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Coastal fisheries in the North Atlantic

**Jónas R. Viðarsson
Gunnar Þórðarson
Edgar Henriksen
Audun Iversen
Durita Djurhuus
Tønnes Berthelsen
Heather Manuel
Tom Brown
David Decker**

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Report summary

Title	Coastal fisheries in the N-Atlantic		
Authors	Jónas R. Viðarsson ¹ , Gunnar Þórðarson ¹ , Edgar Henriksen ² , Audun Iversen ² , Durita Djurhuus ³ , Tønnes Berthelsen ⁴ , Heather Manuel ⁵ , Tom Brown ⁵ and David Decker ⁶		
Report no.	01-15	Date:	January 2015
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Summary in English:	<p>Coastal fisheries are an important part of the North Atlantic marine sector and a vital part of a successful regional development in the area. This report provides an overview of the coastal sectors in the Faroe Islands, Greenland, Iceland, Norway and Newfoundland & Labrador, summarising the key issues that affect the sectors in each country and the contribution of the fleets towards their national economy and the micro- & macro societies.</p> <p>The report addresses how fisheries management in each country affects the coastal sectors, but there are strategies in place in all of the countries that favour the coastal fleet in one way or another. The report also provides an overview of the fleet structure, catch volumes, catch values, fishing gear, regional distribution of landings, employment and operational environment in the sectors of each country.</p> <p>In 2013 the N-Atlantic coastal fleet consisted of 17 thousand vessels and provided full time employment for 18 thousand fishermen. In addition there are a considerable number of fishermen that have coastal fisheries as secondary source of income or as a hobby and. The sector also produces a large number of jobs in processing and supporting industries. It can therefore be estimated that the N-Atlantic coastal fleet provides livelihood for at least 50 thousand families, which are primarily located in small fishing villages were the communities rely heavily on the sector for survival.</p> <p>Total landings of the N-Atlantic coastal sector in 2013 amounted to 680 thousand MT, valued at 815 million EUR. The report though clearly shows that the N-Atlantic coastal sector is highly fragmented, not only between countries but also within individual countries. The vessels range from being very modest old-style dinghies that fish few hundred kilos a year to industrialised state-of-art fishing vessels that catch up to two thousand tonnes of fish a year, which can be valued at over 4 million EUR.</p> <p>The N-Atlantic coastal sector is an important part of the Nordic marine sector and will continue to be so. The fleet has though been going through big changes in recent years, where the number of vessels and fishermen have been decreasing significantly. Big part of the fleet is struggling to make ends meet and recruitment of young fishermen is very limited. A relatively small part of the sector is though running profitable businesses and providing high paying jobs. This is the part of the fleet that accounts for majority of the catches and has invested in new vessels, gear, technology and quotas. It seems unavoidable that this optimisation will continue with the coastal fleet consisting of fewer, better equipped and more profitable vessels.</p>		
English keywords:	<i>Coastal fisheries, coastal communities, coastal catch, regional development.</i>		

Report summary

<i>Titill</i>	Smábátaveiðar í N-Atlantshafi		
<i>Höfundar</i>	Jónas R. Viðarsson ¹ , Gunnar Þórðarson ¹ , Edgar Henriksen ² , Audun Iversen ² , Durita Djurhuus ³ , Tønnes Berthelsen ⁴ , Heather Manuel ⁵ , Tom Brown ⁵ and David Decker ⁶		
Skýrsla	01-15	<i>Útgáfudagur:</i>	Janúar 2015
Verknr.	2003-2212		
<i>Styrktaraðilar</i>	NORA (510-080), Nordic Council (AG-fisk 80-2013) og CCFI		
<i>Ágrip á íslensku:</i>	<p>Veiðar smábáta og tengdar atvinnugreinar eru mikilvægur partur af sjávarútvegi og annarri haftengdri starfsemi í N-Atlantshafi. Greinin skiptir einnig mjög miklu máli fyrir byggðaþróun á svæðinu. Í þessari skýrslu er leitast við að gefa yfirlit yfir smábátaflotann í Færeyjum, Grænlandi, Íslandi, Noregi og Nýfundalandi & Labrador (NL), þar sem tekinn eru saman helstu atriði sem hafa áhrif á greinina í hverju landi fyrir sig, þróun flotans á undanförnum árum og hvernig greinin hefur áhrif á þjóðarhag og nærsamfélög.</p> <p>Í skýrslunni er fjallað sérstaklega um hvernig fiskveiðistjórnun og ýmis önnur stjórnvaldsleg úrræði snerta smábátageirann. En í þeim löndum sem skýrslan nær til leitast yfirlöld við að styðja smábátaútgerð með ýmsum lögum og reglugerðum sem hygla smábátum á einn veg eða annan. Skýrslan veitir einnig yfirlit yfir stærð og samsetningu, afla og aflaverðmæti, veiðarfæri, landfræðilega dreifingu, atvinnusköpun og rekstrarskilyrði smábátaflotanna í áðurnefndum löndum.</p> <p>Árið 2013 samanstóð smábátaflotinn í N-Atlantshafi* af um 17 þúsund bátum og 18 þúsund sjómönum í fullu starfi. Að auki var umtalsverður fjöldi manna sem höfðu smábátajómennsku að hlutastarfi eða að tómstundariðju. Smábátaflotinn skapaði einnig mikinn fjölda starfa í landi við vinnslu afla og í ýmsum stoðgreinum. Áætla má að a.m.k. 50 þúsund fjölskyldur í N-Atlantshafi* hafi lífsviðurværi sitt af veiðum, vinnslu og þjónustu við smábátaflotann. Flest þessara starfa eru í sjávarsamfélögum sem treysta afkomu sína að mjög miklu leyti á smábátaflotann.</p> <p>Heildaraflí smábátaflotans í N-Atlantshafi* á árinu 2013 var 680 þúsund tonn og var aflaverðmætið um 815 milljónir Evra (um 130 milljarðar ISK á verðlagi ársins), en hlutur Íslands í þessum töldum var um 13% af aflamagni og 16% af aflaverðmæti. Skýrsla þessi sýnir þó að smábátaflotinn í N-Atlantshafi er mjög fjölbreytilegur, bæði milli landa og innan landa þ.s. bátar geta verið allt frá því að vera gamaldags trillur á skaki sem veiða bara nokkur kíló á ári upp í fullkomnu hraðfiskbáta sem veiða jafnvel allt að tvö þúsund tonnum af afla á ári.</p> <p>Smábátaflotinn í N-Atlantshafi gegnir mikilvægu hlutverki í sjávarútvegi á svæðinu og mun halda áfram að gera svo. Flotinn hefur hins vegar breyst töluvert á undanförnum árum, þar sem fjöldi báta og sjómanna hefur fækkað umtalsvert. Stór hluti flotans er rekinn með tapi og nýliðun í stétt smábátajómannna er takmörkuð. Tiltölulega lítið hlutfall flotans er aftur á móti rekinn með góðum hagnaði og skapar vel borguð störf. Þessi hluti flotans stendur að baki meirihluta aflans og er einnig sá hluti sem hefur fjárfest í nýjum bátum, veiðarfærum, tækni og veiðiheimildum. Það virðist óhjákvæmilegt að þessi hagræðing haldi áfram innan smábátaflotans í N-Atlantshafi þ.e. að skipum fækki, en þau sem eftir verið séu stærri, betur tækjum búinn og skili eigendum og áhöfn meiri arði.</p>		
<i>Lykilorð á íslensku:</i>	<i>Smábátaveiðar, strandveiðar, byggðaþróun, smábátaafli, sjávarþorp</i>		

* p.e.a.s. í Færeyjum, Grænlandi, Íslandi, Noregi og NL

¹ Matís ohf. Iceland. ² Nofima, Norway. ³Syntesa, Faroe Islands. ⁴KNAPK, Greenland. ⁵Marine Institute of the Memorial University of Newfoundland, Canada. ⁶FFAW, Canada.

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Acronyms

CCTV	Closed Circuit Television
CPUE	Catch Per Unit Effort
DFO	Department of Fisheries and Oceans
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organisation (of the United Nations)
Ft.	Feet (30,48 cm)
GRP	Glass-Reinforced Plastic (fiberglass)
GT	Gross Tonnage
ITQ	Individual Transferable Quota
IVQ	Individual Vessel Quota
J&Ls	Jig and Line system
LPUE	Landing Per Unit Effort
MSC	Marine Stewardship Council
MT	Metric Tonnes
NAFO	Northwest Atlantic Fisheries Organization
NL	Newfoundland & Labrador
NM	Nautical Miles
RT	Registered Tonnage
SQS	Structural Quota System
TAC	Total Allowable Catch

1 Introduction

Coastal fisheries represent a highly important part of the N-Atlantic marine sector. The coastal fleet catches a significant part of the total catches, provides employment for a large number of fishermen, as well as processors and other supporting industries. Large portion of the vessels are located in small and often remote fishing villages where they play a key role in supplying local processing companies with raw material, which makes the fleet highly important for regional development. In addition, coastal vessels have increasingly been venturing into new territories in recent years, where for example innovative companies have built up enterprises around sea angling, sightseeing, whale watching and other such initiatives, providing the sector and small communities with new opportunities for growth.

The N-Atlantic coastal fleet and associated industries is a highly diverse sector, which includes vessels spanning from the most technology advanced fishing vessels in the fleet, to old-style jiggers with modest technology. The most technologically advanced vessels are auto-liners with up to 30 thousand hook systems, bleeding tanks, pre-chilling tanks and on-board slurry ice machines. They have sophisticated fish-finding equipment's, plotters, CCTV that shows what is going on inside, outside and under the vessel; computer systems that show bait use, average catch pr. hook and countless other information. The more modest vessels cover a broad spectrum, from relatively well-equipped fiberglass boats that can reach speeds in excess of 20 knots to traditional wooden handliners and jiggers.

The coastal fleet contributes significantly to regional development in the N-Atlantic, as this fleet segment lands most of its catches in small fishing villages where people depend on the marine sector for their livelihood. For example the almost two thousand coastal vessels registered in Iceland landed 94% of their 91 thousand ton catches in 2013 in small fishing villages with less than 5.000 inhabitants; and in Norway the approximately six thousand registered coastal vessels landed 65% of their 307 thousand ton catches in 2013 in Finnmark, Troms and Nordland; which are in North Norway where many rural costal societies are dependent of jobs in the fishing industry. Similar story is to be told from other countries in the N-Atlantic.

Industries supporting these coastal vessels are also playing an important role in the N-Atlantic marine sector. Vessel designers, boat manufacturers, equipment providers, gear manufactures, net makers, baiters, ironworkers, mechanists, electricians, truckers, fishmongers and many more are all a part of the value chain that begins with coastal vessels. The importance of the coastal sector is therefore significant for social and economic viability in the high north.

The objective of this report is to collect, analyse and compare basic information on the coastal fleets in Faroe Islands, Greenland, Iceland, Norway and Newfoundland & Labrador (NL). There is no international definition of a coastal vessel available, which is why the presentation of data and coverage in the report may differ from one country to another. Each country's definition of a coastal vessel is presented in the beginning of the report and it is important that the reader keeps those definitions in mind when comparing one country to another.

2 Definition of a coastal vessel

Despite considerable efforts by FAO and other stakeholder groups the international community has not been able to agree upon a common definition for coastal vessels. Coastal vessels are therefore defined differently between countries or even within each country. Definition is often based on size, fishing gear, fishing grounds or length of fishing trips, but other criteria can also be taken into consideration. For the purpose of this report the responsible researchers in each country have decided upon a definition with respect to legislation and data availability. The definition used for each country focused on in this report can be seen in Table 1. This is not necessarily consistent with each country's definitions of coastal vessels. In the case of Norway, boats up to 27,99 meters are considered coastal vessels, but only those below 21 meters are considered in the statistics of this report, for better comparability.

Table 1: The definitions used for coastal vessels in each of the subject countries

Country	Definition constrains
Faroe Islands	Vessels less than 15 meters in length
Greenland	Vessels licensed to fish within 3 NM from baseline, max 120 GT
Iceland	Vessels less than 15 meters in length and 30 GT in size
Norway	Vessels less than 21 meters in length
NL	Vessels less than 19,8 meters (65 ft.) in length

Each definition category has also a number of sub-categories, which will be further addressed when appropriate in the following chapters.

3 Fisheries management

Fisheries management is probably the most important factor for operation of coastal vessels in the N-Atlantic, as management measures decide who, where, when and how the marine resources are utilised. The coastal sectors are often favoured in one way or another in the Management Acts of each country, because of their importance for regional development, environmental impacts and other such issues. Following is a brief overview of fisheries management in each of the respective countries, focusing on relevance for the coastal sectors.

3.1 Faroe Island

The Faroese management system is regulated by the Faroese Law of Commercial Fishing. Most fishing vessels in the Faroese coastal sector are owned by individuals or by one person private limited companies.

All Faroese vessels operating in Faroese waters have fishing licences within the “National System of Fishing Days” referred to as “Fiskidagaskipanin”. The System is regulated by the Faroese Law of Commercial Fishing where the fleet segments are broken into five basic groups, as shown in Table 2 (109/2013):

Table 2: The Faroese fleet by groups

Group	Vessel type
Group 1-2	Trawlers
Group 3	Long liners > 110 GT
Group 4	Vessels > 15 GT (4A: <15 m) (A/B/T)
Group 5	Vessels < 15 GT and < 15 m fishing with line or jig (A/B)
Group 6	Others

According to the Law of Commercial Fishing the groups are assigned an annual number of fishing days and the days are allocated based on a set of guidelines. Basically all the species caught are brought to land and as results discards are virtually non-existent. This is considered by fishermen and politicians as one of the main advantages of the system. The guidelines for the system are designed and established by The National Board of Fishing. The number of fishing days are reviewed once a year and adjusted if necessary. The last amendment was made in August 2013 and involved a small reduction in the number of days allocated. The vessels that fall within the scope of this report have fishing licences in the groups 4A, 5A and 5B. Fishing license in 4A is assigned to larger vessels (< 15 m > 15 GT) fishing in the outer areas of Faroese waters. The largest vessels within this group at the moment are 40 GT.

Group 5 is divided into A and B, where fishing licenses in group 5A are assigned to vessels with an annual landing value of minimum 400.000 DKK (approximately 54.000 EUR). These vessels are classed as fully operational. Fishing licenses within 5B are assigned to vessels that are operated on a supplementary basis, with landing value that is less than 400.000 DKK annually (fishing for leisure or not fully operational). Vessels in 5A that do not meet the value requirements for one year are moved to 5B in the following year, and vice versa.

In the Table below some characteristics of the Faroese coastal vessel groups are listed together with the number of fishing days allocated for the period from September 1st 2012 to August 31st 2013 (Fiskveiðieftirlitið, 2013).

Table 3: The coastal vessel groups in the Faroe Islands 2013

Group	Size	Licences assigned	Vessels reporting catches	No. of fishing days
4A	< 15 m > 15 GT	10	7	1.011
5A	< 15 m < 15 GT	39	39	4.730
5B	< 15 m < 15 GT	493	281	5.877
Total		542	327	11.618

The total number of fishing days allocated for this fleet has decreased by almost 65% over the last 15 years i.e. from 32.600 days to 11.618 days. For vessels with licence in group 5A and 5B no limits are set for gear type used on board. Such requirements are set for similar boats in neighbouring countries e.g. Norway and Iceland, but the Faroese legal framework differs in this respect. There is no difference in the terms for commercial fishery compared to leisure fishery. However, in order to produce landings, a fishery licence is required, together with a Fishing Authorization. There are today on-going discussions among politicians, fishery experts and the industry whether to increase restrictions on vessels in group 5B.

According to Faroese law, the fish stocks in Faroese waters are the property of the Faroese people and shall be managed for the public good. The fish stocks are currently managed by two different systems; there is an effort system for some species while there is a quota system for others (Johannessen, 2014).

All commercial fishing is administered by The Ministry of Fisheries which is also responsible for the preservation of stocks as well as optimising these resources in the most sustainable way. To be able to fish commercially the owner of a fishing vessel must have a fishing licence. A vessel is given a certain number of days within the Faroese fisheries zones. The allocation were originally set in 1996 decided by the parliament, with restriction on transferability between vessel categories, grouped by type and gear. One of the terms to hold a fishing licence is a mandatory notification process to the Fisheries Inspection Service. There is generally no cost involved in getting a licence from the Ministry of Fisheries.

3.2 Greenland

There are 310 Greenlandic fishing vessels registered in the Danish Maritime Authority's registry, 294 of which are classified as coastal vessels i.e. with licenses to fish within 3 NM of baseline and under 120 GT in size (Danish Maritime Authority, 2012). The baseline is a line drawn between coastlines/islands reaching furthest into the sea, as shown in Figure 1.

