-scale inshore fisheries in a fragile state, where fishermen are considering whether they should hope for the best and keep fishing as it is, convert their vessels to another type of gear, or abandon fishing altogether. Langeland is an interesting place in this matter because the fishery has been one of the biggest industries on the island, and the island is placed in the Belt Sea, where a proposed total ban on trawl is debated. Therefore, investigating the two communities, Bagenkop and Spodsbjerg, is exceptionally interesting because the fishermen in Bagenkop fish with trawl, while the fishermen in Spodsbjerg fish with gillnets. The lack of focus on the socioeconomic element in the fishery is the focus of this report, and based on this, the research question and related sub-questions are presented.

How can fisheries in small coastal communities continue to exist?

1. Which challenges are present in fisheries, and how do fishermen perceive them?
2. Which scenarios can be established based on the identified challenges?
3. Which means of intervention can be identified to support continued fishing from coastal communities?

These questions are formulated to structure the research, and the research design is presented in Figure 1.3.

Figure 1.3 shows the overall approach to this research. The research design is divided into the conceptual framework on the left and the methodological framework on the right to answer the research question. The methodological framework presents the cases used for the research and the overall scenario planning method. In scenario planning, different data collection methods are used. These are founded on fishermen's knowledge, where semi-structured interviews and participatory observations are conducted. The methodological framework is further elaborated in Section 3.1. The conceptual framework presents the theories and concepts supporting the analysis. The theories which constitute the conceptual framework relates to fisheries-dependent communities, fishermen's identity, and push/pull factors that affect fishermen. The conceptual framework and the theories are further elaborated in Section 3.2.

To answer the research question, an understanding of the coastal communities on Langeland is necessary. Therefore is, a background analysis conducted, where the cases are analysed in the context of fisheries-dependent communities, and characterisations of the fishermen are made. This research is divided into three sub-questions, where the overall method to answer them is scenario planning. To answer SQ1, semi-structured interviews and participatory observations are conducted. The statements from the semi-structured interviews and impressions from the participatory observations are analysed in the context of the push/pull factors which affect them, with the aim of synthesising scenarios for the future. The scenarios answer SQ2. The results of the first analysis will lay the foundation for answering SQ3 because the challenges identified and the perception of these are used to synthesis scenarios for the future. Therefore, group interviews are conducted hereafter to determine the necessary means of interventions according to the different scenarios. Lastly, the overall research question is answered by concluding on the results of the analysis.

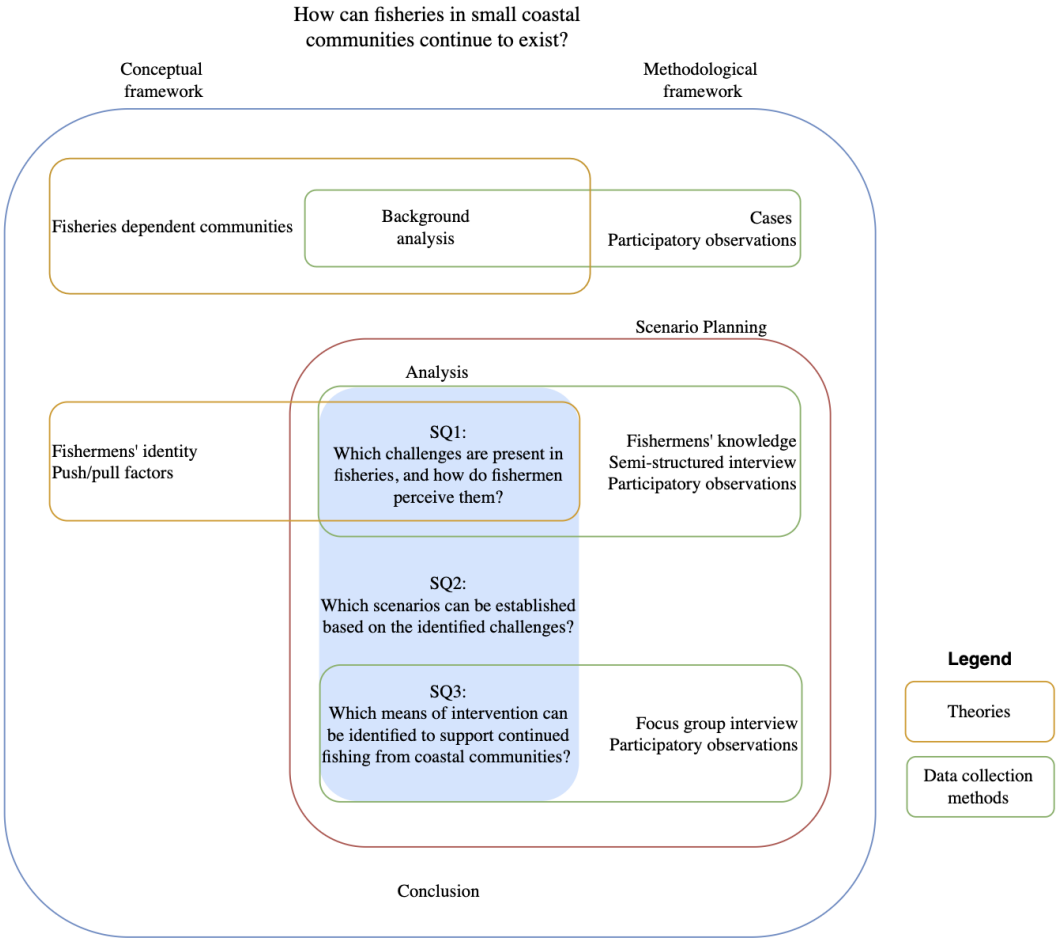


Figure 1.3. Research design for this thesis. Divided into the conceptual framework on the left, the methodological framework on the right, and the overall approach to the research in the middle. The legend on the right illustrates that specific theories and data collection methods are framed with their respective colour.

Coastal communities on Langeland 2

For this research, the two coastal communities Bagenkop and Spodsbjerg on Langeland are chosen because the fishery is still a vital trade here. Furthermore, the fishery can in these two communities be impacted by changes in fisheries management, hereunder the proposed total ban on trawl in the Belt Sea. In the following is a description of Bagenkop and Spodsbjerg as communities with fishery.

2.1 Case descriptions

The introduction in Chapter 1 outlines the factors that have influenced fishery development on Langeland and brought about the current situation. Langeland is visible in Figure 2.1, and is the largest island in the Sydfynske Øhav, with its 284 km^2 (VisitLangeland, 2023). The island has a 152 km coastline, always placing people near the ocean. Therefore fishing has always been an important trade on the island and one of the biggest industries.

In 2013, the fishery on Langeland had a landing value of 22.656.000 DKK in the two communities, Bagenkop and Spodsbjerg, where fishing is still a trade. Fish was landed for 15.081.000 DKK and 6.204.000 DKK[1], respectively. In 2022, these numbers were 9.736.000 DKK and 5.689.000 DKK, amounting to a total value of 15.425.000 DKK (The Danish Fisheries Agency, 2023a). The declining landing value in the two harbours shows a declining fisheries industry. Spodsbjerg is located in the middle on the island's eastern side, while Bagenkop is the city most to the south, placing it almost at the southern tip.

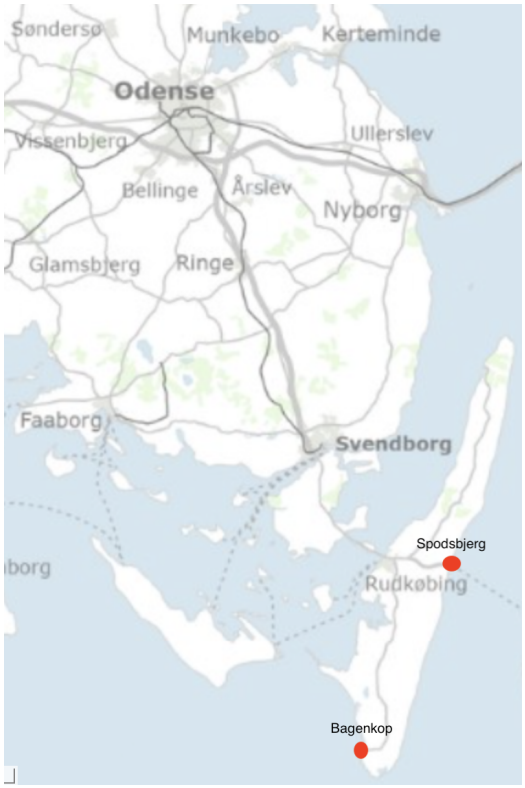


Figure 2.1. Map of Langeland with red dots showing Bagenkop and Spodsbjerg, edited from SDFI (2023).

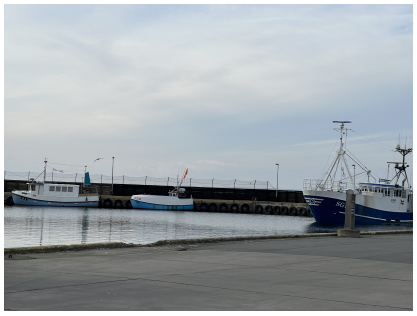
[1]Due to inflation, the value from 2013 needs to be multiplied by 1.2, the original value was 13.710.000 and 5.170.000 (Danmarks Statistisk, 2023; The Danish Fisheries Agency, 2023a).

2.1.1 Bagenkop

The south-going road on Langeland ends at the harbour in Bagenkop. Bagenkop is a town with a population of 483 people (Danmarks Statistik, 2023). The main road goes out in many small side streets, which are either blind or lead to bigger roads, and eventually back to the main road. The main road and the small side streets in Bagenkop are filled with occupied houses on both sides of the street and some closed residential areas. The community has a supermarket, a sports centre with fitness, a fish shop, and an inn. In addition, there is a restaurant and an ice cream store at the harbour, which are open over the spring and summer seasons. There is a sense of community here with life during the day, where people make rounds at the harbour, and tourists visit the place (Own observations). Tourists also have the opportunity to see the *Fiskeriets Hus*, which is an exhibition of fisheries history in Bagenkop run by volunteers (Bagenkop-Info, 2023). Volunteers are vital in the community because they are behind, e.g. the planning and execution of activities such as the local harbour festivity. Volunteers were also behind the establishment of *Ildsjæle Fodsporet*, a trail leading through the community, where nature and history can be explored. Currently, volunteers are behind the planning and application of funding for establishing a community park. Public buses leave from here once per hour. The nearest public school is in Humble, 11.4 kilometres north. The school bus starts in Bagenkop in the morning and goes there twice in the afternoon.

Fishing in Bagenkop is conducted with trawl and has been so for the last four generations (Interview with Theodorsen). A map and pictures of the harbour are visible in Figure 2.2. It is possible for vessels to moor alongside quays and land their fish. A private man operates the refrigerated storehouse, where the fish is collected twice a week (Interview with Kølle). The storehouse has been in operation since the 60s, and Bagenkop has had a lighthouse and a filleting plant over the years, which alongside the storehouse, was a part of the infrastructure surrounding fishery in the town (Informal conversation with Egmose). The harbour is divided into an industrial harbour and a marina. In 1967, there were 75 vessels in the industrial harbour; in 2022, there were 21 vessels (Informal conversation with Egmose),(The Danish Fisheries Agency, 2023b). The filleting plant has closed, and only the refrigerated storehouse is left. It has been possible to maintain the opening of the storehouse because of the 5-6 vessels which go out from there daily (Informal conversation with Egmose).

(a) Map of Bagenkop harbour (SDFI, 2023). With markings of the marina and the industrial harbour.



(b) The industrial harbour on the left. Seen from the pier in the middle of the industrial harbour.

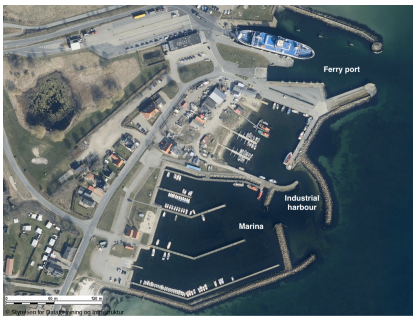
(c) The industrial harbour on the right. Seen from the pier in the middle of the industrial harbour.

Figure 2.2. Map and pictures from Bagenkop harbour

2.1.2 Spodsbjerg

The east-going road goes to the ferry terminal on the Langeland's east side. The ferry terminal is just north of Spodsbjerg. Spodsbjerg is a town with a population of fewer than 200 people Danmarks Statistik (2023). The main road through the community goes south from the ferry terminal, with houses on both sides, most occupied but some for sale. There are a few side streets and one closed residential area. The community has been in a transition stage where the former supermarket closed and is only reopening due to volunteers, who have renovated the buildings, making it possible for a new distributor to take over. Additionally, the community has a camping area with a grill near the marina and a fish shop with a combined restaurant on the harbour. However, the fish shop is only open full-time for the spring and summer seasons. There is not much life during the day. A few people make rounds at the harbour, and some older adults meet in the fishing houses and at the ferry terminal to talk (Own observations). The nearest public school is in Rudkøbing, 7.1 kilometres west. The school bus goes through the town once in the morning and twice in the afternoon. There are no public bus to or from Spodsbjerg.

Fishing in Spodsbjerg is conducted with gill nets, which has always been the way in Spodsbjerg (Interview with Nielsen). A map and pictures are visible in Figure 2.3. Vessels can moor alongside quays and land their fish. The refrigerated storehouse is run by the harbour itself, and is partly the responsibility of the fishermen. The harbour is divided into an industrial harbour, with the ferry port and the quays for the fishing vessel on one side, while the marina is further south. In 2022, 19 boats were registered in the harbour, and 3-4 are fishermen (Interview with Petersen),(The Danish Fisheries Agency, 2023b). Some fishermen go out daily, but most have fishing as a subsidiary occupation.



(a) Map of Spodsbjerg harbour (SDFI, 2023). With the ferry port, industrial harbour and marina.

(b) The industrial harbour on the left side. Seen from the pier between the ferry port and the industrial habour.

(c) The industrial harbour on the right side. Seen from the pier between the industrial harbour and the marina.

Figure 2.3. Map and pictures from Spodsbjerg harbour

Reflections on choice of case

I was born and raised on Langeland and have followed the development in fishery firsthand. Therefore, selecting two cases from the island is ideal because I have close ties to the communities and could have a more accessible entrance to the needed interviews. My close relationship with the communities affects my position as a researcher. Positionality is defined by a researcher's view of the world, their position during research, and the context in which the researcher understands the research (Holmes, 2020). Establishing this awareness is essential because it can affect the conclusions without my intent. To establish my positionality Holmes (2020) recommends that the researcher locate themselves about the subject, the participants, and the research's context and processes. I can not take a purely objective position towards the communities because I define myself as a part of them. The people I interview I acknowledge as my friends and family. Additionally, the context in which these communities exist is also where I have lived, making me uniquely qualified to conduct this research. Altogether it means that these communities are a special place to me. Still, the research is completed with a conceptual framework based on theories to understand the fishermen, following a specific methodology to remain objective.

The situation of a changing fishery is not exceptional for Bagenkop and Spodsbjerg, many small coastal communities are experiencing the same development. Therefore, this research's results can contribute to support fishery in other coastal communities as well. Furthermore, the development and changes in fishery had consequences in local communities, where various changes also led to a shift in culture and economics. Therefore, to understand fishery in these communities, it is relevant to research how dependent the communities are on fishing, the challenges the fishermen experience, and how they can be accommodated.

Research design 3

In this chapter is the reseach design for this thesis presented. It was initially introduced in Section 1.5. In this chapter, the methodological and conceptual framework is elaborated. This research is conducted with an abductive approach, using data to elaborate and understand specific situations to generate new ideas. The two frameworks present the epistemological outlook on the data collected in this research and explain how analysing the data will answer the posed research and sub-research questions. The methodological framework presents the methodological approach to scenario planning, where semi-structured and focus group interviews and participatory observations are conducted. These are founded on the concept of fishermen's knowledge. The conceptual framework presents the theories, and an in-depth outline of fishery-dependent communities is made alongside theories of life-modes among fishermen and the push and pull factors that affect them. Each section contains critical reflections, but only regarding the various methods and theories.

3.1 Methodological framework

The methodological framework introduces and explores the overall method of scenario planning. The data collection methods, semi-structured interviews, and participatory observation used to conduct the two initial steps of scenario planning are also outlined. Furthermore, focus group interview as an approach to conduct the third step of scenario planning, is presented.

3.1.1 Scenario Planning

Scenario planning is an advanced method used since the Second World War when it was introduced in the military (National Park Service, 2013). Scenario planning aims to identify uncertainties and determine different management options according to specific setting out of multiple future settings. Three to four scenarios are established to explain the uncertain settings by following the method. Then, based on these scenarios, different management options are explored, allowing managers to know which strategies are favourable in the given future setting. According to National Park Service (2013): "*managers often use scenarios to inform decision-making in uncontrollable*

situations characterised by uncertainty". Managers can establish scenarios and know how to handle different future settings because they have anticipated each one. It is then possible for managers to handle every set of settings because possible management measures have already been considered. The methodology is somewhat streamlined, but many projects adjust the process during a project. Researchers who recommend and encourage the use of the method also appreciate the ability to adapt the process (Frens and Morrison, 2020). Scenario planning is not an attempt to predict the future. The goal of the scenarios is to anticipate future settings and establish management opportunities for these settings. It is also a means of adjusting for small changes in a more extensive system, which scientific and mathematical models may not be capable of. Additionally, models based on natural sciences may not consider anomalies (Frens and Morrison, 2020).

Scenario planning is a collaborative process in which stakeholder inputs are considered and incorporated. The participatory process allows for a greater understanding of uncertainties because different stakeholders present them. By including stakeholders in the process, a higher level of trust can emerge and inspire co-determination, making the stakeholder more accepting of changes in their daily lives (Frens and Morrison, 2020). Applying scenario planning to this research is a means to identify and understand the challenges fishermen face in coastal communities. Based on the identified challenges, scenarios can be synthesised to understand the differences in the future fishermen face, and the potential future settings can be discussed with the fishermen. By examining the possible future settings with the fishermen, interventions to support continued fishery in the communities can be identified, which is the aim of this thesis. Furthermore, approaching the fishermen through this method gives way to establishing a relationship of mutual respect and ensuring that the fishermen feel acknowledged. However, it can be challenging to follow the method in arranging meetings with the fishermen because fishermen have a more fluent schedule and prioritise fishing.

For this research, the scenario planning method follows the method outlined in National Park Service (2013), presenting a five-step scenario-building process. These steps are Orientation, Exploration, Synthesis, Application, and Monitoring. A visualisation is presented in Figure 3.1. The scenario planning process for this research is based on the first three steps. The focus on the first three steps of scenario planning was decided because it is impossible to conduct the Application and Monitoring steps. However, it is possible to present the results to decision-makers, hoping they will consider them in future decisions. The methods to collect data and complete these steps are semi-structured and focus group interviews, alongside participatory observations. The methods of data collection are elaborated in Subsection 3.1.2.

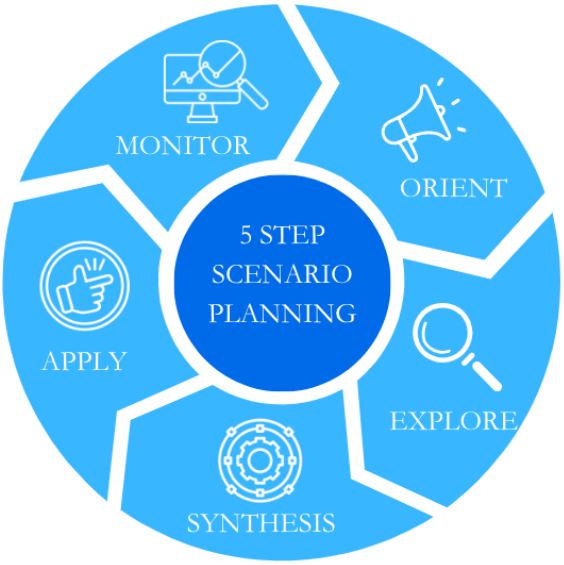


Figure 3.1. The 5 steps of the scenario planning process.

3.1.1.1 Steps of the scenario planning

The Orientation step aims to understand the purpose of the planning and draft a question that the planning aims to answer. Additionally, are potential participants contacted (National Park Service, 2013). Scenario planning in this research aims to designate means of interventions that could support fishery in coastal communities, thereby answering sub-question 3. The answers to this question and the other sub-questions contribute to answering the overall research question, which aims to support fishery in coastal communities prospectively. Fishermen in Bagenkop and Spodsbjerg are potential participants, and they are contacted directly, either face-to-face or by phone.

In the step of Exploration, the aim is to identify critical forces and potential impacts and engage with the stakeholders. This research investigates the critical forces and potential impacts as the challenges fishermen experience. To engage with the stakeholder, different methods of data collection are utilised, hereunder semi-structured interviews. Participatory observations are also conducted to understand the settings in which fishermen operate. The aim of conducting semi-structured interviews with the fishermen is to analyse and understand their statements regarding the challenges they face. The identified challenges are used to synthesise the scenarios in the third step, Synthesis. The analysis and synthesis are conducted in Chapter 5.

The scenarios are created in the Synthesis step based on the results from the Exploration step. The goal of this step is to produce three to five possible scenarios that, according to National Park Service (2013) are: "*possible, relevant, challenging and divergent, (and can be used to) inform, inspire and test action or strategies*". To create the scenarios, the 2x2 Scenario Matrix Framework is utilised.

2x2 Scenario Matrix Framework

Establishing scenarios by the 2x2 Matrix Framework starts by choosing three to five, in this instance, challenges, which can outline deviating settings for the future. An intersection with an x- and y-axis can be created by crossing two of the challenges. The intersection between the two challenges creates four quadrants, each representing a scenario, with possible settings for the future (National Park Service, 2013). This can be done at a workshop with the participants, but for this research, the scenarios were created by the author and presented to the participating fishermen, in an effort to analyse their reactions so that possible interventions can be identified. The scenarios were presented to the fishermen at focus group interviews. Scenario planning is supposed to include a variety of stakeholders, but for this research, the focus is on a specific stakeholder, the small-scale inshore fishermen on Langeland. This research aims to highlight the challenges they face and how these can be accommodated. It is, nonetheless, essential to compare with what other stakeholders are expressing and what is possible to accomplish.

3.1.2 Methods of data collection

There is an undeniable notion regarding the knowledge people have about a specific subject and how it is often related to their education, occupation, and interests. This is especially concerning very specific fields, such as fishery and agriculture, where fishermen and farmers have knowledge that outsiders or newcomers do not easily obtain regarding this field of work. According to Ames (2003), fishermen's knowledge can be an important source of ecological information. Fishermen can contribute to fishing management by providing vital knowledge of distribution, behaviour, species assemblages, and abundance. Obtaining and including this knowledge in fisheries management could enlighten opportunities that would otherwise have been overlooked. In addition to the traditional ecological knowledge, fishermen's involvement can contribute to a participatory management strategy. Active engagement of the stakeholder who might have the most to lose can make the management, regulations, and strategies easier to implement, because a respected partnership is established. In doing so, the involved stakeholders are engaged and feel heard (Harrin, 2020). For these reasons, engaging in conversations with the fishermen is essential, and the following data collection methods were chosen.

3.1.2.1 Interviews

To obtain the aforementioned fishermen's knowledge and gain a comprehensive understanding of the challenges fishermen acknowledge, fishermen are interviewed in Bagenkop and Spodsbjerg. The interviews are a vital part of this research's data collection and are the method for the Orientation and Exploration steps of scenario planning. Furthermore, focus group interviews are conducted to identify means of intervention to support fishery on Langeland. The synthesised scenarios are discussed at the focus group interviews. Interviews are the most widespread method in social sciences, aiming to gain knowledge regarding people's experiences, attitudes, and backgrounds. It is a tool to understand our fellow human beings, and is in that case subjective. Subjectivity is an important aspect of interviews because the interviewer can gain a nuanced picture of the subject. Interviews are a comprehensive task in which the work leading to, during, and after takes time (Brinkmann and Tanggard, 2015).

Semi-structured interviews

The initial interviews for this research are semi-structured interviews conducted using an interview guide. The questions in the interview guide are based on different themes, especially aimed at fisheries. The flexibility of the semi-structured interview gives way to new questions and answers that the interviewer had not prepared or expected beforehand. It also provides an opportunity for the interviewer to ask follow-up questions, which gives the interviewee the opportunity to elaborate on certain matters (Brinkmann and Tanggard, 2015). The interview guide is presented in Appendix A.

Focus group interview

After analysing the individual semi-structured interviews, synthesis of the scenarios is completed, and hereafter focus group interviews are conducted. The focus group interview is a way to evaluate and gain input from multiple people simultaneously. The aim is not to reach an agreement between the interviewees but to give them a chance to express themselves in continuation of one another (Kvale and Brinkmann, 2009). Based on the analysis of the individual interviews, the scenarios are established, which are the focal point for the focus group interview.

Conducting the interviews

The eight interviews and informal conversations were conducted over three periods of 7-10 days in March, April and May. An overview of the collection of data is visible in Appendix B. The first individual interviews were conducted to set the scene. Orienting and exploring are part of the two first steps of scenario planning. Furthermore, to establish a relationship with the fishermen by understanding who they are, why, and how they fish. Additionally, the purpose is to understand

how fishermen perceive management and regulation and identify the challenges they face. Lastly, the purpose is to gain an understanding of how the harbour has developed since the initial descaling of the Danish fishing fleet. The focus group interviews are conducted after the synthesis of the scenarios. The scenarios were presented to the fishermen in Bagenkop during the 10 days in April. It was difficult to conduct the interviews, some of the fishermen have been hard to get a hold of, and others showed interest but did not engage later in the process, which made the interviews hard to schedule. It is sensibly due to the changing working hours and how hard other researchers have found it to gain the necessary data. Gustavsson (2021) discusses these issues as a part of her research and finds that fishermen are people who plan their leisure time depending on how the fishery is on the current day. To get in contact with fishermen, one have to be flexible and available when they have the time. Gustavsson also discusses the fact that interviews with fishermen can differ depending on the interview's location. For this research, the interviews were conducted at fishermen's houses, vessels, and a ferry. The different settings can have impacted the responses from the fishermen. After completing the interviews, the experience is that the fishermen find it easier to talk about the fishery on their vessel or during fishing. According to Gustavsson (2021), specific places, such as the fishermen's home, can inflict that the narrative the fisherman presents is the one he always presents at home, which can be the negative narrative. On the vessel, fishermen seem to be more connected to what they like about the fishery and why they fish.

Transcription & coding

To process the data, the interviews are transcribed, initially using the function *transcribe* in Word, Microsoft 365. Although the online program made the progress of transcription more tangible, there was still a need for thorough listening, corrections, and typing. Appendix C links to the transcriptions of the interviews, both the individual and the focus group interviews. The transcripts are in Danish because it was the language spoken during the interviews since both the interviewees and the interviewer are Danes. The aim is to code the interviews in such a way that statements that correlate to a specific theme are identified and can be used in the context of each other in the analysis, as described in Kvale and Brinkmann (2009). In addition, statements that contradict others can be identified. The writing codes are presented in Appendix D.

Limitations

The advantages of semi-structured interviews can, without careful consideration, also be its shortcomings because there is a risk that the questions asked during one interview are not posed during another interview. To ensure this would not be the case, additional questions were only asked within the themes outlined in the interview guide, cf. Appendix A. This ensured that the questions

were not outside the scope of this research. After conducting the first interview, it occurred to the interviewer that how questions are asked could influence how they are answered. To ensure that the interviewee did not respond with hostile intent, the questions were asked naively with a sincere belief that there were no wrong answers. Another perspective realised during this research is how important it is to have a fisherman that can be a connection to the rest of the fishermen. For example, I had one fisherman I contacted in Bagenkop who made it possible for me to talk to multiple fishermen simultaneously because he contacted me when they were back in the harbour. Unfortunately, I did not have such a person in Spodsbjerg due to how few fishermen there are, and they fish very independently, one as full-time fisherman, others as a subsidiary occupation.