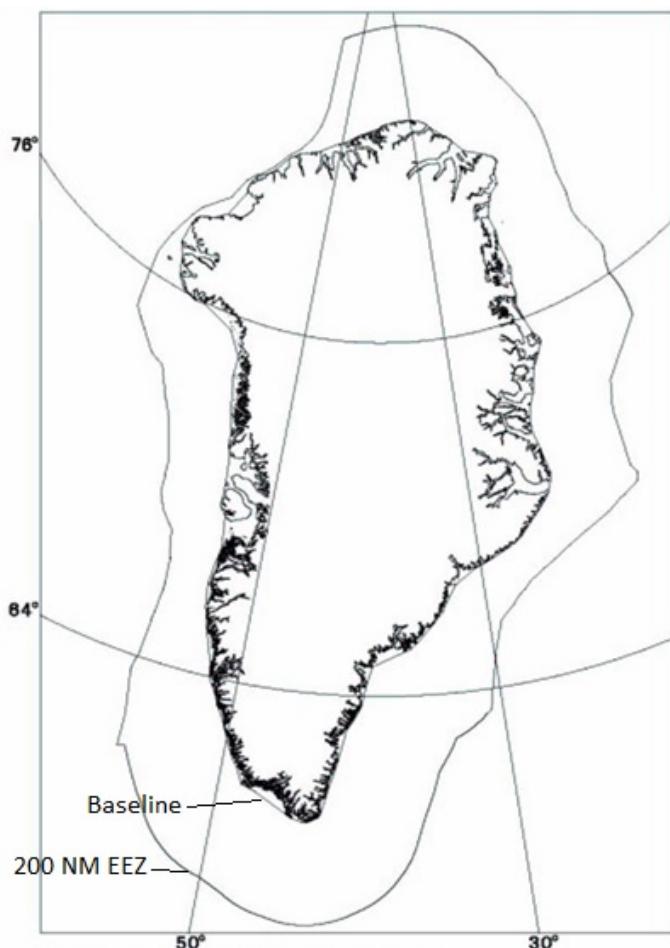


Figure 1: Greenlandic waters and the base line where coastal vessels are allowed to fish within

Greenlandic offshore vessels can fish up to the baseline and foreign vessels holding a quota in Greenlandic waters can fish up to 12 NM from the coastline.

These boats have fishing licences within both the Individual Transferable Quota system (ITQ) and free quota within a Total Allowable Catch (TAC). Maximum size for boats allowed to carry out fisheries within the baseline is 120 GT. However few shrimp trawlers much bigger than this limit do fish inside the limitation with specially issued licenses from government. There are also a number of small vessels operated outside these two main quota systems i.e. the lumpfish fleet and a large number of small unregistered dinghies, which are estimated to be around 1.500 in total.

Fisheries and seafood processing is Greenland's main industry and shrimp and halibut are by far the most important species. In 2013 seafood exports accounted for 91% of the total export value, of which shrimp accounted for 47% and Greenland halibut for 26% (Statistics Greenland, 2014a). More than 90% of the exports are shipped to Europe, where the mainstay goes to Denmark.

Fisheries in Greenland are managed through quotas and licenses regulating the total allowable catch within Greenlandic waters. The system is in basics broken up into three segments i.e. Off-shore fleet, In-shore fleet/coastal fleet and foreign fleet, as shown in Figure 2.

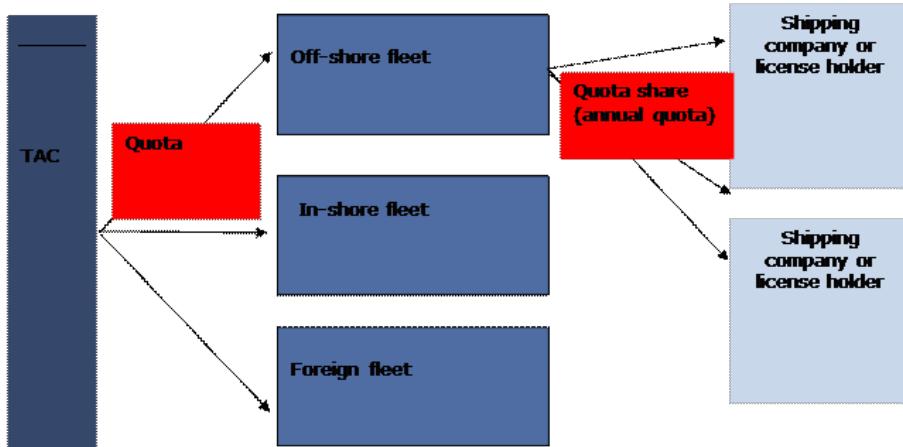


Figure 2: The Greenlandic system of TAC, quotas and licences

The Government of Greenland sets annual total allowable catch (TAC) limits for the fish stocks within Greenlandic waters. The decision is made based on the biological advice provided by the Pinngortitaleriffik (Greenland Institute of Natural Resources). The Fisheries Council consisting among others of representatives from the Association for Coastal Fishermen and Hunters in Greenland (Kalaallit Nunaani Aalisartut Piniartullu Kattuffiat, KNAPK) and the employers' associations (GA and NUSUKA) are consulted before the TAC is set.

The total allowable catch is distributed in the form of quotas to individual units of the fleet. The off-shore fleet is allocated 57% of the total shrimp quota for West Greenland while the remaining 43% are allocated to the coastal fleet. The distribution of quotas for other species is determined by the Greenlandic government.

Licenses are issued to grant fishing rights and from 2008 the licensing system has been used to regulate both the off-shore fleet (shrimp, halibut, crab, cod, redfish, halibut, capelin and grenadier) and the coastal fleet (shrimp, halibut, crab, salmon, lumpfish and scallops). A distinction is made between three types of licenses; temporary licenses with or without an upper limit for the allowable catch and permanent licenses with an upper limit for the allowable catch. Permanent licenses with a maximum allowable catch are used for shrimp. The individual shipping companies or persons have the license to a certain share of the quota of their fleet segment. After setting the TAC, the government notifies the license holders which annual quota the individual licenses represents.

Licenses can be traded between ship owners and individual persons. In the off-shore shrimp fishing, one single company or person can at the most hold one third of the total shrimp quota. In the coastal shrimp fishing, the maximum share is 10% of the total quota. Temporary licenses with an upper limit for the allowable catch are used in the off-shore fleet targeting halibut, cod, redfish, capelin and

grenadier. In the coastal sector, this type of licenses are required when fishing for scallops. Licences are issued for one year at a time and include information on the yearly quota for each individual vessel.

Each fishery is subjected to different set of rules and regulations. Further explanations on the regulatory systems affecting coastal fisheries in each fishery are as follows:

Common fishing licenses

The Greenlandic Parliament (Inatsisartut) sets the rules for issuing of fishing licenses in Greenlandic waters (The Greenland Parliment, 1996). To attain a licence as a fisherman it is necessary to have a background in the Greenlandic fisheries and have been engaged as fulltime fisherman for at last two years, where at least 50% of the individual's gross income must be generated from fisheries. With such a fishing license fishermen are able to fish freely (Olympic fisheries with total TAC) for cod, redfish, catfish, capelin, salmon and few other species in insignificant amounts though. The regulations do not distinguish between fisheries using different gears. Cod fisheries are the most important once within this category, but the mainstay of the cod catches are caught in traps (bundgarn) whilst less than 10% are from either long-line or jigging.

Shrimp fisheries quota system

Every year the Government (Naalakkersuisut) in Greenland allocates licenses for the shrimp fishery. There are four types of licenses that are issued, one of these are allocated to the coastal vessels (section 14). These are licenses that are time indefinite that stipulate TAC to be caught on the West coast of Greenland, from coastline out to 3 NM from the baseline.

Greenland halibut costal system

The costal Greenland halibut fishery is divided into two main areas, with separate management regulations;

1. South of the 68°00'N, which is south of the Diskobay area south on round the southern tip and north on along the east-Greenland. Thule area on the far north is also outside the second main area,
2. North of the 68°00'N degree and up to 75°00'N. That area is again divided into three management areas, the borders of the subareas are stipulated in the Greenland government notice no. 2 of February 2nd 2012 on costal fisheries for Greenland halibut.

A special halibut license is needed for both areas. In the South of 68°00'N fishery, it is obligatory to sell all of the catch to processing companies and in 2012 a total of 529 tonnes of Greenland halibut were sold to the producers. (Berthelsen, 2014). In the North of 68°00'N fishery the area is divided into three management areas, which are a) Diskobay, b) Uummannaq and c) Upernivik. The Greenland halibut fishery in these three areas is the most important fishery for the whole costal sector, in regards to value. More than 23.000 tonnes of Greenland halibut were landed in that area in 2013, valued at 333 million DKK (44 million EUR). Coastal fisheries of Greenland halibut are subjected to a vessel size limitation that exceeds the other coastal sector limits of 120 GT, as only vessels less than 32 GT are allowed to enter the fishery.¹ This is set as precaution to protect the stock and ensure sustainability of the fishery.

¹ Executive Order no. 2, February 2nd 2012 Coastnear Fisheries for Greenland halibut, section 1

Snow crab fishery

The snow crab fishery started around 1992 when Canadians together with few locals started the industry. In the beginning these were mainly off-shore activities, but as they progressed a costal fleet was built up to take over these fisheries and today only costal vessels are allowed to fish for snow crab. The TAC for 2014 is 2.800 MT, which gives the local fishermen catch of 2.550 tonnes, but a small quota of 250 MT is allocated to European Union. The snow crab fishery is divided into six areas, which are all located at the West coast of Greenland, as shown in Figure 3.

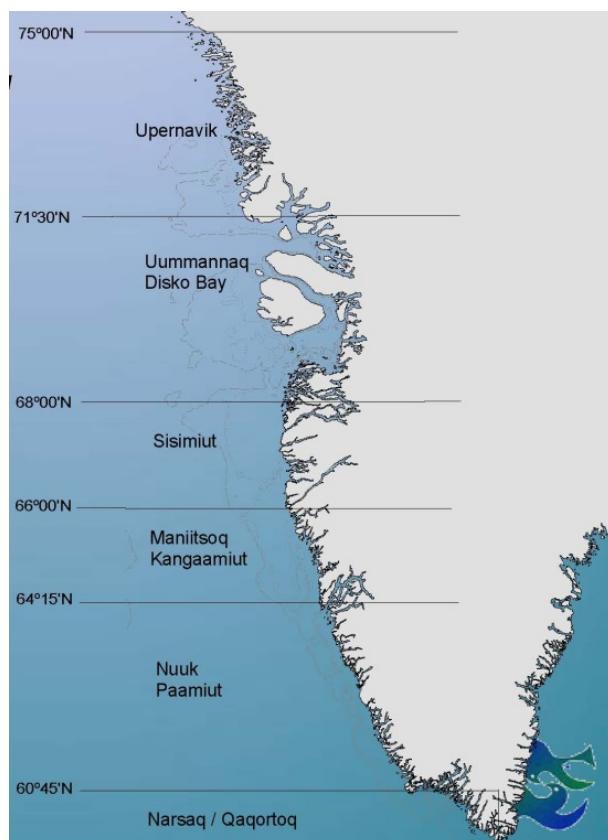


Figure 3: The six fishing zones for snow crab in West Greenland

There is no large-scale crab fishing in the waters East of Greenland, as it is not possible to carry out the pot based fishery in those areas.

Lumpfish fishery

The lumpfish fishery is highly important for the Greenlandic coastal sector, both in regards to value and regional development. The yearly catch relates to about 11 thousand barrels of roes, which are caught by roughly 600 vessels. There is though considerable fluctuations in catches and value between years, partly because of highly unstable markets.

A completely new regulatory system was introduced before the 2014 lumpfish season (Government of Greenland, 2014) that contains a number of restrictive measures. For the first time in history quotas and maximum number of fishing days have been introduced for the fishery and resources have been allocated to carrying out biological surveys for stock assessment. This emphasis on tightening up management and focus on stock sustainability is contributed to the fact that Greenland is now working on getting the fishery certified by MSC. Knowledge is currently lacking on biological reference points

and many other necessary data is not optimum, for example the CPUE (Catch Per Unit Effort) is not applicable and LPUE (Landings Per Unit Effort) must therefore be applied as the second best option. The lumpfish fishery is now subjected to a special licensing, which is valid for two years at a time.

Even though the vessel size limits for the lumpfish coastal fisheries is 120 GT, there are currently only eight boats engaged in the fishery that exceed 30 feet (9,1 meters) and these vessels are mainly used as service-boats i.e. for sleeping, showering, eating etc. The licenses are allocated for a certain number of days in each fishing season (47 days in 2014). Each license is valid for the entire NAFO area shown in Figure 4, meaning that a licence holder can start from south and follow the stock north. It is though in the hands of the local producers and fisheries society in each fishing area (as shown on the Figure below) to decide when the fishery can start and close. When both parties believe the quality of roes is good enough they will declare the season open and fishermen can start laying out nets and henceforth fishing days will count from that point on.

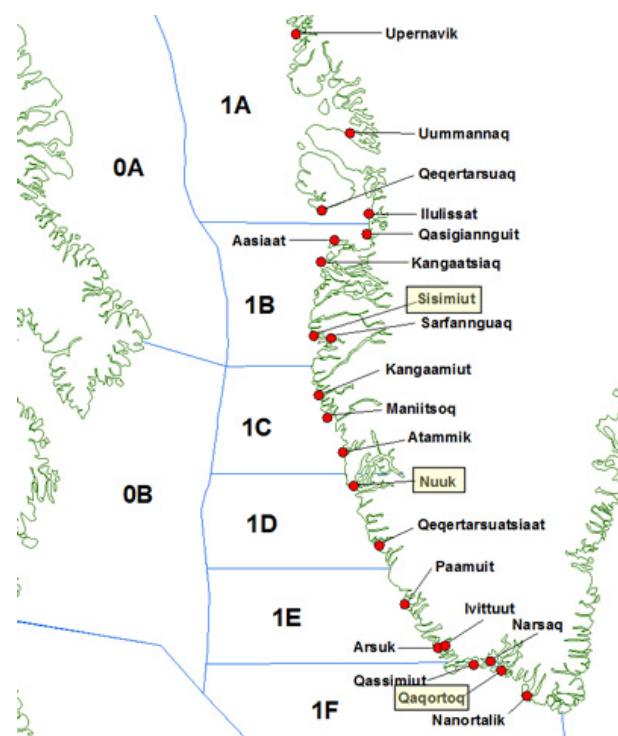


Figure 4: NAFO waters 1A – 1F

There is a separate quota allocated for each of the NAFO areas, but most of the value is generated in areas 1B and 1C. In 2012 these two areas contributed to 56 % of Greenland's lumpfish roe exports (Statistics Greenland, 2013a).

Cod

License for cod fishing in Greenlandic waters simply requires a general fishing and hunting license. Fishing in East Greenland is mainly off-shore bottom trawling and TAC for that area has been decided 10.000 MT a year for the next three years. The coastal fishery is however conducted on the West coast, where the annual TAC for the next three years have been set at 15.000 MT. The main fishing gear used in the cod fishery is Danish model trap, or "poundnet" (bundgarn) which accounts for approximately 90 % of the catches. The traditional high season is May and June, but in recent years the season has

been expanding further into the summer/autumn all the way to September. Hand-operated jigging is also well known in the coastal cod fishery, this form is common from late July on and into autumn. Gillnets are also used, but they can only be used with a special permission from municipality authorities. When the quota of 15.000 MT are finished, the fishing will be stopped.

The cod stock has been in a slump for the past two decades, but is now showing signs of recuperation. Stock assessment indicates that the cod stock is recovering fast and that if everything goes as hoped the stock could possibly withstand catches in excess of 200.000 MT in five years' time.

The cod fishery is at present not really that important for the coastal sector, due to very low landing values. The total export value of cod products in 2013 only amounted to 19 million EUR (Statistics Greenland, 2014a). Average landing value is below 0,6 EUR/kg and the cod industry is currently run at a loss (Statistics Greenland, 2014b). The only reason why the processing companies are continuing with their operations is because of the prospects for a better year's ahead. In Greenland it is mandatory to land all cod catches to local processors.

3.3 Iceland

The Icelandic coastal sector is extremely important for regional development and value creation in the county. The coastal vessels are around 1.900 in total (ICETRA, 2013), but active fishing vessels that reported catches in 2013 were 1.250 (The Icelandic Directorate of Fisheries, 2013a). More than 90% of the 91 thousand MT catches landed by the coastal fleet in 2013 were landed in small fishing villages where the communities depend heavily on fisheries, seafood processing and supporting industries. The government recognises the importance of the sector, which has contributed to some favourable management measures within the fisheries management act (116/2006).