3.1.2.2 Participatory observation

One of the steps for scenario planning is Exploration, and to understand the setting in which fishery is conducted in the two communities, participatory observations are made at the harbour and out on a fishing vessel.

Participatory observation is a methodological approach to qualitative research that can contribute to a broader understanding and new knowledge of local social settings. It is best to research the culture on their own premises to understand it. The new knowledge can consist of perspectives and understanding, which would not have been present if the culture had not been observed and participated in (Szulevicz, 2015). Observations can be versatile and cover diverse aspects in various ways. By conducting participatory observations, the researcher places themselves in the social setting they want to observe, creating a more or less intense interaction with the observed structure. It is a method used to describe and analyse human behaviour and to understand their social and material starting point. Observations regarding people's everyday lives can be conducted to different degrees with various involvements. It is a means to build relationships and ask questions that could otherwise be inappropriate to ask or superficially answered (Szulevicz, 2015).

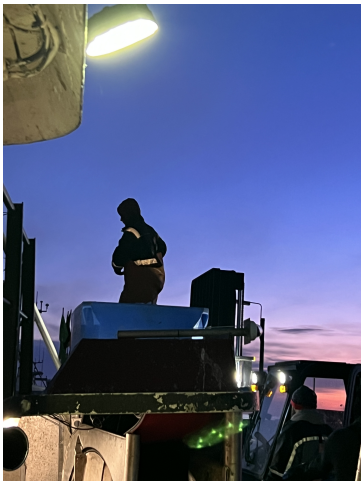
There is no specific approach to conducting participatory observation, but some components must be highlighted and specified in detail. According to Szulevicz (2015), an approach to participatory observation is to go through some of the following aspects: the purpose, planning, access assessment, observation, reporting, hereunder analysis, and interpretation. Validity, reliability, and generalisation can also be assessed. Finally, aspects of conveying the results can be considered. The purpose of conducting participatory observation in this research is to gain an understanding of everyday life in the coastal communities of Bagenkop and Spodsbjerg. This understanding is primarily aimed at the context of fishing and the surrounding settings. The observations support the interview data

and does not stand alone, and planned to a degree where they are made at different times but are otherwise random. The observations are used to analyse Bagenkop and Spodsbjerg as communities, and the interpretation is presented in this context. For this research, the author has conducted the observations and has been less participatory and more observing. The author have been present in the watched cultures, asking questions and wondering, but the aim of the observations was to understand the settings. The author observed more than participated to ensure that the settings were not affected. It was done so because as a local, it would be easy to trapped in conversations that did not relate to the research, and to avoid this, distance was kept.

The observations are made in specific communities at one particular time, with a precise aim and scheme. Following this specific approach to the observations, where the observations are based on specific questions, makes the observations valid. Although the approach to the observations is planned in a manner that makes it possible for others to conduct the same observations, the observations will be biased because they are observed by the author, who has a specific understanding of the world. Therefore, the observations could be perceived differently by other observers. Furthermore, the author's particular understanding will impact the narrative of the observations. The narrative could be different if another were conducting the observations. The observations are conducted in a confirming manner because the author was born and raised on the island, so the author has spent time in these communities and has a background knowledge that must not be underestimated. The results of the observations are impacted by the fact that the author has some knowledge of the communities beforehand. Still, they are reliable because an objective approach is taken towards the observations, and the subjective aspects are accounted for. Since many coastal communities are in the same situation as Bagenkop and Spodsbjerg, it might be possible to generalise some of the results, but observations like these might be tied to the specific situation, particularly in these communities, therefore are the observations used in combination with other methods; so they do not stand alone. Appendix E presents the observation scheme and field notes. The pictures visible in Figure 3.2 was taken during the observation on the vessel SG 120.

The fore of a
vessel with passive gear.

The stern of a
vessel with passive gear



Ice is shovelled
aboard the vessel.

Rows of nets are towed aboard.

Figure 3.2. Pictures taken during the participatory observations at the vessel SG 120.

Limitations

Szulevicz (2015) reflects on many of the objections against participatory observation, such as the time demand, the legitimacy, validity, and the scale of generalisation. The time demand is an unknown factor if the observer does not consider when the observation has fulfilled its purpose. It can be argued that if the observer plans observations with specific purposes and conducts them randomly but observes the same events several times without any alteration, then further observations will not bring new knowledge. What is observed at a given time and in a given place cannot change because it was at that time what happened, so the legitimacy of the observation cannot be questioned if the observer follows the scheme they set up for the observations and reports them. Which is done in this research. Many small coastal communities in Denmark and Europe are in the same situation as

Bagenkop and Spodsbjerg, even though they are not 1:1. On a general level, some of the observations could also be valid in these places, and therefore, the frame of reference is the same, which makes it possible to generalise and make some points, which would also be valid elsewhere. Since participatory observation does not stand alone in this research, conclusions will not be solely based on them, and by triangulating multiple methods, the results will be solid and contribute to the decision-making processes regarding fisheries policy.

If fishermen were people who were easy to get a hold of and get them engaged easily, it would not have made a difference if the observer was a local since there was a need to draw on people privately known; it can be argued that it could have been more difficult for a person outside of the community. The author is still an outsider in the sense that she does not live and spend her time in the community. However, the fact that she is considered a local did mean that she had opportunities someone who did not know these people might not have. One example could be the fact that she understands the dialect of the people she interview, so they do not have to clarify themselves multiple times. Another is the observations conducted on vessel SG120, where the author had the opportunity to spend a day onboard. It can be argued that fishery observations can be affected by the fact that the fishermen are observed. As for the authors presence on the vessel, it is not the impression that it affected their way of fishing.

3.2 Conceptual framework

In this research, the conceptual framework consists of different theories and is a means to provide terms and a tool to understand fishermen, who they are, and how they are affected by the world around them. The theory of fisheries-dependent communities is outlined to analyse Bagenkop and Spodsbjerg's state and how changes could affect the fishermen. To identify challenges and how fishermen perceive these, the analysis is based on theories deduced from sociological research, where conclusions are made regarding fishermen's identity, self-understanding, and the factors which push and pull them.

3.2.1 Fisheries dependent communities

Communities have established themselves by water throughout history because it allowed people to secure a somewhat stable food source. With the development of skills and equipment, people could catch more fish from the sea than they needed. Thereby gaining the opportunity to trade and later sell their surplus. Due to trade and sale, the fishing industry became rooted in some communities and

has existed there since then. The long history of fishing shows that some communities can depend on the fishery.

Dependency on the industrial fishery and the virtual fishery

Dependency on fisheries varies and is expressed in different forms. In the article by Brookfield et al. (2005), the authors define fisheries-dependent communities as: "*a population in a specific territorial location that relies upon the fishing industry for its continued economic, social, and cultural success.*". The spatial level is specified to the local and municipal levels. Thus, Brookfield et al. (2005) divides fisheries-dependent communities based on their economic, social, and cultural values. This underlines the fact that fishery becomes a way of life when the financial perspective is transcended.

A similar development in fisheries as the one described in Chapter 1, has occurred in Great Britain, where Brookfield et al. (2005) identifies four different communities on the East Coast of Great Britain where dependency is present in various forms. The Shetland Islands is a small remote community isolated on islands north of Scotland, where the dependency on the industrial fishery is acute and economic. Economic dependence is less critical in the Peterhead community, where there is greater economic diversification across multiple sectors. Peterhead is in a sparsely populated region, and the medium-sized city is in the peripheral parts of northeastern Scotland. In North Shields, a smaller town on the North East English Coast, dependency is not as directly related to the industrial fishery; nevertheless, dependence is clear regarding its cultural and social qualities. These qualities are referred to as virtual fishery. The lowest dependency is seen in Lowestoft, a relatively deprived town on the East English Coast, where economic diversification is highest. For Norths Shields and Lowestoft, dependence is represented through the locals' use of the harbour and port. In Lowestoft, dependency on the industrial fishery is incidental, but in terms of the virtual fishery, dependency is high (Brookfield et al., 2005). The article presents strategies for coping in different communities, where political and economic initiatives try to support the community based on the development in the community. From the article, it can be deduced that fisheries-dependent communities can depend solely on the industrial fishery with catches, loading, harbour facilities, and factories, but the community can at the same time also depend on the virtual fishery, focusing on the cultural value and subsequent opportunities to develop tourism. On the other hand, the dependency can also be high on the virtual fishery and almost none-existing on the industrial fishery.

The dependency outlined in Brookfield et al. (2005) regarding fishery, has been further researched. In the industrial fishery, an extreme form can exist, which is existential dependency.

Existential dependency

In Ounanian (2019), the author conceptualises the perception of fisheries-dependent communities and establishes a form in which the community is existentially dependent. To stipulate the extremity, the author asks the question: "*whether the motivation is to fish (...) or whether fishing provides the means to remain viable in one's home community?*" And answers, fisheries enable these rural, coastal communities to persist. Dependency is researched in the communities of Thorupstrand on the Danish west coast of Jutland and Cutler in eastern Maine in the U.S. According to the interviewees; fishing is a family business where generations follow generations without coercion. They also pinpointed the feeling of freedom as a crucial factor when they are their own bosses. They set their own working hours and take charge of their own income. If these communities lose access to the fishery, they will lose the employment that keeps people in the community, thereby removing the foundation on which the community exists. There is also an emphasis on how the facilities at the harbour and the harbour itself are used as meeting points for the community. The aforementioned political and economic constraints also impact these two communities. Ounanian also presents how the communities reacted to the threats of the fishing enclosure, where the fishery is limited through access and license management. In particular, the constraints faced by the small-scale fleet in Thorupstrand had a significant impact on the remaining fishery industry. Due to the ITQs and economic support for scrapping, many fishermen in Thorupstrand chose to abandon fishing. To keep fishery in the community, the remaining fishermen decided to establish a guild, where a local fisherman, who has ties to the community, can buy in and share the quotas acquired by the guild. Where Thorupstrand chose a collaborative way forward, Cutler focused on giving newcomers a chance. They have done so by politically setting up programs that give young people easier access to the industry (Ounanian, 2019).

Based on the diverse dependency, many possible forms of dependency exist, which Bagenkop and Spodsbjerg might reflect. The aspects which should be considered to determine how dependent a community is on fishery can be deduced from Brookfield et al. (2005) and Ounanian (2019). Aspects within and outside of the community which should be considered are:

- Isolation from other communities
- Economic diversification
- Cultural presence and importance of the fishery
- Enabling of fishery in the community

Isolation from other communities

A communities connections to other communities can indicate how isolated the community is. If it is easy for people in the community to connect to other communities and activities conducted there,

and they do so, it means that the community is not isolated. On the other hand, if the people in the community stick to themselves and spend their time in the community, it can be argued that the community is, to some degree, isolated.

Economic diversification

Places of business in a community can show what employment opportunities there are for people in the community in terms of keeping them there. For example, if there is a sizeable economic diversification, people work outside a specific industry. In contrast, low economic diversification means that people depend on a certain industry that is present in the community.

Cultural presence and importance of the fishery

The presence and understanding of fishery in a community can be shown by investigating how the fishery is perceived in the community and how the community tells the story of the fishery. If the fishery is essential to the community, it will be reflected in the community. If it is not, then it can be hard to find.

Enabling of fishery in the community

Determining how the community makes fishery possible is a way to understand if and how fishery can exist in that specific community. For example, if fishing is essential to the community, there might be an effort to keep it there.

3.2.2 Fishermen's identity and motives

To understand how fishermen can be categorised, theories of life-modes are explored. Furthermore, the factors that might influence the fishermen by pushing and pulling them regarding the fishery are outlined. The terms outlined in the theories and concepts contribute to understanding the fishermen interviewed in this research. The terms can bring to light considerations that the fishermen themselves might not mention, and an understanding of their motives can be outlined.

3.2.2.1 Life-modes of fishermen

Individuals who want to become fishermen can be young individuals who have not grappled with fishing before or are newcomers to the industry. While fishermen are individuals who have been making their way in the fishery for some time. The aspects of who fishermen are and who they dream of being are by Høst and Christiansen (2018) defined by four modes:

- Self-employed
- Quota holding

- Highly skilled
- Hired

These four modes can be divided into two main categories where others employ the hired and highly skilled fishermen, while the quota holder and self-employed are owners themselves. This differentiation clarifies that individuals in the two categories have different interests. The hired fisherman is not interested in ownership or management but prefers the chance of moving horizontally. Moving horizontally gives him the opportunity to make shifts in the type of fishing, vessels, and sector. Highly skilled fishermen are likely more interested in the management side of the operation because they are more involved and appreciate the responsibility that comes with it. They take leadership and can take responsibility for the machinery and navigation but are not financially invested. They still want horizontal mobility as hired fishermen but are also interested in vertical advancement (Høst and Christiansen, 2018). For some fishermen, the categories where they are hired by others are a temporary state in the pursuit of becoming quota holders and self-employed themselves. The quota holder is generally invested in the economic aspects of ownership, and plans for gradual takeovers might exist. The quota holder can be an in-between situation where the fishermen are gradually taking over a family business, or there has been a willingness in a large-scale company that has seen potential in selling their quotas to new fishermen. The fishermen in this mode take pride in establishing a work environment for others, supporting them and their families. The owners can also see the potential of securing the future economically, where quotas and vessels function as savings (Høst and Christiansen, 2018). The self-employed fisher is in charge of the whole fishing operation and is often a one-person crew or a small group of fishermen. Regardless, they identify a strong link between the daily energy input and the resulting output. The self-employed fisher is often closely attached to a harbour and the surrounding community but moves between the available fishing grounds. The future of the self-employed fisher is due to the concentration of quotas unsure, and young fishermen identify, to a greater extent, a future as hired fishers or skippers. Furthermore, young fishermen are not interested in lifetime investment (Høst and Christiansen, 2018).

Based on the four life-modes, it might be possible to identify the mode in which the interviewed fishermen are and how the life-mode can contribute to understanding potential opportunities and constraints in scenario planning. It is difficult to put people in a specific box and say they are in a certain way, which makes them fit into a particular life-mode. This research does not aim to stipulate what kind of people fishermen are but to understand the interviewed fishermen's motives. To do so, a context to understand them is necessary, which life-modes provides. During the analysis, trades from a specific life-mode can be used to understand why different challenges are important

to a specific fisherman. Outlining the motives of fishermen in terms of push and pull factors can be difficult because it is not sure that the fishermen are disclosing all of their considerations during interviews.

3.2.3 Push and pull factors that affect fishermen

In the article by Johnsen and Vik (2013), the researchers investigate the factors that have contributed to Norwegian fishermen leaving fishery in the context of growth in the modern welfare system. They distinguish between factors based on the push or pull effect. If a factor is, a push or a pull factor is determined based on how the specific factor influences the fishermen towards being pushed or pulled out of the fishery. The push factors stress fishermen to leave from within the industry, such as regulation changes, working conditions, payment, etc. These changes can play into a growing dissatisfaction, which makes fishermen want to leave the industry. Push factors can go as far as forcing a person out, but not necessarily in the sense were they literally have no other option. Forcing can be coupled with a feeling where the fishermen feel they do not have any other choice. This feeling can also be connected to health since fishing is perceived as a strenuous job which demands good health. Pull factors are factors of external attraction, which draw the fishermen out with possibilities of education or job opportunities, more leisure time, etc. Reasons for leaving the fishery, which are not directly linked to conditions within the fishery, are seen as pull factors. The fishermen do not experience force based on the pull factors, but they contribute to a person's considerations regarding their life situation. Even though theories seek to divide the push and pull factors, it is not as simple as that because of how the factors interact and relate to other factors inside and outside the industry. Push and pull factors can act together (Johnsen and Vik, 2013).

Fishery communities 4

The fishermen in Bagenkop and Spodsbjerg are a part of and contribute to the community in the two town. In this chapter, the background analysis of the communities is conducted to understand how dependent the two communities are on the fishery, cf. Section 3.2. Understanding how dependent the communities are, based on development until now and their current state, can give way to exploring opportunities regarding where they are heading and how that can impact the fishermen. Furthermore, opportunities to support the fishermen in the community they contribute to may arise. To conduct the background analysis, the isolation, economic diversification, cultural presence and importance of the fishery, and enabling of fishery in the community, outlined in Section 3.2 are worked through.

4.1 Bagenkop

The following section outlines the four aspects of the community in Bagenkop, concluding with an overall outline of Bagenkop as a fishery-dependent community. Furthermore, the fishermen in Bagenkop are characterised.

4.1.1 The Community

The background analysis is based on the interviews with Theodorsen and Kølle, the conducted participatory observations and the author's background knowledge.

Isolation

Bagenkop is the second biggest town on the south tip of Langeland, and due to the composition of Langeland, where there is one main road leading north and south, and the 11 km distance between Bagenkop and Humble (the biggest town on the southern tip), the community is somewhat isolated. It is not only the composition of the roads but also the community itself that makes it possible for people to keep to themselves. A local supermarket and sports centre allow people to shop and enjoy leisure activities in the town. Even though there are a few places of employment: the supermarket, the fishery, and the inn, the majority of the workforce leaves the town in the morning and returns in the afternoon. Furthermore are, some of the job opportunities highly dependent on the season.

Children cannot go to public school in the town; the school busses take them to the school in Humble. Therefore, the children stay somewhat connected to the specific settings where they are around local children. Since Bagenkop is the next biggest town on the island's southern tip, many of the children come from here. There is a strong sense of unity in the community, mainly because of all the work conducted by volunteers, who work to collect funding for the development of the community and arrange events. Since locals organise these events, many locals attend these to show their support. Locals also use these events as a gathering forum where they can meet, talk and enjoy each other's company. Altogether, this makes the community somewhat isolated because they have the opportunity to keep to themselves, and they do so.

Economic diversification

There are not many places of business in Bagenkop, so the majority of the workforce leaves the village in the morning. The supermarket, the fishery and the inn provide some job opportunities. There are some opportunities to diversify during the spring and summer seasons when tourism is high. People who have worked their entire life in the fishing industry and are now retired remain in the community and enjoy retirement here. Thereby they still contribute to society and the local economy. The fishermen who fish from Bagenkop are full-time fishers who dedicate their working life to the fishery. There is a high economic diversification, where people find employment outside of the community, but due to the strong sense of community, people use their leisure time and spend their money in the community.

Cultural presence and importance of the fishery

The fishery is a place of employment in Bagenkop and has a long history. The long history has made fishery a part of the communities storytelling, which the retired fishermen who remain in the community contribute to, and often spearhead. Many of the events planned by the volunteers are related to the harbour, which shows the importance of the harbour to the community. Alongside Fiskeriet Hus, which is an exhibition of fisheries history in Bagenkop, they show the cultural value of the fishery in the community. The inn has grown in the last decades and has more visitors. Initially, the inn lured tourists to the village with its renowned fish buffet. The tourists who came to the inn had the chance to experience fishery, taking walks along the piers at both the industrial harbour and the marina, where they could buy fish from the local fishermen and visit the lighthouse at the end of the marina pier. Holiday flats are built on the marina pier, which also shows the growing importance of tourism. Just outside Bagenkop is the fortress of Langeland (Langelandsfortet), which is also a goal for tourism. Recently Broløkke Manor (Broløkke Herregård) opened up near Bagenkop, where tourists can enjoy newly renovated rooms kept in the style of a manor. Alongside the rooms, eating

at the restaurant and enjoying beverages from the micro-distillery is possible. The manor is also suitable for meetings and has large conference rooms. Tourism is an important trade in the area and surrounding communities, where Bagenkop focuses on the fishery to tell its story. It can be argued that fishery has a high cultural value and is very present in the community. The newest initiative to develop tourism is a festival for winter swimming at the inn and the Day of the Harbour.

Enabling of fishery in the community

The fishery has enabled the community to exist and develop because it gave the community a food source and a merchantable good. Since then, a decline in the fishery has meant that it does not have the same role in Bagenkop, even though fishery is important in the community. The number of fishermen, who fish with trawl, makes it possible to keep the privately run refrigerated storehouse because a high enough amount of fish is landed. Langeland Municipality owns the harbour, and maintenance of the piers makes it possible for vessels to moor. The harbour allows the fishermen to be there and vice versa. It is not the community that restricts the fishery; it is the conditions in the fishery itself (Informal conversation with Egmose). The proposed total ban on trawl can make fishery from Bagenkop so limited that the industrial fishery can not continue because the amount of landed fish will be so low that the private man running the refrigerated storehouse will no longer do so, and since the company he runs is in charge of transporting the fish to auctions, that might cease too, which would make fishing from Bagenkop impossible unless other alternatives are explored (Interview with Theodorsen, Kølle).

4.1.2 Bagenkop as a fishery-dependent community

The community did exist on the premise of the industrial fishery, and the fishery was the life nerve of Bagenkop (Informal conversation with Egmose)(Interview with Theodorsen). Still, it is now less dependent on the industrial fishery. Dependency towards virtual fishery is growing and is now essential because tourism is a growing industrial sector for the community. The planned activities focus on the harbour and fishery, contributing to growing tourism. The virtual dependency is on the verge of being existential because the community is so focused on telling its story. Nevertheless, dependence is still present, and based on the history of Bagenkop, there are good chances that fishery will continue to exist in the community if the trawl ban is not implemented. The proposed total ban on trawl can make fishery from Bagenkop so limited that the industrial fishery cannot continue, thereby making the community solely reliant on the virtual fishery. If the industrial fishery disappears, it could also affect the virtual fishery because the fishery cannot be experienced but only imagined.

4.1.3 The fishermen

The fishermen who fish out of Bagenkop are full-time fishermen who have been fishing out of Bagenkop their entire careers. Two of the fishermen have been in the fishing association for the Belts (Bælternes Fiskeriforening), trying to make their voices heard and advocate for their points of view (Interview with Theodorsen). The fishermen are driven to ensure fishery in their community.

The fishermen from Bagenkop spent a lot of their time away from home, and Theodorsen explains:

> *Five - six years ago, we could fish in the Baltic Sea for eight months a year (...), but now we are only at the harbour where we belong for two months.* (Interview with Theodorsen)

They spend the rest of their time in Skagerak, Kattegat, and The North Sea. The fact that they need to do so upsets them because it pulls them away from home and family (Interview with Theodorsen, Kølle). During this research, the conditions to catch fish closer to Bagenkop improved, and the fishermen kept their vessels in Bagenkop. This shows that if the opportunity exists, these fishermen are inclined to and will stay in Bagenkop and want to fish from here. The interviewed fishermen are self-employed, where they own and run the operation, while quotas are owned by a company, which they are a part of, alongside a multiple of people. These fishermen demonstrate that they are closely attached to the community but leave the fishing grounds and fish further north when they cannot catch fish in the Baltic Sea. They do so because they are running an operation to make a living. If they did not leave the fishing grounds near Bagenkop, they would not make ends meet. Kølle is in a fishing operation with his brother and father, where they have hired fishermen on their vessel. Kølle and his brother work in shifts where one of them, alongside two hired men, works for 14 days and then they shift, while Theodorsen is in a fishing operation with his brother, where they own a large and a small vessel, and the quotas. They go out on a day to day basis, alongside one hired man (Interview with Kølle, Theodorsen). Theodorsen jokes about how he expects the young fisherman to take over for them when they cannot work anymore. Here it is vital to notice Theodorsen's choice of words. He uses *cannot* work anymore, not when he does not want to. When asked out what fishery means to him, he replies:

> *A good day to me is almost every day because we like what we do. A perfect day is when my boy wants to come along.* (Interview with Theodosen)

The hired fisherman is a young man who sees his future as a hired fisherman because he does not believe that the fishery will remain in Bagenkop. Despite this belief, the fisherman and his girlfriend bought a house in Bagenkop, which shows that some trust exists towards the fishery's future in Bagenkop, and he wants to stay if possible. He has gone to fisheries school and gone through the education, making him highly skilled and ensuring his possibility to fish in the future. Furthermore, he does not see a way for him to become self-employed or a quota holder because of how the fishery is structured in Denmark. There is no path to self-employment or quota holding unless Theodorsen lets him gradually take over (Interview with Theodorsen). As with Theodorsen and Kølle, the young fisherman is strongly attached to Bagenkop since they were all born and raised here, but if the young fisherman must move to keep fishing, that is what he will do (Interview with Theodorsen).

With the current debate of a total ban on trawl as fishing gear, it would mean that the fishermen with small vessels in Bagenkop would have to consider what they will do, stop or convert into other gears. Kølle puts it:

> *We wouldn't be allowed to fish here. It would be awful.* (Interview with Kølle)

The proposed total ban is a push factor, from the fishing industry, specified at the political scene, where efforts to protect the marine environment push fishermen out of the fishery. According to Theodorsen and Kølle, the rest of fishermen in Bagenkop would stop fishing altogether and not move further north because of their small vessels.

4.2 Spodsbjerg

The following section outlines the four aspects of the community in Spodsbjerg, concluding with an overall outline of Spodsbjerg as a fishery-dependent community. Furthermore, the fishermen in Spodsbjerg are characterised.

4.2.1 Community

The background analysis is conducted based on the interviews with Nielsen and Petersen, the participatory observations and the author's background knowledge.

Isolation

Spodsbjerg does not have enough citizens to be classified as a town by Danmarks Statistik (2023). Aside from the road that goes from north to south, there is a road across the island to the east. 8 km from the bridge is Spodsbjerg, which makes the village easy to get to and from. The people here are not as attached to the community as in Bagenkop since there currently is neither a supermarket nor any activities to engage in during leisure time. There are more places of employment in Spodsbjerg, at the ferry, the pilots, the camping area or in the fishery, but these places do not necessarily hire people from the community. Furthermore are, some of the job opportunities highly dependent on the season. The majority of the workforce leaves the place in the morning and returns in the afternoon. Children attend school in Rudkøbing, so they experience and connect with children from most of the island. The sense of community is thereby minor here. Nevertheless, some activities are conducted, e.g. a festivity at the harbour planned and executed by volunteers. The community is less isolated because the opportunity to connect elsewhere is easier and thereby higher.

Economic diversification

Spodsbjerg have some but not many places of business, so people leave in the morning. Some opportunities emerge during the spring and summer seasons, but the economic diversification is extensive, where people are doing many different things out of town. There is currently no supermarket for people to spend their money, and there are no activities to engage in during leisure time. Only one of the fishermen is fishing full-time. The other fishermen have fishing as a part-time job. The economic diversification is higher here than in Bagenkop, where even the fishermen work outside the fishery. There is one vessel with a crew of four, where the owner is a local man. At the start of this research, the three hired fishermen were East Europeans who had fishing as their only occupation. In the meantime, one of the foreigners gave notice and replaced by the fisherman's

son. The community is relatively small, and the opportunities to engage in local activities during leisure time are too, and it is not possible to spend money here. Generally, the sense of community is smaller than in Bagenkop.

Cultural presence and importance of the fishery

The fishery is a place of little employment, even though the history of the fishery is long in Spodsbjerg. Even though the long history of the fishery has made it a part of the town's story, it is not a focus of the community to tell that story. A harbour festivity is arranged every year by locals, but it is the only event related to the harbour. One could argue that this festivity is purely organised for the locals themselves, where they can meet, eat and enjoy each other's company. One part of Spodsbjerg is a large area of holiday homes near the water, and another is a big area for camping, which draws outsiders to the town. Some of them fancy buying food from the fish shop, while others purchase fish directly from the fishermen. The importance of the fishery might be high for the fishermen themselves and for the people related to the fishermen, but it is, on the surface, not important for the town's existence. Among the fishermen, the belief that fishery will exist in Spodsbjerg in the future is small, and the fact that most of the fishermen can only have fishery as a subsidiary occupation supports this notion.