The Icelandic quota system can be split in to two main parts i.e. the ITQ system where all kinds of fishing gears and vessel types are allowed and the jig & line (J&L) system where only vessels under 15 meters and 30 GT using fishing gear with hooks are applicable. In addition there are few sub-categories which relate to specific stocks or political agendas. Roughly speaking about 81% of the demersal captures are within the ITQ system, 12% within the J&L system and 7% within the last-mentioned category. Coastal vessels are operating within each of these systems.

In 2013 there were 150 coastal vessels in the larger ITQ system, most of which had relatively small catches, but 27 vessels exceeded 100 MT annual catches. Coastal vessels operating within this system are using different fishing gear, but the once with the biggest catches are primarily using gillnets. Coastal vessels in the J&L system are around 850 in total, but in 2013 only about 600 reported catches. This fleet is highly fragmented, ranging from old-style wooden dinghies to highly efficient state-of-art industrial fiberglass boats with 25 thousand hook auto-line systems. These industrial coastal vessels are capable of reaching speeds of up to 30 NM and the most efficient once are landing close to 2.000 tonnes of demersal catches a year. In 2013 more than 120 vessels in this category exceeded 100 MT annual catches. The J&L quotas are ITQs and can therefore be sold or leased, but as precautions the quotas in the J&L system cannot be converted into the larger ITQ system, but it is though possible to convert it the other way around. There is however no incentives to do so, as the ITQ quotas are more expensive than the J&L quotas. In recent years the development has been that vessels with limited J&L quotas have been selling their quotas to larger entities so that there are now relatively few companies that own majority of the quotas. In the beginning of the 2014/15 quota year the ten largest J&L

companies owned 1/3rd of the quotas, which is similar development as has already been in the larger ITQ system (The Icelandic directorate of fisheries, 2014f). In order to strengthen regional development and react against too much consolidation in the sector the government has therefore set restrictions against aggregation of quotas in individual and/or connected companies. Each company is now only allowed to own 4% of the J&L quota in cod and 5% in haddock (116/2006, 2014).

The 7% of demersal quotas allocated to special fisheries and political agendas are primarily caught by coastal vessels. The sub-management systems most relevant for the coastal sector are the coastal jigging system, the long line concession, the regional quota allocations, the lumpfish fishery and leisure fishing.

The costal jigging system

The so called coastal jigging fisheries are operated from May through August each year, where special licenses provide access to Olympic fisheries that amount to 8.600 MT of demersal species (The Icelandic directorate of fisheries, 2014a). Strict conditions are set for those taking part in the fishery, such as:

- Vessel operator, owner, individual, or legal owner can only operate one fishing boat.
- The vessel owner must be a part of the crew
- Fishing is prohibited on Fridays, Saturdays, Sundays and public holidays
- Vessels that have sold or leased quotas away within the year cannot enter the fishery
- Each fishing trip can only last for 14 hours and has to be within one calendar day
- operator reports at the beginning and at the end of each trip to the Vessel Reporting (Icelandic Coast Guard) and has to have an automatic positioning system on board
- No more than four automatic jiggers are allowed on-board and it is forbidden to have any other fishing gear on-board.
- Maximum catch for each trip is 650 kg gutted fish of species within the quota system (measured in cod equivalent) and the catch has to be weighed by harbour authorities at the end of each fishing trip.

The Icelandic fishing zone is split up into four areas for these fisheries and the licenses are conditioned to the region the boat is registered within. The fishing through the season has to be within this area and landing of the catch as well. Each zone has allocated an amount of quota, split down to each fishing month. In the summer of 2014 a total of 648 boats fished within the coastal jigging system catching 8.700 MT in total (The Icelandic directorate of fisheries, 2014b).

The long-line concession

Day-trip fishing boats with long-line fishing gear that are manually baited on-land are allowed to land a 20% surplus of its quota. This is a political effort to support regional development by creating/maintaining jobs for baiters that are primarily located in small fishing communities. The government allocates yearly TAC for this purpose and when that amount is finished the concession is no longer available. For the fishing year 2014/15² a total of 5.176 MT were allocated to the long-line concession, 3.375 tons of cod, 1.100 tons of haddock and 701 tons of catfish. Most of the vessels benefiting from the long-line concession are small coastal boats and within the fishing year 2013/14 a total of 199 boats operated within this allowance in the system, landing 5.500 ton surplus to their original quota (The Icelandic directorate of fisheries, 2014c).

² The quota year in Iceland is from 1st of September to 31st of August each year

The regional quota system

Each year the Minister of fisheries allocates quotas to support communities suffering economic setbacks due to dwindling stocks or diminishing quotas. The Minister sets regulations and directions regarding allocation of these regional quota to fishing vessels and communities. These arrangements are mostly allocated to communities, which then assign the quotas to individual vessels with conditions that the catch has to be landed and processed in the community. The mainstay of these quotas end up being caught by small coastal vessels. For the fishing year 2014/15 these regional quotas amount to 6.141 tons in total (651/2014). In addition some 2.214 tons are allocated to the Regional development institute for the same purpose (653/2014).

Lumpfish

Special licenses are issued for lumpfish fishing and only vessels that had valid licenses in the year 1997, and boats substituting them, are eligible for those licenses (72/2014). The licenses are allocated for a certain number of days in each fishing season. Each license is limited to a certain fishing zone and the holder has to specify in an application when he is to start laying nets, and fishing days will count from that time. Only one license can be held by each vessel for the fishing season and the number of crew members determines how many nets the vessel is allowed to carry. For the lumpfish season of 2014, each vessel was allocated 20 fishing days and no more than 200 nets (7.500 m). In 2014 there were 458 vessels that had the right to apply for licences, 423 had active licences (The Icelandic directorate of fisheries, 2014d), but only 223 actually went fishing and reported catches, which amounted to 7.507 barrels of roes (Örn Pálsson, 2014). The decision on allowed number of days is taken by the Minister of fisheries after consultation with the Marine Research Institute and the National Association of Small Boat owners, and is based on a number of factor where stock assessment and market conditions play a leading role. It can be argued that management of the Icelandic lumpfish fishery is partly governed according to co-management principles, as the actual resource users have significant input to management decisions and socio-economic factors are taken into consideration. The Icelandic lumpfish fishery was certified by the Marine Stewardship Council as a sustainable fishery in 2014 (MSC, 2014).

Leisure fishing

Licenses for leisure fishing are primarily issued for companies within the tourist industry. These licenses only allow the use of rod or hand operated jigging fixtures for fishing. There are two different types of leisure fishing licences available: a) Fishing seven fish a day for each rod, without quota allocation. b) Using quota allocation (ITQ or J&Ls) were all catch has to be weighted by harbour authorities and deducted from the vessel's quota.

Only one kind of licence can be used within the fishing season for each vessel. One exception is tough available, as the Directorate of fisheries can allocate licenses for leisure fishing from 1st of May to 31st of August where no quota is needed, but the catch cannot be commercialized (549/2009). In 2013 a total of 49 vessels were operated within this system, landing 220 tons of catches. The mainstay of these vessels are located in the Westfjords, where tourist fisheries are becoming an important industry (The Icelandic directorate of fisheries, 2013b).

Fisheries related tourist industry in Iceland has increased significantly over the last few years, presenting some small fishing communities with interesting opportunities. Enterprises in Westfjords have been leading this development, with two fairly large companies operating fleets of twenty vessels

each, are in the forefront. This industry has created a fairly large number of job opportunities in small coastal communities, for example for fishermen, travel agents, hotels, restaurants etc. Similarly there is a fairly big industry that has developed in Iceland around sea angling and whale, seal & bird watching, often including angling in there service.

3.4 Norway

The Norwegian fisheries management regime has been developed over more than a century and is based on certain key principles where some of the main characteristics are based on local exploitation of the fish resources, as well as the common policy that recognises that the fisheries sector is an important contributor to the settlement in the coastal areas (OECD, 2006). A strong coastal culture has therefore been developed and implemented into the management system, which favours the coastal sector in a number of ways. The main objective of the fisheries policy is to maximise profits through an economically efficient use of the resources, but also to ensure socioeconomic optimisation with respect to the total gain for the communities, within the limits of sustainable use of the resources.

Suggestions for reforming the structure- and regulations politics aimed at the different segments of the fishing fleet have been presented as white papers to Parliament (Stortinget) four times since 1992 (Norwegian Ministry of Fisheries, 1992), (Norwegian Ministry of Fisheries, 2003), (Norwegian Ministry of Fisheries, 2007), (Norwegian Ministry of Fisheries, 2013). This comprehensive process has confirmed and reinforced the policy results over the past two decades. As a result, access to the Norwegian common marine resources is restricted and the number of fishing vessels and fishermen have been significantly reduced. These are regarded by the authorities as the most important measures to simultaneously rebuild stocks and increase the productivity in the sector.

Management decisions have often been highly impacted by what is commonly referred to as a “social contract” (samfunnskontrakt). This “contract” is a general understanding that the fisheries sector has social responsibilities that often are more important than economic efficiency. The sector is obligated to keep communities in existence (Lys i husan). This is for example highlighted in management decisions where certain fleet types and communities are favoured in one way or another. Requirements for preservation of jobs in coastal communities have therefore been attached to quota allocations, which has caused wide scale debates in recent years. This “social contract” has therefore benefitted the coastal sector in a number of ways, but is now under political scrutiny, a process that may result in changes in the near future that could be of importance for the coastal sector (Holm & Henriksen, 2014).

The quota system and regulatory measures

The Norwegian management model is based on licenses that are granted to registered vessels on a yearly basis within an Individual Vessel Quota system (IVQ). The main rule is that the licenses are automatically prolonged as long as the vessel owner³ and the vessels⁴ meet the conditions for holding a license. The system is combined with different regulatory instruments to manage overcapacity in the different segments of both the coastal fleet and the deep sea fleet. A Unit Quota System (UQS) was also introduced to enable the owners of deep-sea trawlers, deep-sea purse seiners and deep-sea long

³ Owners meet the requirements to be registered in the Register for Norwegian Fishermen i.e. be active fishers

⁴ Meet the relevant technical standards for safety at sea and fish handling

liners to transfer quotas from scrapped vessels to vessels in operation. For the trawler fleet and the deep-sea purse seiners the limitation for aggregation of such quotas are now at three UQS per vessel and for the deep-sea long-liners the limitation are five UQS per vessel.

The regulatory regime is based on TACs and closed access, which applies to the mainstay of the fleet. For the coastal fleet, the management system can be broken into two i.e. open and closed system. About 7% of the TACs for cod, haddock and saithe is allocated to an open access group, which is to ensure the coastal populations have access to the fish resources in their local waters.

The coastal fleet is divided into three different length groups, which after the last revision are divided into the following length spans: < 11 meters, 11 – 14.99 meters, 15 – 20.99 meters and 15 meters up to 500 cubic meter hull capacity. To promote a more profitable fleet, a Structural Quota System (SQS) was introduced. The SQS was initially limited to vessels over 15 meters, but after the two latest revisions of the policy it includes vessels down to 11 meters. Suggestions in the process leading up to the 2012 -2013 revision to also include the group under 11 meters in the SQS system, was not taken into account. Under the SQS system the main rule is that 80 % of a vessel quota may be transferred to other vessels within the same length group and located in the same county under the condition that the vessel that is stripped of quotas is scrapped. The remaining 20 % is then shared among the remaining vessels in the same group. The exception to the rule is that vessel owners in the northernmost part of Norway are allowed to buy vessels with quotas from all counties.

Under the present rules vessels over 15 meters may choose between having a quota portfolio of four IVQs in the cod fisheries (cod, haddock, and saithe, including fishing saithe with purse seine), two IVQs in herring fisheries in addition to quotas in the mackerel- and capelin fisheries or two IVQ's in the cod fisheries and four in the herring fisheries. Vessels in the group 11 -14.99 meters are allowed to have a quota portfolio of three IVQs in the cod fisheries (cod, haddock, and saithe, including fishing saithe with purse seine), one IVQ in herring fisheries in addition to IVQs in the mackerel fisheries. Alternatively one IVQ's in the cod fisheries and three in the herring fisheries.

Over time there have been different decommissioning schemes introduced to reduce capacity and facilitate modernisation of the fleet. These initiatives have since the early 1990's primarily been targeted at smaller fishing vessels not included in the SQS scheme. The result is a dramatic reduction in number of coastal vessels over the past decade, as shown in Table 4 (The Norwegian Directorate of Fisheries, 2014a).

Table 4: Change in numbers of coastal fishing vessels according to length in the period 2002-12

Length group	Change in percentage
< 11 meters	-43,6 %
11-14,99 meters	-19,1 %
15-20,99 meters	-61,6 %

About 25% of the overall TAC is allocated to the coastal sector and 70% of the TAC in cod. For 2014 a total of 300 thousand MT of cod, 54 thousand MT of haddock and 38 thousand MT of saithe have been allocated to the coastal sector.

3.5 Newfoundland & Labrador

The fisheries in Newfoundland and Labrador (NL) are managed by species where the Department of Fisheries and Oceans (DFO) is responsible for management of the stocks. A major objective of Canadian fisheries policy is to ensure that allocation of fishery resources is based on equality; taking into account closeness to the resource, the relative dependence of coastal communities and the various fleet sectors upon a given resource, as well as economic efficiency and fleet mobility. The coastal fleet has therefore a strong position within the NL fisheries sector. DFO allocates quotas for each stock within each fisheries management division, as shown in Figure 5 (Department of Fisheries and Aquaculture, 2014).

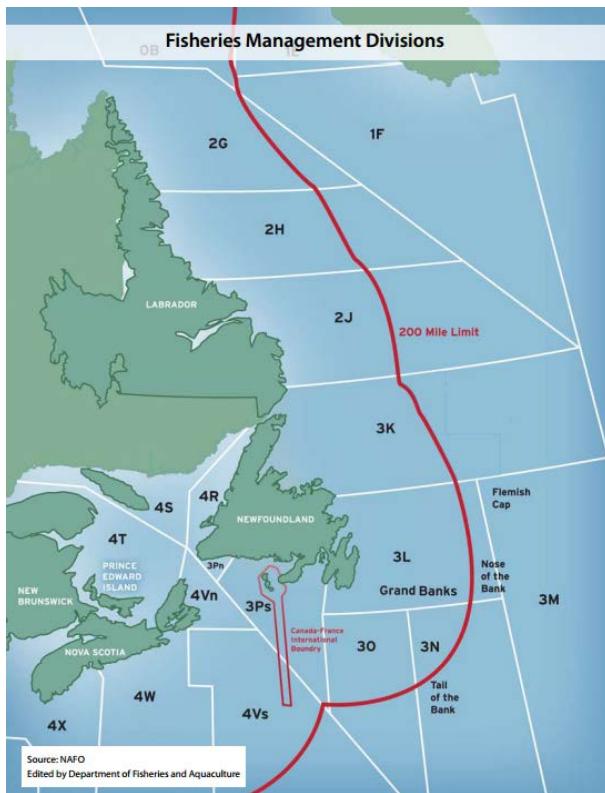


Figure 5: NL fisheries management divisions

The quotas within each division are then distributed amongst the fleet sectors. For many of the demersal stocks the mainstay of the quotas are allocated to the coastal fleet, as can be seen in Figure 6 (Brown, 2013).

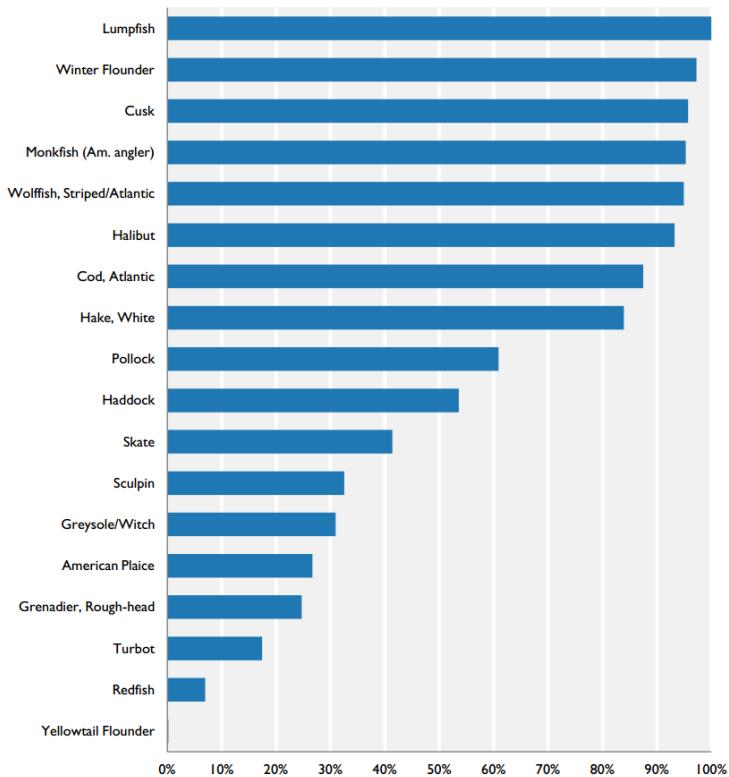


Figure 6: Coastal fleet's percentage of total NL landings in 2012

In order to be eligible to apply for licences and quotas in NL the vessel owners have to be defined as professional fish harvesters. Professionalization is defined as a means to recognize special skills and experience required to become a professional in the fishing sector. Professionalization can either be granted by “grandfathering” or by qualifying for professionalization i.e. grandfathering is the granting of professional status on those who have a longer-term attachment to fishing, while new entrants must qualify through training and experience for professionalization.