Enabling of fishery in the community

The fishery has enabled the community to exist and develop because it gave the community a food source and a merchantable good. Since then, a decline in the fishery has meant that it does not have the same role in Spodsbjerg because the fishery is not as important in the community. The harbour is privately owned, making it the responsibility of a private board, which the fishermen can be part of. For the fishery to exist, there is a need for infrastructure, and one of the critical elements is the logistics, with collection and transport of the fish to a fish auction. Currently, this line is secured by one vessel alone (Interview with Petersen), who says:

> *The thing is....that you only need to remove one, then the house of cards will fall over. And that one is Nielsen.* (Interview with Petersen)

If that one vessel leaves the industry, the other fishermen are unsure whether they can have their fish collected. The harbour runs the refrigerated storehouse and is partly the responsibility of the fishermen themselves. Thereby, the infrastructure is in place in terms of the community but can be limited in terms of getting the fish out of there.

4.2.2 Spodsbjerg as a fishery-dependent community

It is possible to conduct fishery from Spodsbjerg, but if too low amounts are landed, it will not continue. It will mean that those who are fishing now will be the last fishermen to fish out of Spodsbjerg unless the specific focus is given to supporting the current fishermen and recruiting new fishermen to the area. There is no immediate dependency on the fishery in Spodsbjerg, neither industrial nor virtual. It is, most of all, a diminished industry which seems to accept its faith by slowly disappearing from the community. The fishermen are fighting to keep fishery in Spodsbjerg, but have until now not succeeded, which contributes to the feeling of hopelessness. It is possible to keep fishery in Spodsbjerg, but it will be through subsidiary occupations, where the fishermen have time besides their main job to conduct fishery.

4.2.3 The fishermen

Fishery conducted from Spodsbjerg is with passive gillnets, and they can stay the entire year. The fishermen want to keep fishery in the community by the means it is possible. The EU funded the refrigerated storehouse and trucks, which has kept the fishery alive until now (Interview with Petersen). The people in the fishery are a trusted circle where the fishermen know each other, and newcomers can experience a process of trial, where they are weighed on a scale before being fully included in the community. Only one fisherman, Nielsen, who fishes out of Spodsbjerg, is a full-time fisherman. The remaining 3-4 have fishery as a subsidiary occupation. Nielsen has fished out of Spodsbjerg his entire career and runs his operation as a company where he has employees. At the beginning of this research, Nielsen had a crew of 3 foreigners, but during this research, one of the employees quit, and Nielsen hired his son to fill the missing spot. The son has taken an education as a tradesman but wants to be a fisher and is now waiting for his vessel to be ready to start fishing. Nielsen is a leader who is self-employed and takes charge of the operation. He is also the quota holder, and he owns the vessel. Even though he has been granted support for the scrapping of his current vessel, he is still considering the purchase of a new vessel (Informal conversation on SG120). The support for scrapping is a means to get clear in the bank with his loans. The support for scrapping is a push factor, where the industry is supporting Nielsen's desire to stop, but the fisherman is not interested in leaving the industry. Another factor that is pushing him to leave the industry is the frustration he is feeling. Frustrated about quotas being cut without a set plan in terms of how long the quotas stay on that level, possibilities of smaller increases etc. One factor that invites him to stay in is the freedom he experience at sea, and the pulling factors are small since he does not have any employment alternatives (Interview with Nielsen).

The fishermen who have fishery as a subsidiary occupation are also self-employed quota holders in regards to the fishery but are also employed elsewhere. These fishermen have experienced push factors, where Petersen says:

> *Bureaucracy and back problems.* (Interview with Petersen)

Petersen was once a full-time fisher, where he was self-employed, owning his vessel and quotas. He was at that time and still is only himself on the vessel. He was offered a re-education, where he could be trained to work as a deckhand on the ferry nearby. This pull factor, in combination with the mentioned push factor, made him take the re-education offer, which he has not regretted (Interview with Petersen). So for Petersen, the combination of push and pull factors invited him to leave the fishing industry, but not entirely, because he had the opportunity to continue fishing as a subsidiary occupation. Pulling factors have also influenced the other fishermen who started as full-time fishermen. Still, opportunities of better wages, more leisure time, and fishery on the side pulled them out.

Challenges and scenarios 5

In this chapter is an analysis of the challenges the fishermen in Bagenkop and Spodsbjerg are facing, conducted. The challenges are identified based on the semi-structured interviews, informal conversations and the author's observations.

5.1 Fishermen in Bagenkop

The challenges identified in Bagenkop are based on the interviews with Kølle and Theodorsen. Additionally, some perspectives from the informal conversation with Egmose are brought to light.

Potential ban on trawl

The fishery in Bagenkop is conducted by vessels with trawl as fishing gear, so the proposed total ban on trawl will have a high impact here. According to Theodorsen:

> *If they lose these areas, then (the smaller vessels with trawl) have to moor. Otherwise, they have to go out and fish out south, but that means higher seas, which they don't have the vessels to do.* (Interview with Theodorsen)

It will not be a problem for the large vessels, which can fish outside of the Belt Sea, but the small vessels that land in Bagenkop would have to stop since their vessels are not geared for higher seas and longer fishing trips, further away. The fishermen on the small vessel could experience limitation of access as a push factor. If the total ban is implemented, it would mean that a too small amount of fish is landed in Bagenkop, which would make the private man who runs the refrigerated storehouse and ensures that the fish is transported to the fish auctions, stop these functions (Interview with Kølle). The lack of infrastructure would make it impossible for fish to land in Bagenkop, and the fishery would cease. This would also have consequences for the local community, who are trying to establish and develop tourism based on the history of the community connected to the fishery. The total ban aims to protect the health of the marine ecosystem by limiting the use of high-impact gears, so it would be possible for fishermen to fish with passive gears in the Belt Sea. The fishermen can

convert their gears to passive ones, but this is highly unlikely according to Theodorsen and Kølle. It is unlikely because of the uncertainties regarding economic turnover. Theodorsen says:

> *Why would we convert to gillnets? When fishermen with gillnets are giving up due to cormorants and seals.* (Interview with Theodorsen)

The trawling fishermen experience fishermen who fish with passive gear, e.g. gillnets, accepting support for scrapping, have destroyed catches due to predators, and generally have a lower turnover. These experiences make the conversion unsure in the long run. It is, furthermore, not how these fishermen are taught to fish and prefer to fish. Fishermen in Bagenkop are generational in the sense that children of fishermen grow up to become fishermen and so forth. The fishermen are taught a specific kind of fishery, which is not easily changed. It would also mean a considerable economic expense to convert the vessels, especially considering how unsure the fishery is. The remarkable about the trawl as fishing gear is the fact that even though there are claims that the trawl destroys the seafloor, the fishermen keep catching fish at the sites where trawl has been used for decades and still are (Interview with Theodorsen). This may be connected to pollution, which the trawl stirs, and to some extent, secures the mixing of different matters. The pollution aspect is further elaborated in paragraph **External impacts**.

Another aspect, which Kølle mentions in the context of trawl as a gear that potentially impacts the seafloor, is the amount of waste they catch in their nets. As Kølle puts it:

> *It is unbelievable the amount of waste we bring in. Many, many, many tons a year. (...)If we don't clean up, then who should?* (Interview with Kølle)

The idea of fishermen as stewards of the ocean is already a part of the fishermen's identity, but its value is not recognised. It is frustrating to them that they are seen as destroyers of the environment from which they make their living. The fishermen express that they do not fish more than they are supposed to because they would like to fish the next day, too (Interview with Kølle, Theodorsen).

Psychical work environment

The fishery has always been a strenuous occupation for physical health. It takes a great deal of brute strength, and the working day is long, from sun up to sundown, making the physical work environment unique. Fishermen have always known that, and many fishermen have found their way into fishing because they had the skills to endure these settings and were not fitted for many years in school. As a result, they found freedom and employment opportunities at sea.

To some degree, trawl fishing is more straightforward than fishing with passive nets because a net can be dropped in the water, and they can sail around while fish are caught in the net. Then, the nets can be towed onboard and emptied at the deck after some time. They do so three or four times, depending on the conditions and catches in each tow. To some degree, this gives them leisure time during the work day.

The work environment is changing, where control and surveillance are of rising concern (Interview with Theodorsen). The changing conditions are leading to stress among the fishermen. Stress can be a push factor, possibly increasing dissatisfaction among the fishermen. Currently, the fishermen, who own large vessels, spend most of their fishing trips away from home, which can strain their family life. The time away from home can also be a push factor. Kølle talks about hired fishermen who did not want to work on the vessels due to surveillance. Specifically, they had an employee temporarily stop due to the stress it caused. They have also had difficulty finding new employees. Kølle puts it quite frankly:

> *It is also a problem. (...) we were allowed to fish, but there are some, some people who altogether don't like to be watched, at all. We have had a lot of people who didn't want to go out with us because of the cameras. (...) The rules are so strict, it is unbearable.* (Interview with Kølle)

Overall, the conditions in the fishery are now in a state where it can be hard to keep employees and recruit newcomers because the freedom people use to experience at sea is declining, and jobs on land are becoming more attractive (Informal conversation with Egmose). Jobs on land can be a pulling factor for potential newcomers and established fishermen, who chose employment here because the industry pushes them due to stress caused by the regulations and surveillance. Theodorsen thinks that:

> *I believe that within the next 5 years, numerous people will stop because of the psychical pressure, more than the physical.* (Interview with Theodorsen)

The newcomers may find it easier to handle the psychical work environment with tight management measures because they are taught fishing that way.

5.2 Fishermen in Spodsbjerg

The challenges in Spodsbjerg are identified based on the interviews with Nielsen and Petersen.

Surveillance as a means to keep fishing

The fishermen can stay in Spodsbjerg all year, where they fish around Spodsbjerg and near Langeland (Interview with Nielsen, Petersen). They leave the harbour in the morning and return in the evening, giving them a better opportunity for family life. Their work day can be characterised as harder because they empty nets more often, with seven-eighth tows a day (Own observations). The fishermen in Spodsbjerg do not have camera surveillance on their vessels because they do not use trawl as fishing gear and are not fishing in Kattegat. The fishermen in Spodsbjerg are thereby not required to have cameras onboard. The vessel the author went out with did nonetheless have cameras onboard to prove to the authorities that they were not catching fish they were not supposed to and not significantly more than a 12-meter vessel (Interview with Nielsen). The authorities implemented a closing period for vessels above 12 meters because they had the understanding that they were catching more fish. Nielsen and his crew wanted to disprove that so that they could continue fishing. They found it uncomfortable, but in an effort to keep fishing, they accepted it. Unexpected closing periods can become a push factor for the fishermen if they do not have the chance to rebuttal.

External impacts

Fishermen in Spodsbjerg fish with passive nets and experience a high amount of their catches being destroyed by seals and other marine mammals (Interview with Nielsen). When the fish are caught in the passive nets, they become easy targets for the marine mammals to feed upon. Furthermore, some mammals have brought diseases into some species. The diseases are not visible from the outside but become apparent when the fish are gutted. The infected fish have no economic value, and thereby they are just an expense for the fishermen because they are still withdrawn from their quotas (Interview with Nielsen, Petersen). Aside for marine mammals, the fishermen in Spodsbjerg express concerns regarding cormorants. Which they believe are eating large shares of the codlings, since they do not see cods between the very small sizes and very big sizes (Interview with Petersen). Runoff from agriculture and discharge of wastewater from human settlements and industry have been led out into the Belt Sea for decades. The runoff can stem from agriculture, where drain pipes lead the water out into the Belts, and discharge of wastewater from industry, such as RGS Nordic. The pollution has, according to Nielsen:

> *They say there is some kind of a layer of filth in the bottom out there (The belt of Langeland). Everywhere, all the way north. (...) It is north of Hou and across the*

> *belt. They say the bottom is totally destroyed. But they have led it out for 40 years, that sludge.* (Interview with Nielsen)

If this is true, it might be the reason why fish cannot live here, since there is no available food. Compared to the fact that fishermen who use trawl claim that fish continue to live where they are, it might be possible that the trawl is mixing up the filth on the seafloor with the shovels they use.

Value of caught fish

The fishermen in Spodsbjerg do not catch the same amount of fish as in Bagenkop, which makes the economic turnover generally lower. Furthermore, are the fish caught in the Belt Sea worth significantly less than fish caught in the North Sea, (Own observations). According to Petersen, the differentiation of value can be attributed to the state of the species in the Baltic Sea, where fish are not labelled with MSC[1]. Another aspect contributing to the fish's low value is the fact that the fish is not transported to the fish auctions right away. The value of the fish drops because it is no longer fresh. In this case, infrastructure with limited collection and transport is a challenge. In terms of making fishery more sustainable and potentially providing a label which gives the fish a higher wholesale value, Petersen mentions the environmentally selective inshore fishery label (NaturSkånsom[2]). Petersen tried to catch and sell fish under the label, but it did not sell at the fish auction because the amount he caught was not big enough for wholesalers and too big for small-sized enterprises. It is also a question of infrastructure; if the fish has been in the refrigerated storehouse for some days, it might not be interesting for wholesalers to buy it.

5.3 Generally on Langeland

Overall, the fishermen on Langeland recognise a difficult future ahead, where they are unsure if there is room for them and the fishery. Fishermen from Bagenkop and Spodsbjerg identify challenges specific to their communities, especially regarding the two kinds of fishing gear used on the vessels. Banning trawl gear can become crucial for the fishermen in Bagenkop who use these. The fishermen in Spodsbjerg are mostly fishers as a subsidiary occupation, and that is also how they see it in the future. Some challenges are common for both communities and are presented in the following.

[1]The MSC certification has three main focus areas: fishing from healthy stocks, ensured long-term by management, and minimised impact on the broader ecosystem (Marine Stewardship Council, 2023).

[2]The NaturSkånsom label has three main focus areas: selective fishing gear, healthy stocks, small vessels with short fishing trips (The Ministry of Food, Agriculture and Fisheries, 2023)

Quotas and closing periods

The challenge all the interviewed fishermen mention, especially the interviewed fishermen in Spodsbjerg, talk about is the declining quotas on cod. The declining quotas have meant that an overall turnover for the fishermen is lower than previously, making it hard for them to make a living. Nielsen directly says: *We have been sucking on the patch the last years.* (Interview with Nielsen). The hardship in terms of making a reasonable turnover is also reflected in the problems in terms of recruitment, where fishermen choose to fish from harbours, where there is a prospect of reasonable income. The fishermen understand the necessary cuts of quotas in terms of securing the survival of fish stocks. Still, the uncertainties connected to the quotas are pushing the fishermen out of the fishery. To some extent, they understand the need for closing periods as well. Closing periods are certain periods of time when the fishery of some species is closed so that the fish can breed and grow. Petersen outlined his frustration with low quotas with the fact:

> The quotas on cod, that is the issue, it is straight zero. I have 1% left of what I started with. 1%! (Interview with Petersen)

Nielsen is the last remaining full-time fisherman in Spodsbjerg, and he is considering stopping. The pushing factor for him is the way management and implementation of regulations are handled. In particular, Nielsen is frustrated that quotas can be cut without monetary compensation and asks why. It is frustrating because he loaned money to buy additional quotas, which equates to the quotas' initial worth. Cutting the quotas makes it hard for him to argue to the bank why they should lend him more money to buy additional quotas. The possibility of renting quotas makes it easier, but the overall turnover is lower. Nielsen and Petersen appreciate the fact that regulation is implemented but are frustrated when it seems to be without a set plan. To Nielsen, the management measures such as closing periods seem to be implemented on a temporary basis. When it is extended, it causes a breach of trust in the authorities. The breach of trust can become a push factor if the fishermen experience it multiple times.

Implementation of regulation and setting a fixed plan

The fishermen in Bagenkop and Spodsbjerg appreciate the management and regulation measures taken because they do not wish to destroy their own livelihood. Although, they would like to understand more about why certain decisions are made, the motives, and the plan. Communication is especially lacking in these matters. Currently, the biggest feeling in the fishery communities is that management and regulation are forced upon them.

Two of the interviewed fishermen, Kølle and Nielsen mentioned the need for a management plan. The plan they have in mind is, according to Nielsen:

> *It is exciting to see if they could make a management plan - a five-year plan. It could be fun to have such if they would stick to it. If they could draft a five-year plan, so we would know whether to stop, or, or, if it was possible to continue. That could be fun.* (Interview with Nielsen)

This plan needs to be precise and followed to the letter, somewhat contradicting current management. The plans are made on a yearly basis, which makes it hard for fishermen to know what is going to happen and when. The yearly plans can push people who are considering becoming fishermen to change their minds. It is difficult for newcomers to enter the industry when they can not be sure how it will look. According to Petersen, the fishery will, in the future, be a subsidiary occupation, where fishermen have another line of work and have fishery on the side. For Petersen, the new and, according to him, strict regulations, alongside back pains, pushed him out of the fishery while being pulled by the offer of education as a deckhand on the nearby ferry. For Nielsen, it might be the unpredictable management where closing periods are extended, limitations on species to catch, and the worth of the caught fish that can end up pushing him out, but without pulling factors, it is not likely he will leave. Furthermore, it is not his wish to leave. For Kølle and Theodorsen, implementation of the total ban on trawl as fishing gear would mean they could not fish near their homes, but they would keep fishing elsewhere.

5.4 Possible scenarios

Based on the identified challenges, it is possible to synthesise some scenarios following the method for the 2x2 matrix framework, described in Section 3.1. In this research, the uncertainties have been investigated as challenges because the aim of this study is to identify means of intervention in terms of supporting fishery in small island communities. To investigate what can happen, scenarios are synthesised based on the analysis of statements in the exploration phase in the previous sections.

The challenges identified based on the statements are:

- Ban on trawl as fishing gear
- Predators' impact on stocks
- State of the fish stock
- Closing periods
- Surveillance as a management measure

Generally, these bullets fit into two aspects: the fish stock changes naturally, or means of management to secure the fish stock changes. These challenges can be arranged in different ways to form scenarios. Initially, the challenges are arranged in the matrices, presented in figure 5.1. To eloborate the scenarios, considerations in terms of how close some of the challenges are linked, how immediate the impact on the fishermen is, and how likely it is that interventions can be made are considered.

Matrix 1 intersects the ban on trawl and the regulations of predators. There is no link between these two challenges, and the matrix is established to investigate the opportunities for the fishermen to convert their fishing gear if predators are a focus in management. The total ban on trawl as fishing gear is an immediate challenge to the fishermen in Bagenkop, where they are forced to fish outside the Belt Sea or stop fishing with trawl. A decision regarding the proposed ban on trawl is postponed until the end of 2023, but a decision will be made, and since the EU has agreed upon the 100/30/10 protection plan, some sort of ban will likely be implemented. In terms of regulation on the predators, it is an intervention the fishermen have been asking for, but until now not reacted upon. By having this intersection, it is possible to investigate if the fishermen are willing to convert their gear if regulation on predators is implemented.

Matrix 2 intersects the closing period and surveillance. The link between the closing period and surveillance is somewhat close because fishermen are trying to prove they do not catch what they are not supposed to by having surveillance on their vessels. Closing periods are determined yearly; therefore, the fishermen are made aware of these at the beginning of the year. Surveillance is a means which can impact the fishermen significantly in terms of their psychical health, but if it makes it possible for the fishermen to continue fishing, they seem to accept it. Not all closing periods are determined in Danish politics, so it is not likely that these changes. Surveillance is a means to control and keep tabs on the fishermen, implemented by Danish politicians. Even though Danish politics do not solely determine the closing periods, this matrix provides an idea of what compromises the fishermen are willing to make.

Matrix 3 intersects the fish stock and the ban on trawl. The link between the state of fish stocks and trawl as fishing gear has had rising awareness because claims have been made regarding trawl as destructive to the seafloor and causing habitats to disappear. It is hard to say why fish stocks are impacted and how to ensure that it is stopped. Predicting how the fish stock will look in the coming years is also problematic. Changes in the stock can affect the fishermen in the long run. If there is no fish, the fishermen will lose their livelihood. A means to protect the fish stock is through the ban on trawl as gear, but it could have devastating effects on small-scale inshore fisheries in coastal communities.

Matrix 4 intersects the fish stock and predators. The link between these two is close because it revolves around the food web in and around the oceans. The fishermen have tried to put awareness of predators as a problem for the fish stocks but have not been heard. If the predators have the impact which the fishermen claim, the impact is immediate for the fishermen because predators destroy their catches. Due to an unsure understanding regarding the level of predators and their impact on the fish stocks, no means have been taken to regulate them. Interventions can be made to secure the fish stocks from harm by predators, but it requires an investigation of how significant the impact is. This matrix is somewhat outside the scope of the research, but by including it, it can help fishermen feel acknowledged.

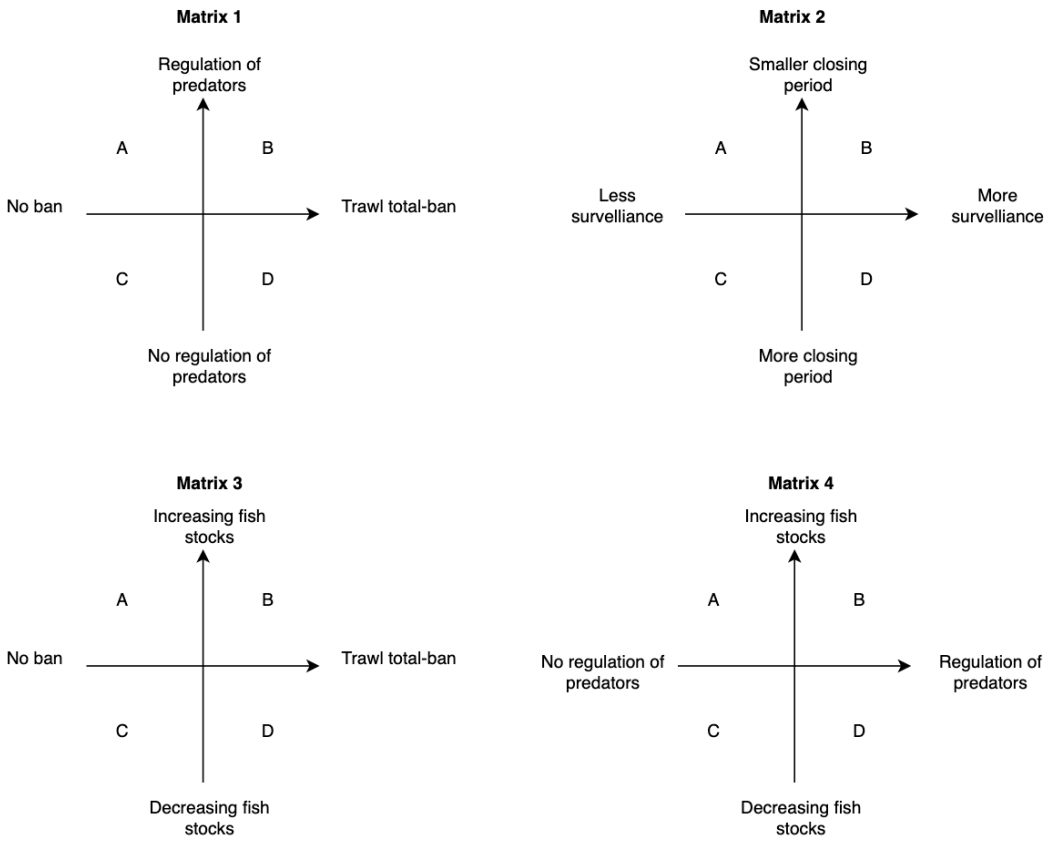


Figure 5.1. 2x2 matrices for possible scenarios.

The considerations regarding the four matrices show that some are more relevant to discuss with specific fishermen than others. Matrix 1 and 3 are especially relevant to discuss with the fishermen in Bagenkop, while Matrix 2 can be discussed with all the fishermen. It is possible that the fishermen in Spodsbjerg can have more to say about Matrix 2, and especially Matrix 4, because their immediate challenges are presented here.

5.4.1 Presenting the scenarios to the fishermen in Bagenkop

The matrices 1 and 3 were presented to Kølle, Grabentinn, and Theodorsen, fishermen in Bagenkop, at a focus-group interview. The aim of the focus-group interview was to identify what kind of settings the fishermen could imagine themselves working in in the future and how they would react to specific settings.

The fishermen in Bagenkop will perceive the ban on trawl as a pushing factor and cease to fish out of Bagenkop. They would move further north and stay there in the months they are not there now. It would not incline them to shift to passive gears because they do not see the reason to. And according to Theodorsen:

> *It is totally impossible to make a living solely based on passive gears because of cormorants.*

And Kølle adds:

> *Yes, and I would vomit too.*

Where to Grabentinn responds:

> *Yes, yes. If one had to fish with 7-800 nets every day* (Focus group interview in Bagenkop.)

So the fishermen cannot imagine themselves fishing with passive gillnets. They would instead move their fishery. They will not convert their gears, even if the predators that destroy the catches are regulated. They would rather keep fishing with trawl than convert their gears. It is more important to them to keep fishing with trawl than ensure that fishery is conducted out of Bagenkop. But on the other hand, the fishermen from Bagenkop fish from here when it is possible, so there is a strong community sense, but only when it is reasonable to fish here. So work is prioritised above the sense of community. It seems that the fishermen are experiencing a conflict since they do not wish to convert their gears, but they would like to fish from Bagenkop, where they live. It is an indication that people who want to become fishermen will settle where it is possible to conduct fishery. If it is impossible to do so from Bagenkop, and what is more, Spodsbjerg, no new fishermen will settle here. Presenting the scenarios was relatively quick because the fishermen had difficulty imagining themselves in these specific settings, and the conversation turned towards the abovementioned challenges. A new focus was the fact that the fishermen do not recognise how they should be the ones causing the problem and do not understand why they are being blamed for it. The aim of the interview was also to generate means of interventions in terms of securing continued fishery in Bagenkop, which are presented and discussed in Chapter 6.

The point of establishing scenarios is to outline three to five matrices and then deliberate and reach one or two. However, in this case, it is hard to establish a focus on just one or two because many different aspects impact the fishery. All at the same time. When introduced to the scenarios, it was hard for the fishermen in Bagenkop to see themselves in them because they identified a difficult future with complicated settings ahead, so making them operate in a specific setting was not ideal. Therefore was, Matrix 2 and 4 not presented to the fishermen in Spodsbjerg. Instead, they were asked directly what means of interventions would be necessary to support fishery in the community.

A discussion of possible interventions 6

The fishermen can not relate to the scenarios' specific settings because they generally see a challenging future ahead. To ensure that the purpose of identifying interventions was still reached, the approach to the fishermen in Spodsbjerg differed from that of the fishermen in Bagenkop. Specific questions were asked during informal conversations at the harbour and the storage garage near the harbour. These questions were regarding monetary support, where the fishermen were asked directly what they would use the money for if they were able to gain financial support. The question was asked in two categories: they could either receive a specific but somewhat low amount every year for some years or get one large amount of money once. Notes from the informal conversation are presented in Appendix G. The discussion is divided based on the distinction that some interventions require direct monetary support and others do not.

6.1 Interventions demanding direct monetary support

Interventions that require immediate financial support are related to logistics, the potential trawl ban, funding projects, and closing periods and quotas.