4 Fleet structure

There are approximately 17 thousand coastal vessels in the five countries covered in this report, of which roughly 12 thousand are active i.e. reporting catches. These vessels are hugely variable in respect to size, equipment, gear, construction material, age etc. The total number of coastal vessels and number of active vessels, along with average age in each of the respective countries can be seen in Table 5.

Table 5: The total number of coastal vessels in the countries respective countries and their age

Country	Number of vessels	Number of active vessels	Average age
Faroe Island	542	327	30
Greenland	1.817	317	45
Iceland	1.922	1.248	28
Norway	5.809	5.809	28
NL	6.958	4.769	20
Total	17.048	12.470	

Average numbers can be deceiving when analysing the fleet, because the sector is so fragmented. The average age of the sector is around thirty years, which suggests lack of investment in new vessels when looking at the sector as a whole. There has however been considerable investments made in the part of the fleet that has the mainstay of the catches, but in respect to the fleet as a whole the share number of vessels with relatively small catches skews the picture. Following is an analysis of the fleet structure in each of the countries subjected to this report.

4.1 Faroe Island

The vessel registry of the Faroese Maritime authority (FMA) has 542 coastal vessels registered, of which 327 reported catches in 2013 and only 35 of them were fully operational i.e. with catches valued at 54 thousand Euros or more. This suggests that 93.5% of Faroese coastal vessels are not operated for commercial purposes or are operated as a hobby that only provides the fishermen/owners with secondary source of income. The number of coastal vessels in each group can be seen in Table 6 (The Faroese Maritime Authority, 2014)

Table 6: The number of coastal vessels in the Faroese coastal sector in 2013

Group	Size	Total number of vessels	Vessels reporting catches	Fully operational vessels
4A	< 15 m < 40 GT	10	7	4
5A	< 15 m < 15GT	39	39	20
5B	< 15 m < 15 GT	493	281	11
Sum		542	327	35

The table above shows that half of the vessels in 5A had catches valued at less than 54 thousand Euros i.e. did not meet the criteria for a “fully operational vessels”. These vessels will therefore be in group 5B in the fishing year 2014/15. The same applies to the eleven vessels in group 5B that had catches valued over 54 thousand Euros, they will be transferred to group 5A the following year.

The number of coastal vessels have dramatically decreased over the past decade, as can be seen in Figure 7 (The Faroese Maritime Authority, 2014).

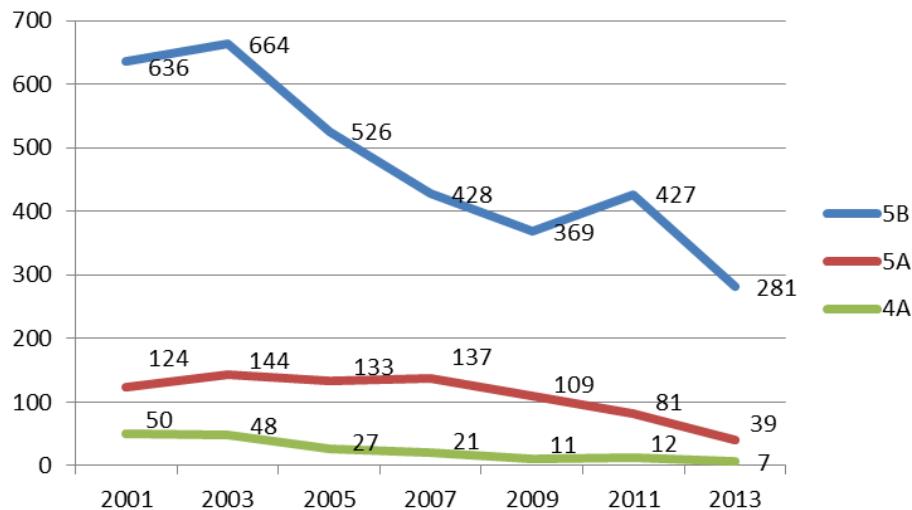


Figure 7: Number of Faroese coastal vessels reporting catches in each group 2001-2013

The main explanation for this development are low catches due to poor conditions of the Faroese cod and haddock stocks and low prices. Many of the vessel owners are though using their vessels to catch fish for own consumption, which does not have to be registered.

Approximately 75% of the 327 coastal vessels that reported catches in 2013 were over 25 years old and 76% of them were made of fiberglass (GRP – glass-reinforced plastic), as can be seen in Figure 8 (The Faroese Maritime Authority, 2014).

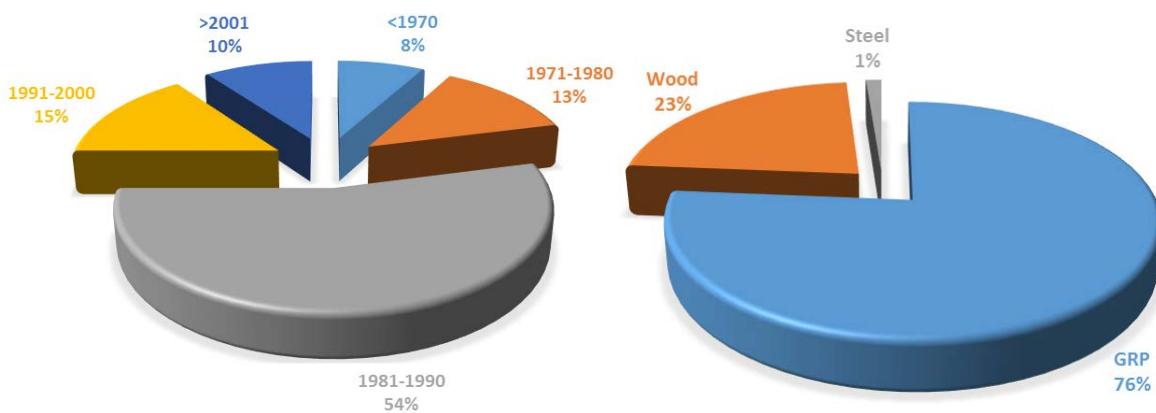


Figure 8: Age and building material of Faroese coastal vessels 2013

Almost half of these vessels have engines with less than 70 Kw engine power, 17% have 70-110 Kw engine power, 29% have 110-200 Kw engine power and 12% have more than 200 Kw engine power. It is therefore apparent that the Faroese coastal sector consists of highly variable vessels, ranging from old traditional dinghies to efficient industrialised vessels.

4.2 Greenland

The definition for coastal vessels in Greenland relates to where they are allowed to fish, rather than to strict restrictions on size, gear or effort capabilities. Because of this the Greenlandic coastal fleet is highly diverse in regards to size, equipment's and operation. It can though be divided into the following three main categories:

- Coastal shrimp trawlers. These are shrimp trawlers that are allowed to fish within the baseline and they are in most cases significantly larger than most people would consider as typical coastal vessels. These are in total 23 vessels that are mostly 80 – 800 GT i.e. vessels in this group can apply for exemptions from the 120 GT upper limit for coastal vessels.
- Larger coastal vessels that are required to be registered with the Danish Maritime Authority i.e. have GR numbers. These are vessels primarily made of wood or steel and the typical size is 20 – 70 GT (30 – 70 feet long). These GR boats were 294 in total in 2013.
- Small open dinghies 14 – 21 feet long, many of which do not even have cabins or any other shelter. These boats are used for different types of fisheries, such as cod, lumpfish, Greenland halibut etc. The total number of these kind of vessels is not clear, as they do not require to be registered and each boat can have a number of different licences. They can also not have any types of licenses and only be used for fishing for own consumption. This best estimation is that these dinghies are around 1.500 in total.

The GR vessel fleet is quite old, with average age of well over 40 years. Most of the vessels are located in the Qaasuitsup municipality, which spans over the northern part of the West-coast. There are also considerable numbers of GR vessels in the Sermersooq and Qeqqata municipalities, which are in the middle of the country. There are however relatively few coastal GR vessels in Kujalleq municipality, which is the most southern municipality.

Table 7: Number and average age of GR vessels according to municipalities

Municipality	No. of GR vessels	Average age
Kujalleq (south)	38	44
Sermersooq	86	43
Qeqqata (mid)	63	47
Qaasuitsup (north)	107	45
Total	294	



Figure 9: Map of the Greenlandic municipalities

The above demonstrates that coastal fisheries are very important in the northern regions, but not as important in the southern part where farming and other industries are more important.

4.3 Iceland

There were 1.922 coastal vessels registered in Iceland in 2013 (ICETRA, 2013) of which 1.248 reported catches (The Icelandic Directorate of Fisheries, 2013a). This fleet is highly diverse in respect to size, equipment's and operation. It can however be divided into five main categories, which are though interconnected. These categories are:

- a) Coastal vessels working within the (larger) ITQ system. These are 150 vessels that are of different size and operate with different fishing gear. A total of 126 of those vessels reported catches in 2013 and the mainstay of the catches were caught by vessels that are close to the upper limits of being categorised as coastal vessels. The main difference between vessels in this category and the other categories is that they can use variable fishing gear and many of them are fishing with gillnets for all or parts of the year.
- b) Coastal vessels working within the J&L system. In 2013 these vessels were 853 in total, of which 605 reported catches. These vessels are solely allowed to use fishing gear with hooks i.e. jigging and longline. Most of the vessels are modestly equipped longliners that are 8-12 meter long and under 15 GT. The size distribution is caused by historic reasons i.e. the upper limits used to be 12 meters, which then were expanded to 15 meters and 15 GT. Many of the best equipped vessels are therefore just under 12 meters and 15 GT, some of which have auto-line systems aboard. The upper limit was then raised again in June 2013 to 15 meters and 30 GT and since then there have been twenty new vessels built/renovated that are close to this upper limit and a number of older vessels in this size category have also entered the J&L system. This category spans a big diversity of vessels, from old style wooden jiggers to state-of-art fiberglass boats capable of reaching speeds in excess of 30 NM and operating 25 thousand hook auto-line systems.
- c) Coastal vessels in the coastal jigging system. Since 2009 the Ministry of fisheries has allocated 4-9.000 MT quotas to coastal vessels that do not have quotas in other systems. The fishery is conducted as an Olympic fishery where TACs are set for each month (May-August) for each region (country split into four areas). Each vessel is only allowed to catch approximately 600 kg per day and once the TAC have been filled the fishery is suspended. The fishery is subjected to licensing and the aim of it is to provide newcomers with an opportunity to start in the business and to strengthen regional development. Despite its aim, vessels working in other systems can take part in the coastal jigging system, but cannot take part in two systems in the same month. The vessels taking part in the coastal jigging system are modestly equipped and the only fishing gear allowed are electrical/hydraulic jigging fixtures (maximum of four fixtures). In 2014 a total of 648 vessels took part in the fishery.



Figure 10: Coastal vessel in the ITQ system



Figure 11: Coastal vessel in the J&L system



Figure 12: Coastal vessel in the coastal jigging system

- d) Coastal vessels in the Lumpfish fishery. Vessels operating within this system are generally quite basic gillnet vessels, which often take part in the J&L system or the coastal jigging system when they are not fishing for lumpfish. There are over 400 vessels that can apply for a license each year, but participation varies depending on allocated effort quota (fishing days) and market conditions. These lumpfish vessels are typically under 12 meters in length and not very technologically advanced.
- e) Leisure and tourist vessels. These are generally very basic open coastal vessels using either rod or jigging fixtures. When leisure fishing for own consumption it is not allowed to use electric/hydraulic powered jigging fixtures. As presented in chapter 3.3 there are two alternatives available for these vessels i.e. leisure fishing without quotas (maximum of seven fish a day) and leisure fishing within the J&L system. In the 2013 there were 49 vessels registered for leisure/tourist fishing without quotas and 33 tourist vessels within the J&Ls. There are two companies that are by far the biggest in this industry today i.e. Hvíldarklettur Ltd. with 22 vessels and Sumarbyggð Ltd. with 21 vessels.



Figure 13: Coastal vessel in the lumpfish fishery



Figure 14: Leisure and tourist vessel

Table 8 shows the number of licenses allocated to coastal vessels in each category in 2013 and the number of vessels reporting catches. It should though be kept in mind that some vessels are double counted, as they can work within more than one system within the year (ICETRA, 2013), (The Icelandic Directorate of Fisheries, 2013a).

Table 8: Number type of vessels working within the Icelandic coastal sector in 2013

Type of license/vessels reporting catches in 2013	
Total number of registered vessels / vessels reporting catches	2.287/1.828
Total number of registered “coastal vessels” / vessels reporting catches	1.922/1.248
Small vessels in ITQ system with licenses / with reported catches	150/126
Small vessels in ITQ system with permanent quota	87
J&Ls licenses / J&Ls with reported catches	853/605
J&Ls with permanent J&L quota	354
Coastal jigging system	645
Lumpfish licenses / vessels reporting catches	444/297
Leisure fishing licenses	49
Tourist vessels with J&Ls licenses	33

More than 80% of the 1.922 registered coastal vessels are under 10 meters in length and 95% are under 12 meters (ICETRA, 2013). The length distribution can be seen in Figure 15

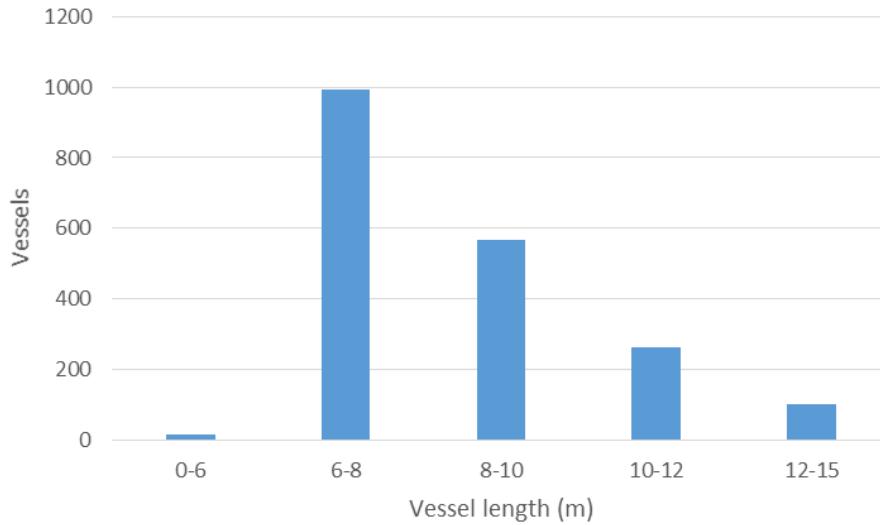


Figure 15: Length distribution of the Icelandic coastal fleet

The development over the past few years in the coastal fleet is that seafood companies have been buying up quotas in the J&L system and investing in larger and more technologically advanced vessels. Single man companies have therefore been dropping out and the sector is becoming more industrialised.

4.4 Norway

The Norwegian coastal sector included 5.809 vessels less than 21 meters in 2012, of which 85% were less than 11 meters long (The Norwegian Directorate of Fisheries, 2014a). The bulk of the vessels are in North Norway, where 57% of the coastal fleet is located. Regional distribution of the fleet can be seen in Figure 16.



Figure 16: Regional distribution of the Norwegian coastal fleet

Only 3% of the coastal fleet are vessels over 15 meters, of which 75% are located in North Norway. All coastal vessels need to have the owners on-board the vessels and processors are not allowed to own vessels. The sector therefore includes a lot of one-man companies, but the reason for the regional distribution is tradition, closeness to fishing grounds and political favouritism towards coastal fisheries in Northern Norway. Table 9 shows size- and regional distribution of Norwegian coastal vessels in 2012 (Henriksen, 2014).

Table 9: Size and regional distribution of the Norwegian coastal fleet in 2012

Region	< 11 m	11-15 m	15-21 m	Total
North Norway	2.729	452	132	3.313
Mid Norway	417	62	5	484
West Norway	1.316	155	32	1.503
South Norway	252	32	8	292
East Norway	188	28	1	217
Total	4.902	729	178	5.809

About 75% of the coastal vessels are made of fiberglass, but as can be seen in Table 10 there is quite a difference in hull material depending on vessel size. About 64% of coastal vessels over 15 meters are made of wood and 21% are made of steel, whilst the overwhelming majority of vessels under 15 meters in length are made of fiberglass (Henriksen, 2014).

Table 10: Hull material depending on size group in the Norwegian coastal sector 2012

Hull Material / length group	< 11 m	11-15 m	15-21 m	Total
GRP	3.790	452	26	4.268
Wood	1.063	214	114	1.391
Steel	46	63	38	147
Total	4.899	729	178	5.806

Most of the vessels have modest engine power, but average engine size in the <11 m fleet is 121 HP, in the 11-15 meter fleet it is 277 HP and in the over 15 meter fleet it is 402 HP. The fleet is quite old and there have not been dramatic investments within the fleet since the 80's. About 75% of the fleet is over 20 years old, as can be seen in Table 11 (Henriksen, 2014). It should though be pointed out the 18 % of the fleet is built after the year 2000.

Table 11: Age of the Norwegian coastal sector according to length groups

Year of construction	< 11 m	11-15 m	15-21 m	Total	%
Before 1960	133	53	21	207	4%
1960-69	219	47	35	301	5%
1970-74	425	15	17	457	8%
1975-79	844	77	26	947	16%
1980-84	1.065	93	17	1.175	20%
1985-89	806	149	36	991	17%
1990-94	266	66	6	338	6%
1995-99	263	89	13	365	6%
2000-04	308	70	3	381	7%
2005-09	385	54	4	443	8%
2010-12	185	16	0	201	3%
Total	4.899	729	178	5.806	100%

Most of the Norwegian coastal vessels are gillnetters or Danish seiners, but these two types of fishing gear accounted for 55% of the total coastal catches and 72% of the coastal cod catches in 2013 (The Norwegian directorate of fisheries, 2014b).

4.5 Newfoundland & Labrador

As of December 31st 2013 there were 6.958 coastal vessels (<65 feet / 20 meters) registered in NL, of which 4.769 reported landings (DFO, 2013). The current regulation requires Federal registration of “all small non-pleasure vessels powered by an engine of 10 horsepower (7.5kw) or more”. This is a relatively recent change in regulation, but prior to 2008 Canada required registration of vessels exceeding 15 RT. Registration of vessels under 15 RT was voluntary. Canadian fleets are responding to this new registration, however the current data underrepresents the actual fishing effort in the Coastal Fleet. Canadian fishing vessels were and are however required to register with DFO Licensing to receive their Vessel Registration Number, a number unique to fishing vessels and different from the vessel’s Official Number provided through Federal registration. On the account of this there might be some vessels under 15 RT missing from the list.

The coastal fleet is highly variable and includes vessels ranging from less than 1 RT up to 150 RT, but most are in the range of 11-15 RT and 70% are less than 9 meters (30 feet) in length, as can be seen in Figure 17 (Decker & Manuel, 2014).

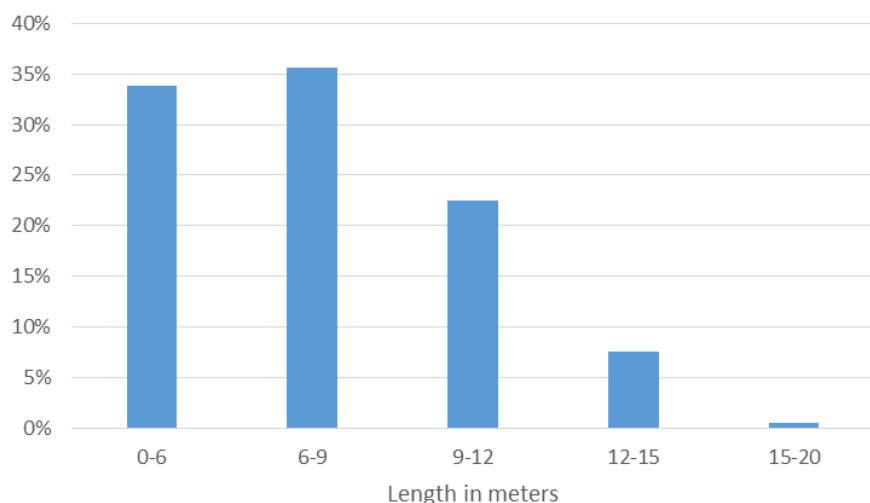


Figure 17: NL coastal fleet distribution by vessel length range

About 40% of the coastal fleet is constructed of fiberglass and equal amount is constructed of wood. The vessels are primarily geared towards shellfish i.e. snow crab, shrimp, lobster and whelk. The mainstay of investments in the fleet since the collapse of the cod stock in 1992 have been in the shellfish fleet and the groundfish fleet has seen very little renewal. There are though indications now that the cod stock might be recuperating and if so there will be a need for large scale investment in the fleet.

The current regulation in Canada is intended to restrict who is able to control a fishing enterprise i.e. so called “owner-operator principle”. It also places a requirement of residency in the region in which quota allocation is held. Because of this, coastal vessels are operated solely by their owners and access

to capital for such small operations can therefore be problematic. In addition there is something called “minimum processing requirements” in place on harvested products that ensures that the captures also benefit people working in the fish processing plants. This obligates the coastal fishermen to sell their catch to local processors, which then restricts the fishermen’s potentials to seek higher prices for their catch.

5 Catches and regional distribution of landings

Total catches of the coastal fleet in the countries focused on in this report in 2013 amounted to nearly 680 thousand MT, with landing value of 815 million EUR. The importance of individual species vary significantly between countries, where cod is by far the most important species in Faroe Islands, Iceland and Norway, whilst shellfish & crustaceans, Greenland halibut and pelagic species are more important in Greenland and NL. Landing volumes and values are summarised in Tables 12 and 13.

Table 12: Landing volume of the coastal sectors in each of the respective countries (MT) in 2013

Country	Cod	Haddock	Saithe	Other demersal	Shellfish & crustaceans	Pelagic	Other	Total
Faroe Isl.	1.697	804	609	631	44	511	0	4.296
Greenland	14.834	0	0	26.416	46.909	242	14.248	102.649
Iceland	54.543	13.304	3.464	14.420	298	5.519	0	91.548
Norway*	173.015	26.909	24.680	23.085	10.859	47.528	978	307.055
NL	7.778	43	122	5.923	108.752	48.317	0	170.933
Total	251.867	41.059	28.875	70.475	166.862	102.116	15.227	676.480

Table 13: Landing value of the coastal sectors in each of the respective countries (Mill. EUR) in 2013

Country	Cod	Haddock	Saithe	Other demersal	Shellfish & crustaceans	Pelagic	Other	Total
Faroe Isl.	3	1	1	1	1	0	0	7
Greenland	9	0	0	51	48	0	6	114
Iceland	83	25	3	19	0	3	0	133
Norway*	157	22	18	51	43	28	1	321
NL	5	0	0	13	214	9	0	240
Total	256	49	22	135	306	40	7	815

These catches contribute significantly to regional development of many of those countries, which is why distribution of landings is of importance. Following is a summation of the most relevant information concerning catch volumes and values, species composition and distribution of landings in the respective countries.

* Vessels < 21 meters

5.1 Faroe Island

In 2013 the Faroese coastal fleet landed 4.300 MT of catches, valued at 7 mill. EUR (Fiskveiðieftirlitið, 2014). Cod is by far the most important species representing 39% of the catches, followed by haddock (19%) and saithe (14%). Total catch value has decreased dramatically for the past decade in each of the three coastal fleet categories, as can be seen in Figure 18.

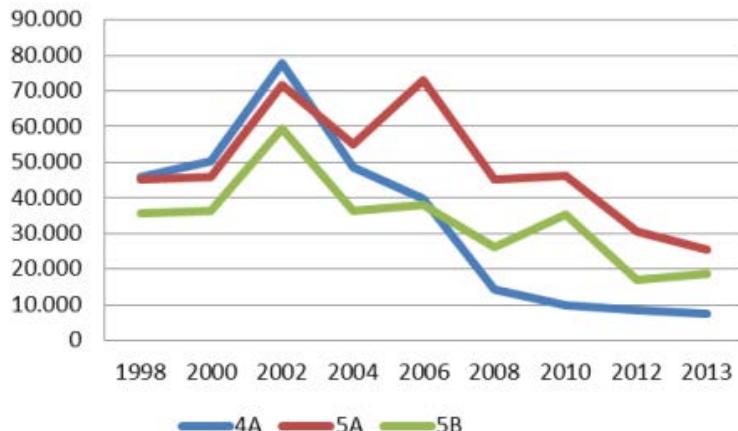


Figure 18: Landing value of Faroese coastal vessels 1998-2013 (DKK)

The importance of the sector as a whole within the national economy has decreased and represents now only 3% of total landing values. The coastal vessels however continue to account for significant part of the landings of cod and haddock, with 32% of the total landing value of cod and 35% of the total landing value of haddock in 2013 (Fiskveiðieftirlitið, 2014).

The importance of the coastal sector for regional development is not considered to be particularly relevant in the case of Faroe Islands, because the country as a whole is basically just one region. There are only 112 km from the most southern tip of the islands to the most northern tip and transportation between the islands are good. The fishing grounds are located all around the islands, as can be seen in Figure 19, so closeness to the best fishing grounds is therefore a minor issue.

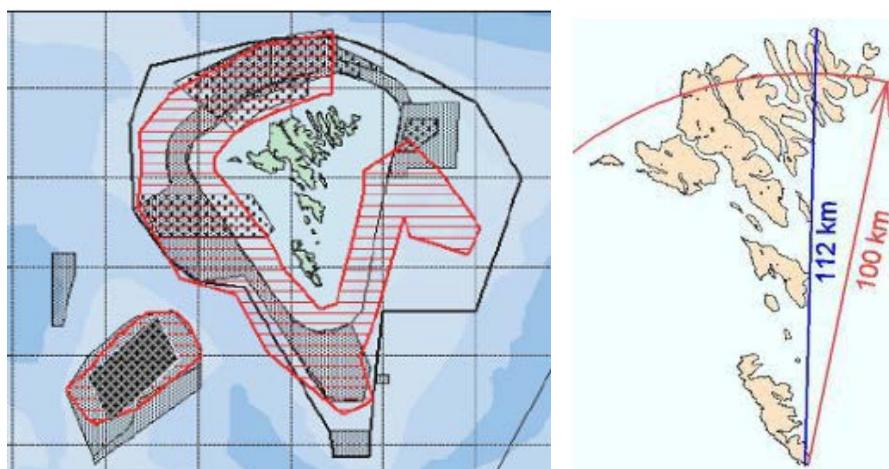


Figure 19: Fishing areas for coastal vessels within Faroese waters and areas subjected to closures or gear restrictions

The coastal vessels have access to fishing grounds that other vessel groups have not, but many of the fishing grounds are subjected to temporal closures and only allow certain types of fishing gear. The coastal vessels use primarily hand line (jigging), longline and gillnets as fishing gear. There is not a lot of variations in catches depending on seasons in the Faroese coastal sector. Catches of the main species are relatively evenly distributed by months, as can be seen in Figure 20 (Fiskveiðieftirlitið, 2014).

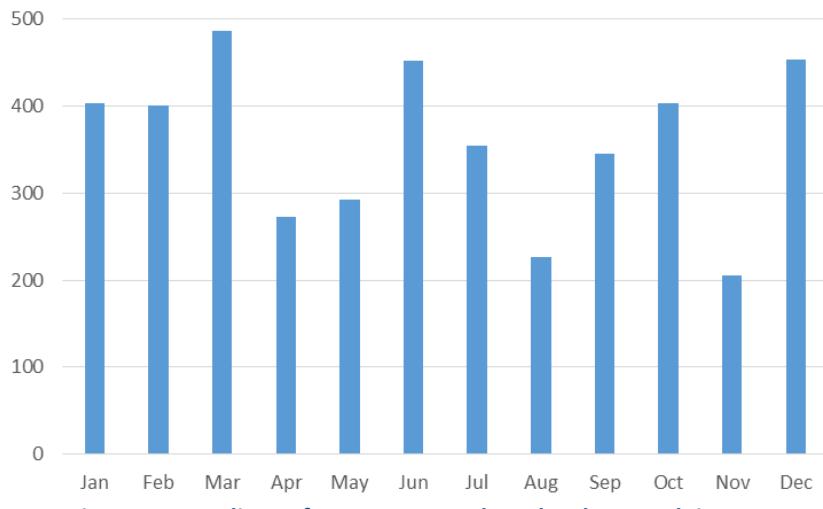


Figure 20: Landings of Faroese coastal catches by month in 2013

Variations between months are primarily dependant on weather and market prices, as the Faroese coastal fleet attempts to maximise value of the little effort quota they have.

5.2 Greenland

The Greenlandic coastal sector landed 103 thousand tonnes of catches, valued at 114 million EUR in 2013. Shrimp and Greenland halibut accounted for 85% of the landing value, each with little over 40% of the total value. The third and fourth most valuable species were cod and lumpfish, with 7% and 6% of the landing value (Statistics Greenland, 2014b).

The coastal fleet serves an important role in the Greenlandic economy and regional development. The fleet is for the most parts rather inefficient, with low average catches and difficult operational environment. The authorities have made some attempts to favour this fleet segment, which have to a point helped the industry. It is however almost impossible to start fresh in this business, because investment costs and capital costs are too high. It is likely that some parts of the coastal sector (red shrimp and Greenland halibut) will experience more consolidation in the nearest future, as has happened within the larger fleet. Fewer and better equipped vessels and economics of scale seem to be emphasised. It is though clear that the coastal fleet will continue to serve a leading role in the Greenlandic fishing sector and in regional development of the country.

The costal fleet is largely operated from the cities situated on the coast. The settlement patterns have been severely affected by the commercialisation of the fishing industry in the last decades. The shrimp industry has in particular gone through an optimisation process, as the two largest seafood companies have aggregated the mainstay of the quota shares. By the turn of the century there were ten shrimp processing plants in the country, but today there are only four left and they are all located in the

northern part of the country. In some extreme cases small traditional fishing settlements with little or no fishing rights have faced plant closures or temporary closures, which have caused problems in regards to regional development. In some cases the coastal fleet sector is now the backbone for employment and survival of these fishing settlements. This fleet is therefore highly important for survival of the small fishing communities around the country.

The population of Greenland is around 56.000, of which 30 % lives in the capital city of Nuuk (Statistics Greenland, 2013b). Other larger cities are; Sisimiut with 5.500 inhabitants and Ilulissat with 4.500 inhabitants. When looking at population development or migration over the past ten years it is apparent that there is a trend where people are moving from smaller cities and settlements into the larger cities. There is also a clear trend showing that people from the larger cities are moving to the capital of Nuuk, and also from Nuuk to Copenhagen. The population in the cities is therefore growing, whilst population in the traditional fishing and hunting settlements around the country are decreasing.

The small coastal vessels are relatively evenly distributed around the west-coast and are particularly important in coastal communities in Diskobay and further north where the small boat sector accounts for most of the landings. They are hugely important suppliers of fish for on-shore production, as after all it is mandatory for them to land all catches to on-shore processing plants. On the east coast there are however just two major settlements and they only have six GR boats registered, but instead there are a large number of dinghies operated there targeting Greenland halibut and lumpfish.

The Greenlandic economy is highly dependent on the fishing industry, as its contribution is reported to be as high as 25-30% of GDP (McBean, 2004). The rural villages and settlements along the coast, which often have about 150 inhabitants in each village, are entirely dependent on fishing and hunting. The coastal fisheries generated 114 million Euro into the Greenlandic society in 2013, where the Qaasuitsup municipality with 31% of the population accounted for 68% of the value. Table 14 shows the value of Greenlandic coastal fisheries for each of the four municipalities and the share of the population in each municipality (Statistics Greenland, 2014b).

Table 14: The value of Greenlandic coastal fisheries in 2013 by municipality

Municipality	Value (mill. DKK)	Value (mill. EUR)	Share of value	Share of population	Average value / habitant (€)
Qaasuitsup	573.248	77.049	68%	31%	4.438
Qeqqata	102.981	13.842	12%	17%	1.454
Sermersooq	153.523	20.635	18%	39%	945
Kujalleq	17.795	2.392	2%	13%	329
Total	847.546	113.918	100%	100%	

The Table shows the importance of the coastal sector for the municipalities in the north of Greenland. The share of the sector in the economy of Qaasuitsup is particularly noteworthy. These settlements in the northern part of the country have been struggling in regards to rural development issues, as many young people have moved to the larger cities. This development would have been even more severe if it was not for the coastal sector.

The importance of the coastal sector for Sermersooq should also not be underestimated. The average value of the sector per capita is lower than in the case of Qaasuitsup and Qeqqata, but then it must be considered that the capital of Nuuk is located in Sermersooq. The coastal sector is very important for

the settlements on the east coasts, as well as for smaller settlements on the West coasts, such as Paamiut.