Secure logistics and the potential trawl ban

The fishermen in Bagenkop and Spodsbjerg do not necessarily acquire the same means of interventions to support fishery in the two communities. But one of the main necessities in both is the logistics, where the collection of fish could be secured. It is already essential for the fishermen in Spodsbjerg and can become more important to the fishermen in Bagenkop if the ban on trawl is implemented. obs. If the proposed trawl ban is implemented, it would mean that the amount of fish landed in Bagenkop would become so low that it would cease because the fishermen do not want to convert their gear if they can fish elsewhere. Logistics are secured by the large vessels that bring in a large amount of fish, so it could become impossible to uphold the fishery if the trawlers were banned from the area. A ban could be implemented in specific sites because fishing with trawl is not conducted in large parts of the Belt Sea, cf. Figure 6.1. A ban implemented in specific sites could keep the fishermen in Bagenkop, but it could also disrupt the purpose of the ban. It is worth considering if

the purpose of the ban can be accomplished without banning trawl entirely.

If the government want to keep fishery in Bagenkop, another possibility could be to ban trawl for vessels over a specific size in the Belt Sea and let the smaller vessels continue in certain sites. If the government were to do so, it would also demand support to secure logistics because it is unsure whether the private man who runs the refrigerated storehouse would continue to do so. On the other hand, it might be good for the fishermen in Spodsbjerg if the trawl was banned from the Belt Sea because that would give links in the marine ecosystem a chance to re-establish, and fish could replenish. In addition, it might provide the fishermen in Spodsbjerg with the opportunity to catch more fish because they would be the only ones fishing in the Belt Sea.

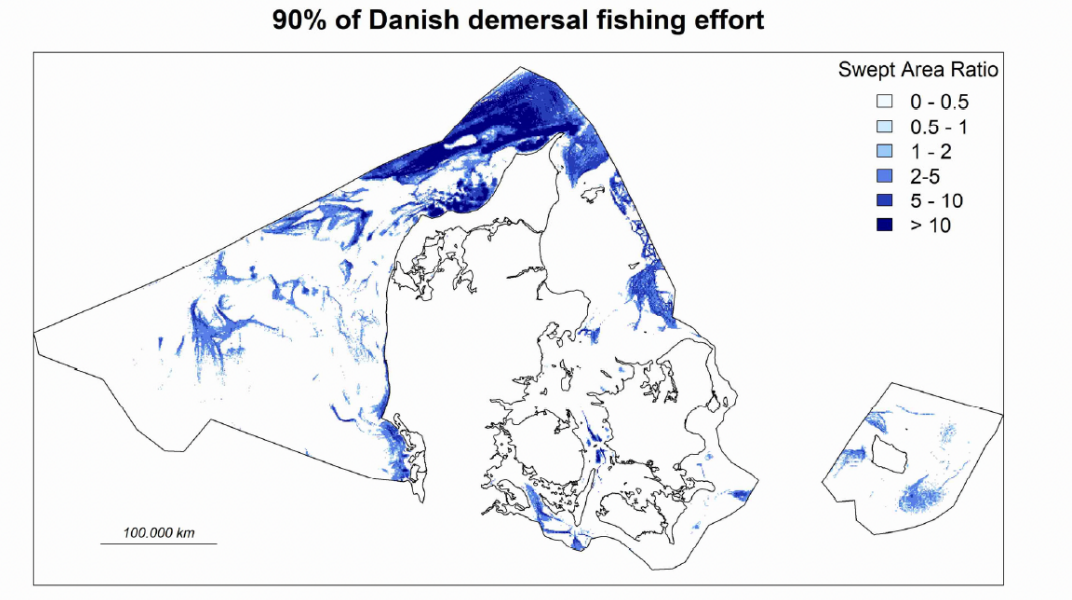


Figure 6.1. Satellite data showing where fishing is conducted using trawl as gear in Denmark (The Danish Fishers PO, 2023).

Funding for projects

There are many suggestions in terms of what one large amount of money could do for the fishery in Spodsbjerg. Facilities at the harbour, deepening of the harbour, making it possible for larger vessels to go on building berth etc. (Informal conversation with Nielsen, Nielsen, Petersen). Overall these aspects fit into a category of harbour maintenance. Spodsbjerg Harbour is privately owned and run by a board of directors, who have been applying for funds to renew the harbour, but have not received enough (Informal conversation with Petersen). One of the projects they have been applying money for is the expansion of the harbour so larger vessels could land their fish in Spodsbjerg, which would give way for a more considerable turnover in Spodsbjerg. The board of directors have applied for money through the EU and private funds, but in these places, the application might be one of many, making it less likely that they will receive money for their project. If it is the authorities

wish to support fishery in small communities, they could set up a fund where small-scale inshore fishermen who fish with selective gears could apply for funds. Some of the projects are connected to the vessels themselves, where fishermen acquire help in terms of individual projects. If a fund is set up, it would be possible for them to apply for monetary help in terms of vessel upgrades. Funding for individual projects could give the fishermen an opportunity to avoid fines because they could potentially make upgrades that would make it easier for them to uphold the laws. There is a chance that a fund would distort the unity between the fishermen if individual projects are funded.

While considering these interventions, it is important to remember that many of these initiatives would be in vain if the quotas were kept at the current level. The fishermen in Spodsbjerg are limited due to low quotas on the fish, e.g. cod, they have a historical right to. Nielsen says:

> *Any initiative taken would not really matter if the fishery is limited due to non-existent quotas.* (Informal conversations with Nielsen)

Closing periods and quotas

Until the fishery for cod was closed, it was the species that ensured high economic turnover of the species caught in Spodsbjerg. Since the fishery for cod was closed, fishery for Sole has made it possible for the fishermen to uphold a reasonable turnover, but they are waiting to catch cod again. They do not expect to get all their cod quotas back at once, but it would be good to have a small amount when possible (Informal conversation with Nielsen). An opportunity to help the fishermen in Spodsbjerg right now is to investigate the possibility of helping them in terms of quotas on Sole because the opportunity to catch Sole makes the fishery possible by ensuring a reasonable turnover. The fishermen are leasing the quotas for Sole, which makes the turnover less than it could be if they had quotas themselves (Informal conversation with Nielsen, Petersen). An opportunity that could be explored in regard to giving the fishermen access to more quotas on Sole, is by enhancing the amount of Sole that is appointed to the arrangement for small-scale inshore fishermen. It could benefit the fishermen in Spodsbjerg because it could potentially give them a higher turnover if the quotas came through the arrangement. It is, of course, important that the amount of allocated Sole is within the limits of reasonability, so that other fishermen do not feel robbed.

Reinstatement of a closing period during the period in which the fish spawn is suggested by Petersen. During this period, the fish stocks could breed in peace. Although closing periods can greatly distress the fishermen because they do not have an income during that time, it could be possible to implement the closing period by supporting the fishermen monetarily while they stay at the harbour. According to Nielsen, fishermen in Germany and Poland receive money to stay in the harbour during closing

periods, which he argues could also be good for the fishermen in Spodsbjerg. Even though the suggestion of a reinstated closing period is his, Petersen disagrees because he does not believe in artificially keeping the fishery alive.

6.2 Interventions aside from monetary support

Generational shifts

Outside of the monetary support, it is essential for the fishermen that a way of securing generational shift is established and supported by the authorities (Focus group interview in Bagenkop)(Informal conversation with Petersen). This could be by setting up a pathway for the fishermen to pass on their quotas to specific fishermen. For example, it could be to fishermen they are related to or younger fishermen who have been working on their vessels and wants to take over after them. By making a pathway supported by the authorities, younger fishermen could take over specific vessels and quotas. Thereby, the fishermen could stay in the community they have been working in. It would mean that the authorities, aside from establishing the quotas, also meddle in the aspects of the private market in the fishery.

A specific management plan

The primary frustration the fishermen are experiencing is the lack of a specific management plan. Nielsen and Kølle are requesting a plan, which the authorities can not deviate from unless something out of the ordinary occurs because the uncertainties related to regulation that is implemented on a yearly basis create mistrust when it is not revoked. It is Nielsen's understanding that such a plan is on its way and will be presented in October. If this is not the case, it should be communicated clearly. It can be argued that communication is a critical element in fisheries management because people who are trying to make a living are involved. The mistrust between fishermen and authorities has created an untenable situation where fishermen feel pursued, and the authorities do not trust the fishermen. Setting a fixed plan is difficult in an uncertain system, and the expectation of such a plan is mostly an expression of the fact that it is the uncertainties of limited management that can push fishermen out of the fishery.

Tourism

A means of support that would not benefit the fishermen directly is by supporting the opportunities of tourism, where fishermen are involved. Fishery plays an important role in tourism in Bagenkop; many of the events happening in Bagenkop are connected to the fishery. The community has made their story about the fishery and is telling that story to tourists. The fishermen are connected to the tourists through the events conducted at the harbour. When the boats moor at the quay, tourists can buy fresh fish and talk with the fishermen. It is a way to experience fishery without being a fisherman. Thereby, tourism is enforced by the fact that there are fishermen. The events are planned and executed by volunteers who want to establish a focus on the story of fishery in the community. Supporting the group behind such events could be a means to ensure the fishery in communities branding themselves through fishery. Tourism is not a focus in Spodsbjerg, even though they have a large area of holiday homes and a camping area. There is a yearly festivity at the harbour, but it is not branded the same way as in Bagenkop. Support could mean that the volunteers would have the opportunity to enhance focus on the fishery as a factor of tourism.

Conclusion 7

Numerous challenges exist in the small-scale inshore fishery, which for this thesis has been researched in the coastal communities of Bagenkop and Spodsbjerg. These communities are located on Langeland. The community of Bagenkop is more dependent on the fishery, and the fishermen are an important part of the communities storytelling. The fishermen who fish here descend from a long line of fishermen and are closely connected to the fishery, where they work full-time and dedicate their work life. The two challenges discussed the most between the fishermen are the potential ban on trawl in the Belt Sea and the use of camera surveillance on their vessels. The fishermen in Bagenkop operate with trawl as fishing gear, and many of the smaller vessels fish in the Belt Sea, therefor there is a risk that fishery will cease in Bagenkop if the ban is implemented. Camera surveillance is a requirement for the vessels that operate in Kattegat. It is a means to keep tabs on the fishermen and ensure that they are following the rules, but to do so, the surveillance has created a stressful physical work environment for the fishermen, making it hard for them to recruit new employees.

The community of Spodsbjerg is not as dependent on the fishery as Bagenkop because the fishery is only important to the fishermen and their relatives. The fishermen in Spodsbjerg fish with passive nets, and most of them have fishery as a subsidiary occupation. They predict that fishery in the future will only be conducted by fishermen who have fishery as a subsidiary occupation. They identify challenges in terms of predators destroying catches and a low economic turnover based on the amount of fish they land, held against what they have quotas for. They experience their catch has been destroyed by predators such as seals. Additionally, diseases from the seals infect the fish, and due to the low amount of catch, the economic turnover has been low. Even the fishermen who have tried fishing under an environmentally selective inshore label have not seen an increase in turnover. Overall, the fishermen on Langeland identify challenges with declining quotas due to low fish stocks and closing periods, where they are forced to stay in the harbour or fish after species with a smaller economic value without any monetary compensation. They have lost trust in the authorities because regulations are implemented on a yearly basis, and some can stretch over multiple years without a concrete plan.

Based on the challenges, scenarios were established as presented in figure 5.1. Matrix 1 and 3 were presented to the fishermen in Bagenkop. Matrix 1, regarding the ban on trawl as fishing gear and regulation of predators, and Matrix 3, regarding the ban on trawl as fishing gear and changes in fish stocks, essentially meaning quotas. The matrices were presented at a focus group interview to investigate the possibility of fishermen converting their gear from trawl to passive gillnets. The interview showed that the fishermen would rather fish away from Bagenkop than convert their gears, both because of the uncertainty in terms of economic turnover and because it is not how they like to fish. It was hard for the fishermen to imagine these specific settings, so the interview quickly turned towards a conversation regarding future possibilities, such as interventions that could be implemented to support fishery in Bagenkop. Due to the hardship the fishermen in Bagenkop experienced in terms of imagining specific future settings, Matrix 2 and 4 were not presented to the fishermen in Spodsbjerg. They were instead asked directly in terms of what means of intervention they could imagine to support fishery in Spodsbjerg.

Of the interventions discussed in Chapter 6, the following suggestions are the most feasible. If it were possible for the fishermen to apply and get monetary support from a fund, they would, in Spodsbjerg, use it for projects such as the maintenance of the privately owned harbour and for projects on individual vessels. An intervention could thereby be setting up a fund specifically aimed at small-scale inshore fishermen fishing with selective gear. Outside of monetary direct monetary support, the fishermen in Spodsbjerg request support to secure logistics so collection and transportation of caught fish to the fish auction is secured. An element which could benefit all the fishermen is if attention is brought to the fact that predators are destroying catches and introducing diseases into species, making them worthless. The fishermen in Bagenkop and Spodsbjerg do not acquire the same means of interventions to ensure continued fishery in the two communities. It is not certain that fishery will continue in Bagenkop if trawl is banned as fishing gear. If that were to happen, it would be a loss for the community because the community is branding itself through fishery in terms of tourists and storytelling. The ban could be implemented on large vessels, which would leave the small vessels with fishing opportunities out of Bagenkop. It is not necessarily monetary support the fishermen need, it depends on how the authorities are going to conduct management in the future. A common request among the fishermen that could benefit both communities would be if management were planned more specifically over multiple years. If it were possible to set a specific plan for multiple years, it would allow the fishermen to make an extensive plan for their future in the fishery. It might convince fishermen to stay if plans to e.g. monetarily support the fishermen during closing periods, were implemented. Overall fishery in small coastal communities require governmental support and in some cases monetary support to keep existing.

Perspectives 8

This research was conducted on the premise that fishery should continue to exist in coastal communities where the small-scale inshore fishery exists. If this notion is disregarded and the government chooses to phase out this kind of fishery, it would impact places like Langeland. Supporting small-scale inshore fishery in Bagenkop and Spodsbjerg is a means to support the coastal parts of Denmark. If it is not a prioritisation the government can agree upon, but they wish to support places such as this island in other ways, tourism is worth looking into. Tourism is becoming especially important on the island, and one of the aspects the island is branding itself through is experiences connected to the water. Some also involve fishery, where the fishermen contribute. If the fishermen were no longer there, it would mean that Langeland would have to focus on some of the other aspects of tourism. Angling is one of the aspects which could still connect tourists to the fishery and attract them to the island. Angling is especially present in Spodsbjerg, where many foreigners rent summerhouses and go fishing from rental boats. Supporting this side of tourism could ensure that Spodsbjerg does not end up as a dormitory town. Since fishery is not as crucial in Spodsbjerg, it might be worth looking into other opportunities to support the community. Without the fishermen, the fishery would still be important in Bagenkop, where they are telling the story of the fishery and will continue to do so. The closure of the fishery might even become a new addition to the story, which could contribute to tourism. A relatively new project under development is called **SHORES**. **SHORES** is a project where the ocean and activities related to the water are under particular focus. Events are arranged as part of the project throughout the summer, and multiple funds give money to develop and support these events. A part of the project is to apply for money to build facilities close to the water in an effort to make Langeland the epicentre of activities connected to the water. Another tourism sector Langeland is trying to develop a focus on is hiking trails, which should attract tourists to the island because of its nature and environment. Many opportunities to develop the tourism sector exist on Langeland, but without the fishermen, it will not be the same. If the government agrees that Denmark's coastal parts deserve support, looking into supporting some of these initiatives could be a start. Still, it would not avoid the fact that these places would become dormant outside of the seasons.

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A Interview guide

Table A.1. Interview guide

INTERVIEW GUIDE		
THEME	BACKGROUND	QUESTIONS
Before starting the interview	Setting the agenda	• Introduce interviewer • Introduce project – Momentum in this area right now • Acceptance of recording • Possibility of anonymization
Introduction	Interviewee background and history	• What is your name? • What is your occupation?
Fishing	Interviewee everyday life	• How do you fish? – Gear, In-shore etc. • Where do you fish? • Why do you fish?
Management and regulation	Perception of tools of regulation and means of management	• Which of the interventions had the most impact on your daily work? • How would the potential trawl-ban impact you? – And your colleagues?
Scenario Planning	Gather knowledge of uncertainties and driving forces	• What challenges do you face in your work? • Which limitations are most important for you as a fisher? • What drives you?
Development of the fishing in Spodsbjerg/Bagenkop (past and future)	Investigate the relation between community and fishing	• How has the community developed while you have been fishing here? – How has the harbor developed? • How do you think the fishing will be in the future?

B Collection of empirical data

The overall schedule to show how the collection of empirical data was conducted is visible in table B.2. Additional interviews were planned, but due to a lack of communication from the interviewee, never executed. This was the case in both weeks 10 and 14. In week 20, the purpose of returning to Langeland was to follow up on the research conducted thus far.

Table B.2. Schedule for the collected empirical data

Time schedule for collection of empirical data		
Date	Where	Purpose
Week 10		
8/3	Visit to center for local history on Langeland	Gain available background information regarding the two communities and contact information on relevant people to talk with
9/3	Interview with Frank Theodorsen at their boat Gi-Bri	Establishing a relationship and knowledge development in terms of who, how and why he is a fisher
9/3	Bagenkop harbour	Participatory observations at the harbour in the afternoon
10/3	Spodsbjerg harbour	Participatory observations at the harbour in the afternoon
12/3	Interview with Klaus Nielsen at his house	Establishing a relationship and knowledge development in terms of who, how, and why he is a fisher
Week 14		
3/4	Spodsbjerg harbour	Participatory observations at the harbour in the morning
4/4	Out fishing on the vessel SG120	Participatory observations on a fishing vessel (06.00 - 18.00)
5/4	Informal conversation with Henning Egmose at his house	Knowledge from an retired fisher regarding fishery and community development
5/4	Interview with Sune Petersen on the ferry Langelandslinien	Knowledge regarding fishing as a subsidiary occupation
6/4	Focus interview at Gi-Bri with Andy Grabentinn, Theodorsen, and Kølle	Reactions to the established scenarios and further talk about what is necessary to keep fishery in Bagenkop
6/4	Visit to the Fiskeriets Hus	First hand experience of how Bagenkop has changed since the downscaling of the fishing fleet
6/4	Bagenkop harbour	Participatory observations at the harbour in the afternoon
Week 20		
16/5	Informal conversation with Klaus and Andreas Nielsen at the harbour	Directly asking what they would use money on if it were available
18/5	Informal conversation with Petersen at the fishing garage	Directly asking what they would use money on if it were available

C Transcribed interviews

Transcriptions of the interviews are available through the following hyperlink - Transcribed interviews. The transcriptions are divided according to the method of the interview and whom are interviewed.

The transcripts cover individual interviews with:
Frank Theodorsen
Klaus Nielsen
Mads Kølle
Sune Petersen

And a focus group interview with:
Frank Theodorsen
Mads Kølle
Andi Grabentinn

D Writing codes

The categories are based on the themes from the interview guide, cf. Appendix A. The categories from the interview guide are as follows:

- Fishing
- Management and regulation
- Scenario Planning
- Development in the coastal community

After coding in these categories, it was clear that statements under scenario planning and development in the coastal community correlated more than expected and could therefore be assigned under one overall classification, the future. An additional category was established based on the first sub-research question regarding challenges. Overall, the coding structure with categories and subcategories became as follows:

- **Fishing**
  - Family life
  - Generational change
  - Work environment
- **Management and regulation**
  - Danish arrangement for small-scale in-shore fishery
  - Total-ban of trawl
- **The future - Scenario Planning and Development in the coastal community**
  - Tourism
- **Challenges**
  - Control
  - Economy
  - Natural
  - Politic

E Observations scheme and field notes

Table E.3 show the scheme which was followed during the observations.

Table E.3. Schedule for the collected empirical data

Scheme for participatory observations		
Date	Where	Working questions
Week 10		
9/3	Bagenkop harbour	• What happens at the harbour? • Who is at the harbour? Why?
10/3	Spodsbjerg harbour	• What happens at the harbour? • Who is at the harbour? Why?
Week 14		
3/4	Spodsbjerg harbour	• What happens at the harbour? • Who is at the harbour? Why? • Anything different from the last time?
4/4	Out fishing on the vessel SG120	• What happens at the harbour before a vessel leaves? • What happens aboard a vessel? • How do fishermen work?
6/4	Bagenkop harbor	• What happens at the harbour? • Who is at the harbour? Why? • Anything different from the last time?

This appendix presents the field notes from the observations, the notes are structured by place and date.

E.1 Observations at the harbors in Bagenkop & Spodsbjerg

The purpose of being at the harbor is to gain an understanding of what is happening in a small coastal community, at what time.

Bagenkop harbor - 9/3

In the afternoon (between 12.30 - 15.30) at the harbor there is not much life. People, mostly elderly, make rounds at the harbor. And they talk with the few fishermen who are in. These fishermen are elderly too. There is not many cutters in the harbor at this time.

Spodsbjerg harbor - 10/3

In the late afternoon (between 14.30 - 17.15) at the harbor there is not much life, expect for when the ferry departs and arrives, which is does once per hour. The little life that creates is mostly around the ferry port, but some do wander to the harbor an have a look around. There is not much to see since the boats that are still fishing from Spodsbjerg is either out, or still at the harbor. Pilots are

shipped from Spodsbjerg which happens quiet regularly. People in cars make rounds at the harbor, either people, who used to fish, or fish as a subsidiary occupation. Some come there to look for the fishermen who are out, to buy fish at the docks. Lately, giant mould has been shipped out from Spodsbjerg. A floating dock has been established at the old ferry port, which draws attention from both ferry passengers and locals.

Spodsbjerg harbor - 3/4

In the forenoon (between 8.00 - 12.00) nothing happens at the harbor in Spodsbjerg. There is only a few tourists who goes to the playground by the ferry. The harbor is stagnant.

Spodsbjerg harbor - 4/4

In the early morning (5.30 - 6.15) it is still dark outside and not many people are out. A few cars are waiting to go with the ferry. The only light at the harbor is coming from SG120, a fishing vessel that is leaving the port at around 6.00.

Bagenkop harbor - 6/4

It is Maundy Thursday, a holiday in most Christian countries. Even so, the fishermen are out from Bagenkop. Life is buzzing at the harbor, both with tourists who are visiting the town and locals who are out to enjoy the holidays. The ice cream shops is open and so is the restaurant, both quiet busy.

E.2 Observations and conversations out on a fishing vessel

The purpose of going out on a vessel is to gain an understanding of what it actually means to be a fishermen, and have the opportunity to talk to Klaus while being at sea.

SG120 - 4/4

The workday begins at 6.00, where Klaus and his crew meet at the fishing vessel. Ice is collected at the ice storage and brought aboard. They do so to pack the fish, while at sea.

SG120 is a vessel where the fish with nets. At this time, they have 600 nets i the water, and we are going to 400 of them in this day. There is only room for the most necessary on the boat. Fore is a set up for hailing net, collecting the fish and gutting them before they are packed. Astern is a set up for unraveling the nets, so they are ready to be set back in the water. In the wheelhouse is all the mechanics for controlling the vessel, alongside screens with electronic systems for maps, sonar, and so on.

The nets were put out yesterday, and on the way to the first row of nets, I had the opportunity to talk with Klaus, without any agenda, an informal conversation. The notes from this conversation is

accessible in Appendix F.

After having pulled approx. 7 rows of nets between 07.45 and 16.45 it is time to head home. One row of nets were not pulled entirely, they pulled some, but Klaus decided to let them stay because of how empty they were. They also set of some extra nets, but mostly the nets were pulled and set in the same spots. The nets were generally very empty, but it amounted to 550 kg plaice, 198 kg mixed dag and turbot, 25 kg Dover sole, and 1 box of cod. This is a little below average, it would have been god with an extra box of Dover sole. Especially considering 13 kg Dover sole equates 200 kg plaice in monetary unites.

Returning to the harbor at 18.00 clock people are waiting, buyers, both commercial and private. One has come all the way from northern Funen to buy freshly caught fish. The rest is stored in the ice storage until it is collected buy fish auctions.

Overall

Klaus runs his fishing as a business, where he is in charge of sailing and taking the finale decisions, with help from his crew members, he is an active part of the gutting on the way home, but until then the crew members have this task.

Being out on a vessel gives one the sense of forthrightness, unpredictable, and autonomous.

F Notes from informal conversations

Klaus Nielsen on SG120

Owner of the vessel SG120. Different subjects came up during the informal conversation with Klaus.

Fish auctions

- They collect the fish twice a week right now, that is good enough
- Once per week is to little, the fish is standing to long
- There is price difference between the fish caught in the North Sea and the fish from the Baltic Sea, on this day 22 danish crowns to be exact
- A 30% expense
- A more local fish auction would make ends meet, because fisheries are concentrated at the Danish vest coast

Local buyers

- Selling to local buyers, such as fish shops and restaurants, gives a bigger profit

Shores Langeland initiative - From sea to table

- Founded
- Questions regarding the long term plan, it intervens with how they do business now, and it can only be done in holiday seasons.
- It sounds fun

Scrapping

- To get the loans he has in the bank clear, he does not have any alternative
- It is to late to do anything

Other players in the market for space at sea, which might disturb the natural environment.

- Fixed Femarnbelt Connection
- Offshore wind turbines
- Oxygen depletion

Retired fisherman Henning Egmose

A fisherman himself until 2006, has lived his entire life in Bagenkop.

Fishery in Bagenkop

- It was the foundation on which the city existed.
- Alongside the lighthouse, filleting station, the fortress, and the ferry - a loss of 300 jobs.
- Most fishermen diversify themselves today, and does not rely solely on fishery
- Old refrigerated storehouse - from the 60s
- In 1967 were there 75 vessels in the harbor

Less fish

- Pollution from agriculture, waste water, Stigsnæs
- Cormorants and seals

Fisheries management and regulations

- Makes fishermen say "Now I don't want to fish anymore"
- The differentiation between living weight to gutted weight, wrong estimations give them fines
- Difficult for newcomers, because there is so much

The future

- A possible six inches maximum on the trawling disks
- A need for flexibility
- To much difference between nets and trawls
- Tourism can give something for a couple of months, a subsidiary occupation.
- It i hard to predict and imagine how fisheries could survive
- Necessary to recruit young people

Ban on trawl in the Belt sea

- Fish were they trawl, how does that make sense?
- Fishermen in Bagenkop are not happy
- No reason, the stocks has always fluctuated.

G Notes from the informal conversations conducted at Spodsbjerg Harbour

Andreas Nielsen

A certain amount of money for a number of years:

- Support for fishing gear
- Updrage of boat
- Support during closing periods
- Secure line of transportation
- Focus upon fish that is caught with selective gear

A large amount of money once:

- Maintenance of the harbour
- Deepening of the harbour
- Making it possible to get vessel on the building berth
- Fund for local purposes

Klaus Nielsen

A certain amount of money for a number of years:

- Secure logistics - fish collection
- Regulation of predators
- Support during closing periods
  - As they do in Germany and Poland

Other perspectives:

- Being able to fish for some cod in the months they are there
- If they want fishermen to fish out of Spodsbjerg there has to be the prospect of advantages
  - It could be by giving them access to a small amount of cod-quotas
- Looking forward to a set management plan they* talk about

Overall, it does not really matter what you are doing to support fishermen if there are no quotas.

Sune Petersen

A certain amount of money for a number of years:

- Support during closing periods
- Logistics
- Quotas without the historical right - Sole
- Focus on the fishery as an education

A large amount of money once:

- Fund for in-shore selective gears
- Facilities at the harbour
- Stoping fishery in periods of fish roe

Other perspectives:

- Focus on illegal fishery
- Evaluating the purpose of the discard* between trawling and passive nets
- Brand fish as the most sustainable resource of proteins