The coastal sector has the least impact for the municipality of Kujalleq in the south, which is more dependent on farming and truism.

Figure 21 shows in which cities/settlements the coastal catch was landed in 2013. The Figure clearly shows the importance of shrimp/prawns, Greenland halibut and lumpfish (Statistics Greenland, 2014b)

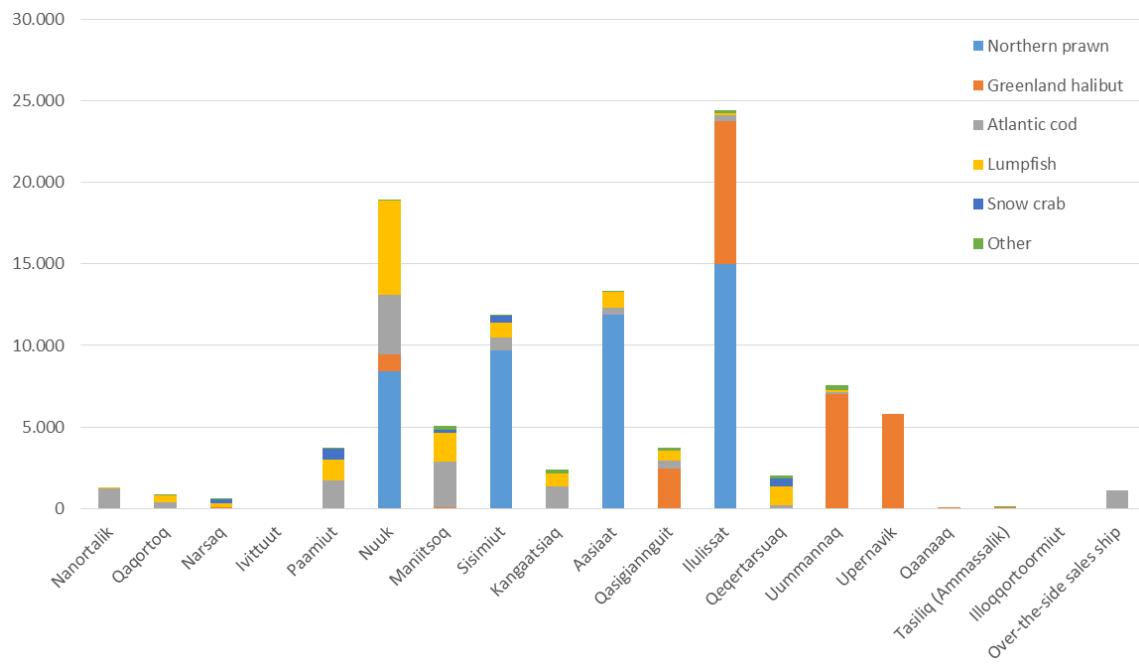


Figure 21: Landings (ton) of coastal catches in 2013 by landing harbour

Figure 22 shows the landing value of these species and Figure 23 shows a map of Greenland locating each of these cities/settlements (Statistics Greenland, 2014b).

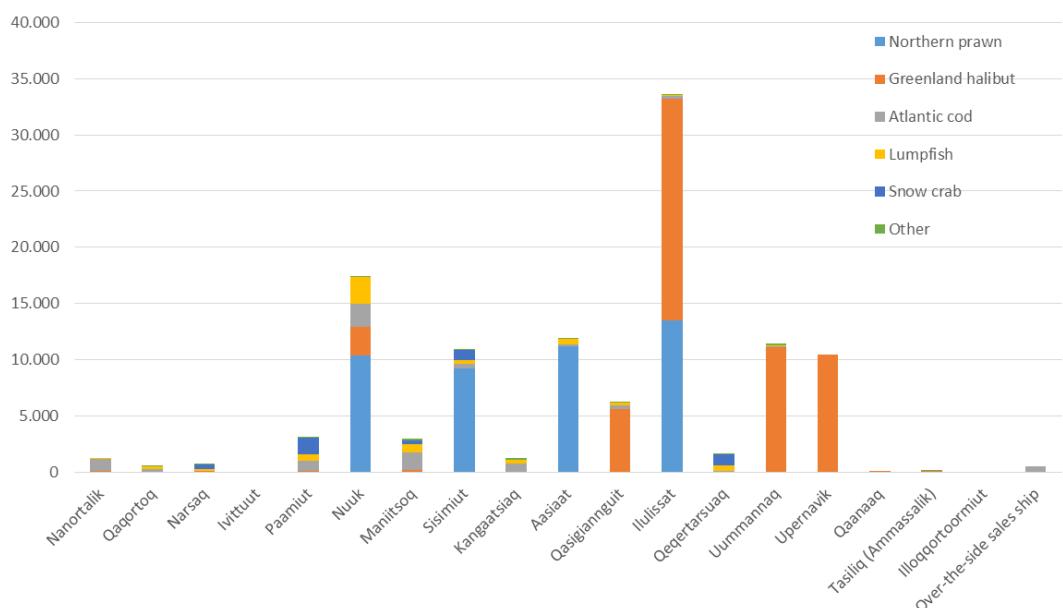


Figure 22: Landing value (thousands of EUR) of coastal catches in 2013 by species and landing harbour

Ilulissat stands out in regards to total landing value of coastal catches, as it has the highest value in both Northern prawn and Greenland halibut. Nuuk, Sisimiut and Aasiaat are the other three towns with prawn processing, which explains their considerable share in the total value. Uummannaq and Upernivik then have a significant interests in the Greenland halibut fishery, while the other settlements represent a much smaller portions in the total landing value of coastal catches.



Figure 23: The municipalities of Greenland and major cities and settlements

The above demonstrates that the importance of different species varies between settlements and municipalities. It should also be considered that type of vessels and fishing gear depends on the target species. Trawling accounts for 42% of the coastal catches and they are mainly used in the shrimp fishery. Trawling requires larger vessels and as mentioned earlier there are only four shrimp processing plants operated in Greenland today, which means that the fishery has limitations regarding regional development in rural areas.

Jig and line accounts for 43% of the coastal catches, where the most important species is Greenland halibut. This fishery is done on small boats and is of importance for settlements of all sizes i.e. is very important for regional development. The same applies for Gillnetters, where the most important species is lumpfish. The lumpfish fishery is conducted on small dinghies and is very important for small and medium sized settlements.

Poundnets, which are large traps set out close to shore, are primarily used to fish for cod. Poundnets account for 5% of the coastal catches, but its importance is not significant as the fishery is low value and highly seasonal. The cod fishery is though expected to become more important in the nearest future, as stock estimates expect that the cod stock will increase dramatically in the nearest future. The Greenland Natural Institute has even mentioned figures exceeding 200.000 MT total cod catches in just five years' time. Figure 24 shows the portion of each fishing gear in total coastal catches in 2013 (Berthelsen, 2014).

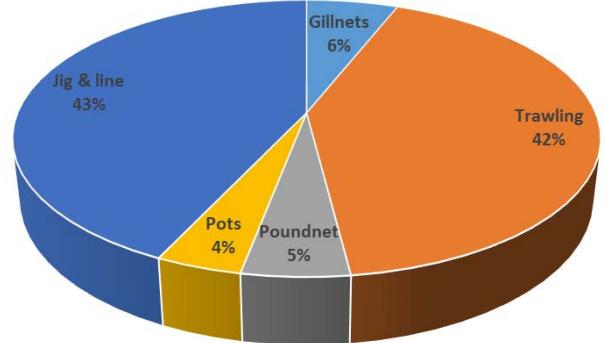


Figure 24: Portion of each fishing gear in total Greenlandic coastal catches 2013

Transportation and access to markets is of particular important when considering fisheries and regional development issues with respect to coastal fisheries in Greenland. The fact is that transportation is a major barrier for profitable processing in the country and that directly affects the catching sector. The average landing value of cod in 2013 was for example only 0.57 EUR/Kg, which is extremely low in comparison which what is paid in the other Nordic countries (Statistics Greenland, 2014b). This is in combination with other things caused by problems that can be contributed to transportation difficulties. Marketing and "monopoly" issues are also a big factor, which is for example highlighted in the fact that 75% of Greenlandic exports are exported to just two countries i.e. Denmark which 60.4% and Japan with 14.6% in 2012 (CIA, 2014).

5.3 Iceland

Icelandic coastal vessels landed 91 thousand tonnes of catches valued at 133 million Euros in 2013 (Statistics Iceland, 2014b). Estimated export value of products produced from these catches amounted to 310 million Euros, or 18% of the total export value of Icelandic seafood exports in 2013. (Örn Pálsson, 2014). Cod is by far the most important species, as can be seen in Figure 25.

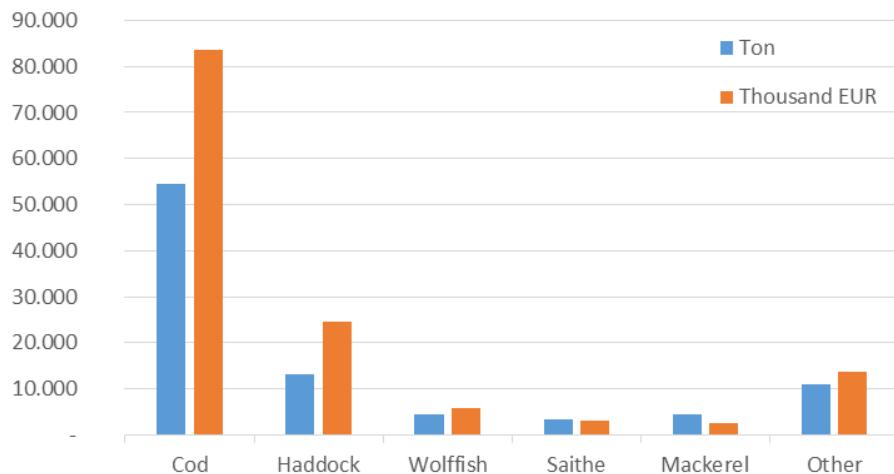


Figure 25: Volume and value of coastal catches in Iceland 2013 by main species

Coastal catches are almost solely caught by three types of fishing gear i.e. longline with 62% of the catches in 2013, jigging with 25% and gillnets with 11%. The distribution of coastal catches by species and fishing gear in 2013 can be seen in Figure 26 (Statistics Iceland, 2014c).

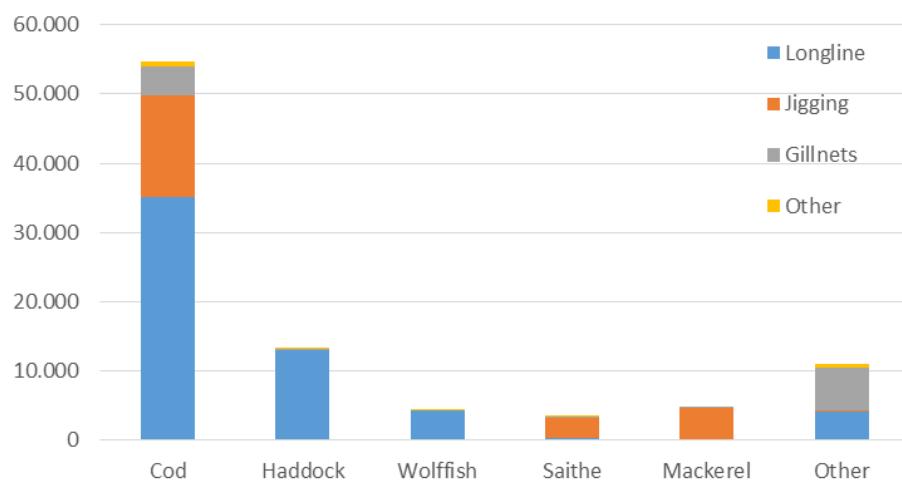


Figure 26: Icelandic coastal catches (ton) by species and fishing gear

The share of coastal vessels in total catches of cod in 2013 was 23%, for haddock it was 29% and for wolffish it was 50%.

The mainstay of the coastal vessels sell their catch through auction markets, but most of the larger and more technologically advanced vessels that land the majority of the catches are supplying processors directly; either upon contracts or because they are owned by the processors. In 2013 the auction

markets, which are located in 27 places across the country connected through the same auction system, sold 110 thousand tonnes of fish for 178 million EUR, where a big portion came from coastal vessels. This network of auction markets is very important for the coastal sector and regional development, as it gives smaller operators access to a good and competitive market, with secure and prompt payments. The auction markets are also very important for processors relying on supplies from coastal vessels, particularly for processors that do not own fishing vessels. There are close to 300 registered buyers at the auctions, which usually guarantees fair and competitive prices.

The Icelandic coastal sector is considered extremely important for regional development. In many of the smaller rural fishing villages, the coastal vessels are the backbone of the economic viability of the towns. They provide most or all of the raw material processed in the villages and all other jobs in the area either directly or indirectly depend on the catching- or the processing sector. This is why the coastal sector is awarded special attention in the fisheries management act and there is a clause in the act stipulating that one of the objectives of the management system is to secure stable employment and settlement in the country.

The population of Iceland reached 318 thousand in 2013, of which 66% lived in the capital area. The population had then increased by 17% over the previous 15 years, but the areas most dependant on the coastal sector saw a decrease in population during that same time i.e. Westfjords with 16% decrease, Northwest with 23% decrease and West with only 8% increase despite of creation of large number of jobs in heavy industry.

Iceland is split into eight regions, as can be seen in Figure 27. The coastal sector is of variable significance depending on the regions. The relative importance of the sector is highest in the Westfjords as a whole and parts of the West and Northwest are also heavily dependent on the sector. The coastal sector is also important for the Northeast, East and the Southern peninsula, but those areas have more diverse industries and are not as dependant on just one sector. The South region has few harbours, long distances to good coastal fishing grounds and harsh weather conditions, which is why the seafood sector in the region has concentrated on larger vessels.



Figure 27: The regions of Iceland

The Icelandic Regional Development institute published a report in 2013 were the contribution of different sectors to the economy of each region in the country were estimated (Jóhannesson, Sigurðsson, & Árnason, 2013). The results showed that the seafood industry contributed to 8% of the Icelandic economy, but for some regions it accounted for as much as 31%, as can be seen in Table 15.

Table 15: Contribution of different sectors to the economy of each region in Iceland

	Capital	Southern peninsula	West	West-fjords	North-west	North-east	East	South	Total
Agriculture	0%	4%	3%	4%	8%	4%	2%	9%	2%
Seafood industry	2%	19%	20%	31%	18%	14%	22%	18%	8%
Heavy industry	5%	10%	20%	6%	5%	6%	21%	6%	7%
Other industry	8%	6%	6%	5%	5%	7%	6%	8%	7%
Construction	4%	7%	4%	5%	8%	8%	7%	7%	5%
Trade and transport	28%	15%	12%	11%	16%	14%	11%	13%	23%
Banking and services	31%	18%	15%	16%	16%	22%	16%	18%	27%

As the table clearly shows, the importance of the seafood sector is by far most significant in the Westfjords. It is also in the Westfjords were the contribution of the coastal sector is highest in relation to other fleet sectors. Looking at the demersal quota allocations for each region the Westfjords stand out with 31% of the demersal quota in the area allocated to coastal vessels; for other regions the relative allocation varies from 2-17% as can be seen in Table 16 (The Icelandic directorate of fisheries, 2014e)

Table 16: Demersal quota allocations to the coastal sector and other sectors for the quota year 2014/15

	Coastal quota	Other quota	Sum	%
Capital	2.604	49.248	51.852	5%
Southern peninsula	9.796	49.968	59.764	16%
West	8.742	44.043	52.786	17%
Westfjords	9.454	21.373	30.827	31%
Northwest	1.889	21.024	22.913	8%
Northeast	5.608	55.226	60.833	9%
East	6.355	42.709	49.065	13%
South	992	46.995	47.987	2%
Sum	45.441	330.586	376.027	12%

The above clearly demonstrates the importance of the coastal sector for regional development in Iceland. The coastal vessels are an intrinsic part of every-day life in many of the rural communities and when looking at the number of coastal vessels in relation to inhabitants in each region it can be seen that there is one coastal vessel for every 18 inhabitants in the Westfjords, but for the capital area there are 800 persons for every coastal vessel.

5.4 Norway

Norwegian coastal vessels (less than 21 meters) landed 307 thousand tonnes of catches valued at 321 million Euros in 2013 (The Norwegian directorate of fisheries, 2014b). These landings represented 15% of total catches of Norwegian vessels and 21% of the total landing value. Cod is by far the most important species, representing 56% of the volume and 49% of the value, haddock, herring, saithe and shrimp are also of significant importance, as can be seen in Figure 28.

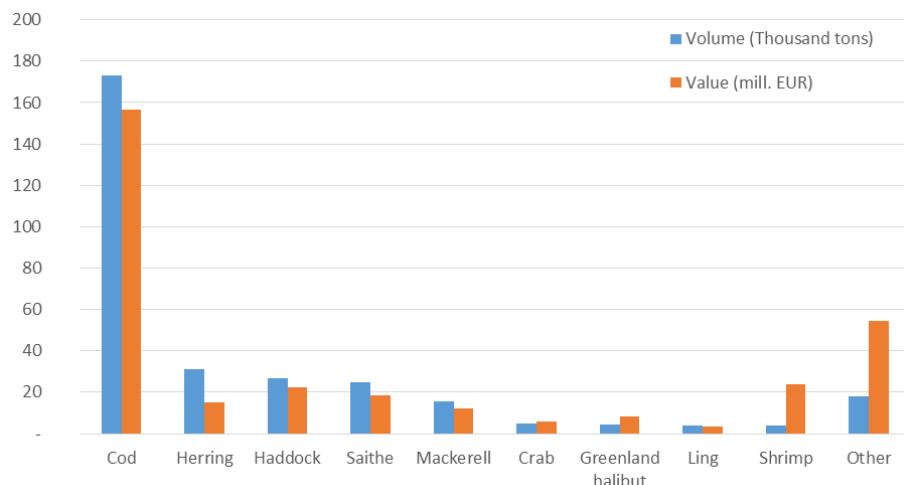


Figure 28: Volume and value of coastal catches in Norway 2013

The distribution of the coastal catches and landing value between the vessel size categories can be seen in Figure 29, but as discussed in chapter 4.4 the overwhelming majority of the vessels belong to the under 11 meter fleet, or 84%; whilst 13% belong to the 11-15 meter group and only 3% to the 15-21 meter group (The Norwegian directorate of fisheries, 2014b).

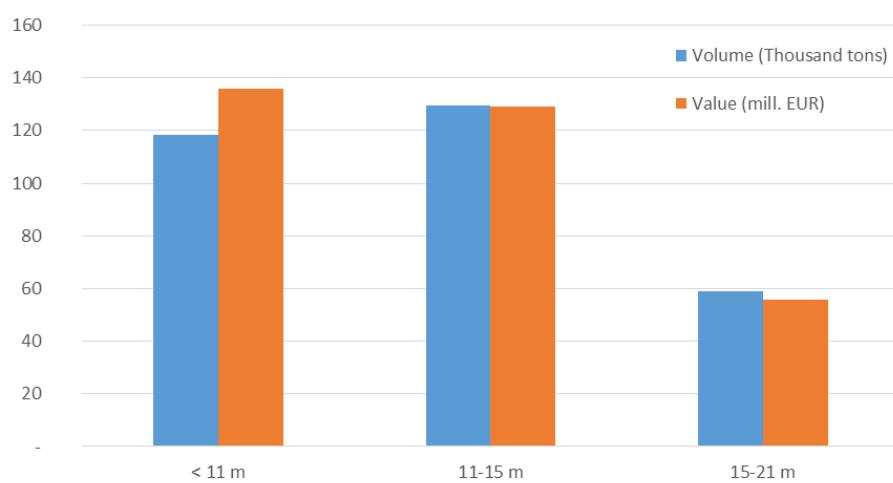


Figure 29: Distribution of coastal catch volumes and landing value by vessel length group in 2013

Just over 213 thousand tonnes of the coastal catches in 2013 were landed in North Norway, which represents 69% of the sectors total landings. West Norway came in second with 21% of the landings and other regions were much less dependent on the coastal sector, as can be seen in Table 16 and Figure 23. The geographical division of the regions can then be seen in Figure 31.

Table 17: Landings of Norwegian coastal catches in 2013 by regions in volume and value

Region	Volume (Ton)	%	Value (€ 1000)	%
North Norway	213.104	69%	207.624	65%
Mid Norway	20.831	7%	22.977	7%
West Norway	64.484	21%	67.803	21%
South Norway	4.842	2%	12.889	4%
East Norway	3.793	1%	9.495	3%
Total	307.055	100%	320.788	100%

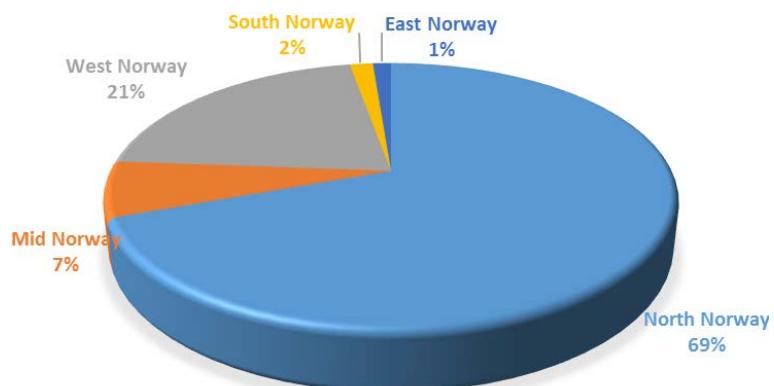


Figure 30: Landings of Norwegian coastal catches in 2013 by regions in volume



Figure 31: Location of municipalities and regions in Norway

The Norwegian coastal fisheries are highly seasonal, as over 60% of the catches are landed in the first four months of the year, as can be seen in Figure 32 (The Norwegian directorate of fisheries, 2014b).

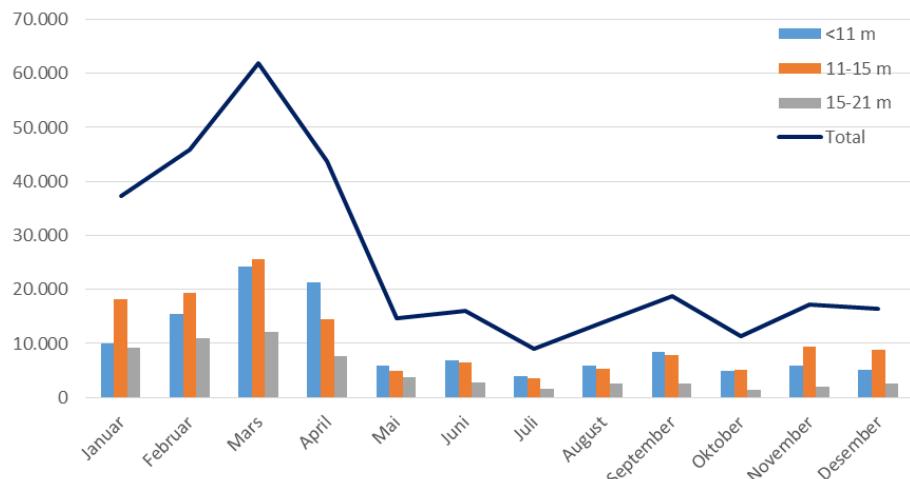


Figure 32: Landings of Norwegian coastal catches in 2013 by landing month and vessel length group

This seasonality in catches can mainly be contributed to the cod fishery, as coastal cod catches are primarily concentrated at the first four months of the year when the Barents Sea cod stock aggregates along the North coast of Norway to spawn. In 2013 almost 90% of the coastal cod catches were landed in the period from beginning of January to end of April. This seasonality in the Norwegian cod fishery has both advantages and disadvantages. The advantages are for example that coastal fishermen can focus their operations on the months where catch per unit effort (CPUE) is very high i.e. low operational costs for each kilogram of catch. The disadvantages are however various quality issues, as they sometimes catch too much at once, reducing the ability to properly take care of the catch. It is also a challenge for processing firms and for marketing of the finished products when almost all of the catch is landed in such a short period of time.

Over 50% of Norwegian coastal catches are caught in gillnets and Danish seine, which is quite different from the catch composition by fishing gear in the other Nordic coastal fleets (The Norwegian directorate of fisheries, 2014b). Line and purse seine are also important fishing gears for the Norwegian coastal fleet, as can be seen in Figure 33.

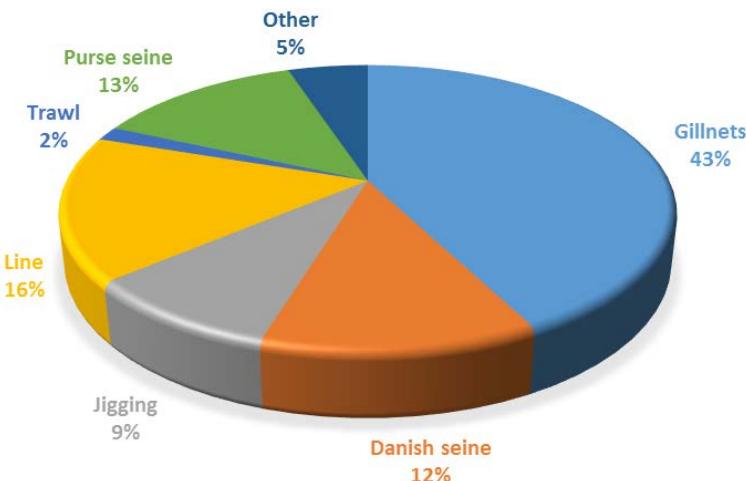


Figure 33: Distribution on Norwegian coastal catches by fishing gear in 2013

When looking at this gear/catch composition for cod, the most important species, the share of gillnets and Danish seine become even more obvious. Almost $\frac{1}{4}$ of the cod catches are caught by gillnets and Danish seine, as shown in Figure 34 (The Norwegian directorate of fisheries, 2014b).

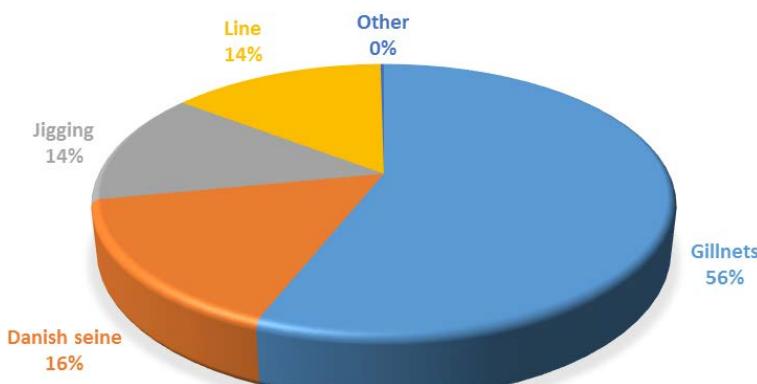


Figure 34: Distribution of Norwegian coastal cod catches be fishing gear in 2013

This gear/catch composition, together with the high seasonality of the fishery, have been shown to be a cause for various quality problems that the Norwegian coastal fleet has been struggling with for the past decades (Henriksen & Sovorken, 2011).

The coastal sector has always been of significant importance to rural societies, especially in the Northern parts of Norway, and the government has actively protected the coastal sectors as a part of the regional policy. Quotas are allocated based on such considerations and various supporting actions are provided. There is even an “unwritten understanding” in Norwegian politics referred to as the social contract (samfunnskontrakt) where there has been a common agreement to favour the coastal communities by giving them special privileges. This “contract” is however at present under debate and revision (Holm & Henriksen, 2014).

5.5 Newfoundland & Labrador

NL coastal vessels landed 171 thousand tonnes of catches valued at 240 million Euros in 2013 (DFO, 2014). This amounts to 60% of total landing volume in NL and 54% of total landing value in that year. Shellfish such as lobster, shrimp and crab account for 60% of the volume and 86% of the value, where crab alone represents over 61% of the total value. The coastal fleet is broken into two separate groups when reporting catches i.e. 0-34 ft. (0-10,5 m) inshore fleet and 35-64 ft. (10,5-20 m) nearshore fleet. The inshore fleet accounts for around 20% of both volume and value, but the mainstay of the catches are caught by the larger vessels in the nearshore fleet, as can be seen in Table 18 (DFO, 2014).

Table 18: Landing volume and value of the NL coastal fleet in 2013

Fleet type	Inshore vessels 0-35 ft.		Nearshore vessels 35-64 ft.		Coastal vessels total		
	Species	Volume (MT)	Value (mill. €)	Volume (MT)	Value (mill. €)	Volume (MT)	Value (mill. €)
Cod		6.175	4,1	1.603	1,1	7.778	5,2
Halibut		266	1,6	331	2,0	597	3,5
Turbot/Greenland halibut		140	0,3	3.973	8,2	4.113	8,5
Other Groundfish		436	0,2	941	0,5	1.377	0,7
Herring, Atlantic		3.100	0,6	13.628	2,6	16.728	3,2
Mackerel		49	0,0	3.607	1,4	3.656	1,4
Capelin		10.019	1,4	17.827	2,5	27.846	3,8
Other Pelagics		57	0,2	30	0,1	87	0,3
Scallop		23	0,0	1.050	1,7	1.073	1,7
Whelks		623	0,6	4.122	4,0	4.744	4,6
Other Molluscs		817	1,0	243	0,3	1.060	1,3
Lobster		2.183	12,0	18	0,1	2.200	12,1
Shrimp, <i>Pandalus Borealis</i>		0	0,0	49.615	45,5	49.615	45,5
Crab, Queen/Snow		9.880	29,5	39.400	117,6	49.279	147,1
Other Crustacean		79	0,0	702	0,4	780	0,4
Total		33.847	51,4	137.086	187,9	170.933	239,3

The most important species for the inshore fleet are cod, lobster and crab, representing 90% of the value. The larger nearshore vessels are a bit more diverse, but over 90% of their catch value though also come from only three species i.e. crab, shrimp and turbot; as can be seen in Figures 35 and 36.

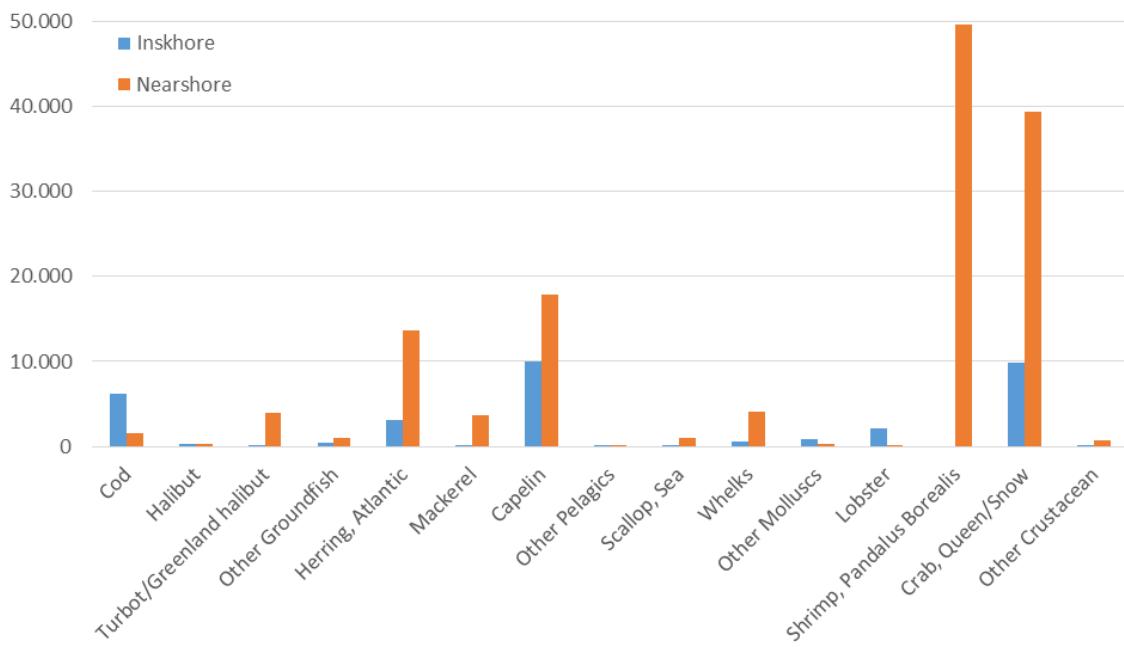


Figure 35: Landing volumes by species of the two NL coastal fleets in 2013 (MT)

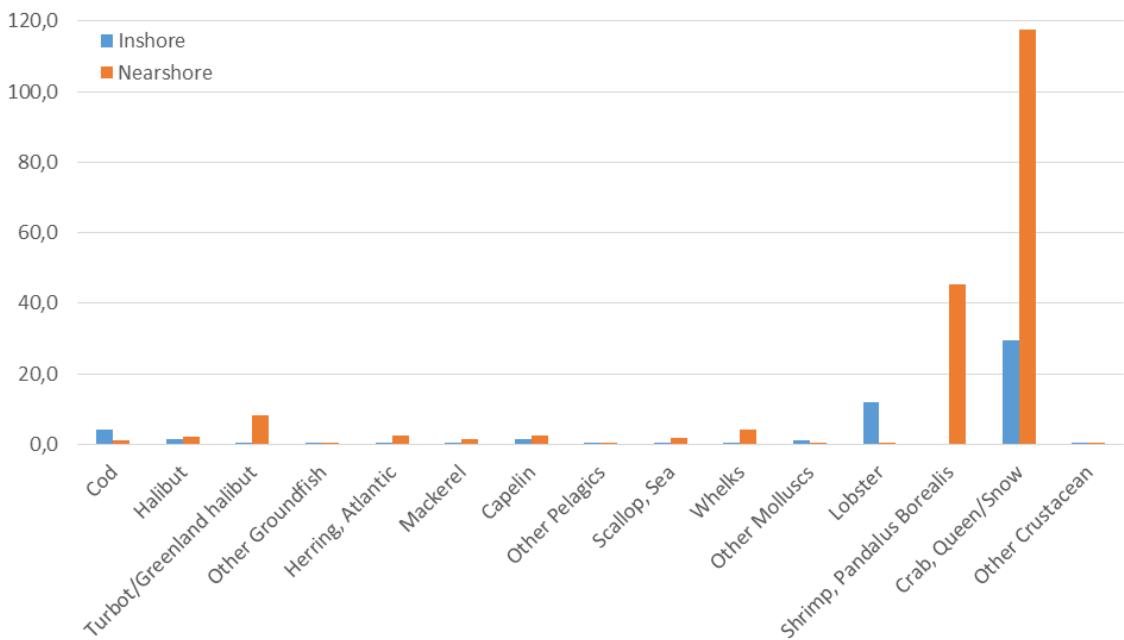


Figure 36: Landing values by species of the two NL coastal fleets in 2013 (mill. €)

Coastal fisheries and processing of coastal catch are extremely important for rural development in NL. In 2013 there were 9,500 people working in the coastal catch sector and 8,400 in the processing sector in NL (Decker & Manuel, 2014), which represents 7.1% of the workforce (Newfoundland & Labrador statistics agency, 2014). Estimated market value of the products were 640 million Euros, which amounts to 2,5% of NL GDP (Statistics Canada, 2014). There has been a significant decrease in the number of coastal vessels and processing plants in recent years, where the number of vessels has decreased by 60% and processing plants by 48%, as can be seen in Table 19 (Decker & Manuel, 2014)

Table 19: Number of vessels, plants and workers in the NL coastal sector in 1998 and 2013

	1998	2013	Decrease
Vessels	11.200	4.500	60%
Plants	214	111	48%
Harvesters	16.500	9.500	42%
Plant workers	21.000	8.400	60%

At the same time there has been a lack of new entry into the sectors, which means that the average age of harvesters and processors has been increasing. Between the year 1990 and 2010 the number of fish harvesters over the age of 55 increased by 35% while at the same time the number of fish harvesters under the age of 25 has decreased by almost 80%. The positive thing with this development is that average annual income has increased significantly. The same development has taken place in the processing sector, as can be seen in Table 20 (Decker & Manuel, 2014).

Table 20: Changes in age distribution of NL fish harvesters and plant workers between 1990 and 2010

	Age <25			Age 55+			Average annual income		
	1990	2010	Change	1990	2010	Change	1990	2010	Change
Fish harvesters	2.200	500	-77%	2.000	2.700	35%	14.572	32.050	120%
Plant workers	5.370	1.340	-75%	1.500	2.600	73%	16.140	26.840	66%

Some of the fisheries and related processing are highly seasonal, such as the crab fishery for example. This means that processing facilities, vessels and labour have to be available for relatively short period of time and will then either have to close down or find alternative means of income and work. There are 99 communities in NL that had processing plants relying on coastal catches in 2013, with 111 plants and 86 companies, their locations can be seen in Figure 37 (Department of Fisheries and Aquaculture, 2014).



Figure 37: Locations of active fish processing plants in NL in 2013

As mentioned in chapter 3.5 there are restrictions on quota allocations and “minimum processing requirements” in place, which guarantees that regional development issues are a big factor when comes to choosing locations for processing plants and from where the vessels are operated. This has proven to be valuable tool in securing that at least some parts of the work and income derived from the natural resources benefit the rural areas in NL.

6 Employment and operational environment of the coastal sectors in the N-Atlantic

There were around 18 thousand coastal fishermen operating in the N-Atlantic in 2013 i.e. fishermen that had coastal fisheries as their primary source of income in the countries subjected to this report. The number of fishermen that worked on coastal vessels for parts of the year or for recreation is probably close to equal that number, so rough estimates suggest people working within the coastal sectors in the countries subjected to this report could be between 30 and 40 thousand. Related jobs in processing and service industries is then at least equal to that amount; probably more. Table 21 shows estimations of number of coastal fishermen in the respective countries i.e. having coastal fisheries as their main source of income.

Table 21: Estimated number of coastal fishermen in the countries subjected to the report

Country	Coastal fishermen
Faroe Islands	80
Greenland	2.000
Iceland	1.600
Norway	5.000
NL	9.500
Total	18.180

There are some difficulties estimating these numbers since registrations are often not separated into fleet sections. Employment can also be temporary or fisheries can be a secondary means of income. The numbers in the table above should therefore be taken as educated estimates.

The operational environment for the coastal fleets in the N-Atlantic have been variable. In general the sector is struggling to return profits and many have given up and left the industry. As discussed in chapter 4 the average age of the coastal fleets is very high, there have not been significant investments in vessels and new entry of workers have been limited. There are though parts of the coastal fleet that are operating with healthy return on investment, particularly the “larger players” in the Icelandic and Norwegian coastal fleets and in the NL shellfish fleet.

Following is a discussion on employment and operational environment of the coastal sectors in each of the relevant countries. The discussion focuses on the number of jobs and development of job opportunities in the sectors over the past years and operational environment in regards to profitability and investments.

6.1 Faroe Island

The Faroese coastal sector has been going through rough times for a number of years due to the condition of the cod and haddock stocks around the islands (Djurhuus, 2014). The number of fishing days allocated to the coastal fleets have decreased by 65% from 1997, total catches are only 4 thousand tonnes valued at 7 million EUR and as of 2013 there are only 35 coastal vessels left that are defined as “fully operational”. It is estimated that 70-80 persons are employed full time in the sector, but there is a significant number of people that work part time or for recreation on coastal vessels in the Faroe Islands, as the number of licensed coastal vessels is almost 550. The contribution of the

coastal fleet to the Faroese processing sector is also limited since only 1/4th of the haddock and 1/3rd of the cod landed by coastal vessels are processed in the islands. The mainstay of the catches are exported unprocessed to auction markets or in direct sales to UK, France and Germany.

The operational environment for the fully operational coastal vessels is very difficult and for the rest of the fleet it is simply impossible. The stocks are too small to maintain sufficient income for the fleet. When looking at the annual accounts of the fully operational vessels, it can be seen that they are really struggling to return profits. Of the 35 fully operational vessels in the fleet there are 19 vessels that are run as limited liability companies and their annual accounts are therefore a matter of public record. In 2013 these 19 vessels returned an aggregated EBITDA of 470 thousand EUR, averaging 24 thousand EUR/vessel. It is easy to see that these numbers do not add up for the owners of the vessels (Djurhuus, 2014).

6.2 Greenland

Estimating the total number of coastal fishermen in Greenland is subjected to considerable uncertainty since registration is not obligatory for big part of the fleet and many work only part time in the sector. The official number for people working in fishing, hunting and agriculture as main employment in 2013 was 3.548 and when looking at people employed for at least one month in the sector the number was 6.819 (Statistics Greenland, 2014). Of the approximately 3.500 people working full time in fishing, hunting and agriculture industries it can be estimated that around 2.000 are working in the coastal sector. The number of people working part time and for recreation in the sector is though much higher.

The operational environment for the Greenlandic coastal sector is difficult. For most species there is a monopoly situation when it comes to selling the catch and prices can therefore be extremely low. Logistics make it difficult to get products to market and to build up large scale industrialised processing in regions where coastal fisheries are of importance. Seasonality of the different fisheries make it also difficult to provide sufficient income throughout the year. Shrimp and Greenland halibut are by far the most important species in regards to value and are therefore the fisheries most likely to return profits. There are however only a handful of processers buying those catches and subsequently very few communities that have reported landings. The lumpfish fishery has during some seasons given good returns, but it is characterised by severe fluctuations due to unstable market situations. The hope is that MSC certification for the fishery will make it more stable and profitable. The cod fishery has been run at severe losses, but the hope is that stronger stocks will make the fishery profitable in the nearest future. As shown in chapter 4 the average age of fully operational coastal vessels in Greenland is 45 years, which clearly demonstrates the difficult operational environment of the sector.

6.3 Iceland

According to Statistics Iceland 3.600 employees worked full time in the capture sector and 5.000 in the seafood processing sector in 2013 (Statistics Iceland, 2015). Of those it is estimated that 1.600 worked on-board coastal vessels, creating close to 600 full time jobs in processing (Sveinn Agnarsson, 2012) and more in other related industries. In addition there are considerable number of people working part of the year within the coastal jigging system, the lumpfish fishery and J&L system. These are people that are working in other professions for most of the year, so they are not counted in the national registry as fishermen. There were for example 675 vessels that took part in the coastal jigging

fishery in 2013, so it is safe to estimate that about 600 persons had employment for part of the year within that fishery (Sveinn Agnarsson, 2012).

The Icelandic coastal fleet consists of a diverse group of vessels. It is therefore difficult, and can be highly misleading to give general comments on the profitability within the sector. Some vessels are returning healthy profits whilst others are struggling to make ends meet. On big contributing factor is the quota allocation i.e. the vessels that got quotas allocated based on fishing experience (grandfathered quota) are in most cases doing fairly well, but vessels that have bought quotas in recent years are experiencing difficulties. The bank crisis hit the coastal fleet particularly hard, as many had invested heavily in the years leading up to the crisis, taking on loans in foreign currency. The loans and instalments then doubled or tripled almost overnight when the ISK collapsed in 2008. This can for example be seen in Table 22, where operation accounts of the under 10 meter fleet is shown from 2003 to 2012 (Statistics Iceland, 2015).

Table 22 Operation accounts of the Icelandic fleet under 10 meters 2003-2012

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Revenues	100,0%									
Wages	42,9%	43,3%	32,8%	31,6%	34,4%	29,8%	29,5%	30,5%	29,5%	29,3%
Oil	2,4%	2,4%	9,0%	9,5%	10,5%	12,0%	4,5%	8,8%	10,6%	11,6%
Fishing gear	1,4%	2,3%	3,1%	1,0%	7,2%	5,3%	5,0%	3,8%	4,8%	1,9%
Maintenance	9,7%	9,4%	6,1%	5,2%	6,2%	5,3%	6,0%	6,9%	9,8%	10,5%
Office cost	1,9%	2,9%	8,8%	8,8%	8,2%	6,5%	7,2%	7,0%	4,2%	9,1%
Insurances	4,0%	5,3%	1,0%	1,0%	1,0%	1,9%	2,0%	2,1%	2,7%	1,6%
Quota rent	3,6%	6,9%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Other costs	22,3%	19,5%	19,8%	18,4%	20,0%	16,2%	21,9%	20,6%	23,9%	24,9%
Costs	88,3%	92,0%	80,7%	75,4%	87,8%	77,0%	76,3%	79,7%	85,5%	88,8%
EBITDA	11,7%	8,0%	19,4%	24,6%	12,2%	23,0%	23,7%	20,3%	14,5%	11,2%
Depreciation	14,3%	5,9%	5,8%	5,3%	3,9%	4,0%	2,8%	3,9%	6,7%	8,8%
Interests and infl.	5,7%	5,4%	3,3%	12,3%	2,1%	43,5%	6,9%	3,4%	1,3%	4,3%
Profits	-13,5%	-8,4%	3,1%	-4,3%	-1,8%	-82,0%	5,1%	10,4%	4,9%	-3,8%

Costs for renting quotas is only given individually for 2003 and 2004, but is included in other costs after that. It needs to be kept in mind that the numbers presented in the table are relative to total revenues, which means that an increase or decrease in cost categories between years may be caused by increase or decrease in revenues. These numbers though show clearly the instability that the coastal fleet is subjected to. The most dramatic economic blow that this sector has experienced came in 2008, as mentioned earlier. That year the EBITDA was 23% of turnover, but the fleet was nevertheless run with an 82% loss because of inflation and currency depreciation.

The coastal fleet serves an important role in the Icelandic economy and regional development. The fleet is for the most parts highly efficient, but instability in the national economy and consolidation within the sector has made it difficult for part of the fleet to return healthy returns on their investment. The authorities have made some attempts to favour this fleet segment, which have to a point helped the industry. It is however almost impossible to start fresh in this business, because investment costs and capital costs are simply too high. It is likely that the coastal sector will experience more consolidation in the nearest future, as has happened within the larger fleet. Fewer and better equipped

vessels and economics of scale seem to be emphasised. It is though clear that the coastal fleet will continue to serve a leading role in the Icelandic fishing sector and in regional development in the country.

6.4 Norway

Fishermen in Norway are around 12 thousand in total, of which 9 thousand have fisheries as their main source of income (Henriksen, 2014). In 1960 there were 50 thousand fishermen in Norway and the numbers have been decreasing steadily ever since. Also, as demonstrated in chapter 4 the number of vessels have decreased significantly in recent years, particularly in the coastal fleet. Despite it being relatively easy to start up a new business in the coastal sector, new entry has been lacking. Investment in new boats and quotas are costly. Another reason is probably competition from other industries that can pay higher wages and better working conditions. The seasonality of the fishery is also a factor, since many coastal vessels are only operated for parts of the year.

The number of full time employment man-years in the sector has also been decreasing significantly, as it for example has decreased by 19 % over the past ten years (2002-2012) as can be seen in Table 23 (The Norwegian directorate of fisheries, 2004) & (The Norwegian directorate of fisheries, 2013).

**Table 23: Number of full time employment man-years in the Norwegian fishing fleet
2002 and 2012 by fleet type**

Fleet/year	2002	2012	Difference
Demersal coastal vessels <11 m	2.961	824	-16%
Demersal coastal vessels 11-14,9 m		850	
Demersal coastal vessels 15-20,9 m		826	
Conventional "coastal vessels" >21 m	2.100	329	-36%
Conventional deep-sea vessels		1.008	
Cod trawlers	1.340	1.439	7%
Shrimp trawlers	535	263	-51%
Pelagic coastal vessels < 11m	44	99	125%
Pelagic coastal vessels 11-21,35	435	437	0%
Pelagic coastal vessels >21,36 m	2.118	582	-18%
Purse seiners		1.155	
Pelagic trawlers	344	154	-55%
Total	9.877	7.966	-19%

There is a difference in registration between 2002 and 2012, which explains why some fleet sections are aggregated in the 2002 numbers. The <8 m fleet is also only included in the 2012 numbers, so that needs to be kept in mind when comparing development in the coastal sector. The table though clearly shows that employment in the coastal demersal sector has decreased, but employment in the coastal pelagic sector has increased.

Estimating the number of coastal fishermen based on the above is clearly quite difficult since statistics vary depending weather looking at full time employment, main source of income, and secondary source of income or recreational/hobby fishery. With the above in mind it can though be estimated that coastal fishermen, having fisheries as their main source of income, are around 5.000 in Norway and around 1.500 have fisheries as their secondary source of income.

The Directorate of Fisheries annually publishes a profitability survey on the Norwegian fishing fleet where operational costs in each fleet category can be seen. The most recent report was published in 2013 and covers the survey for 2012 (The Norwegian directorate of fisheries, 2013). Looking at the operating margin and return on total assets for the coastal vessels over the past few years it can be seen that the coastal fleet has been run with low margin and return on total assets has also been relatively low. The pelagic coastal sector has though been the exception, returning healthy profits for some of the years at least, as can be seen in Table 24 (The Norwegian directorate of fisheries, 2013).

Table 24: Operating margin and return on total assets for the different coastal fleets in Norway 2009-2012

Vessel holding license in length group	Operating margin				Return on total assets			
	2009	2010	2011	2012	2009	2010	2011	2012
Demersal coastal vessels <11 m	0,1%	-0,7%	6,2%	3,9%	0,3%	-0,5%	5,5%	3,6%
Demersal coastal vessels 11-15 m	6,0%	7,8%	6,6%	9,8%	4,7%	4,9%	4,7%	6,8%
Demersal coastal vessels 15-21 m	5,5%	6,5%	8,0%	7,3%	3,6%	3,2%	3,9%	3,2%
Coastal purse seiners <11 m	16,8%	-1,5%	14,1%	12,5%	15,8%	-0,9%	13,7%	3,6%
Coastal purse seiners 11-21 m	31,8%	12,8%	18,5%	16,1%	20,4%	4,9%	12,8%	7,5%

The table shows that the demersal coastal fleet's return on total assets hardly exceeds the level of interest rates, and hence poorly rewards the owners for the risk involved in the operation. It is therefore hardly worth the effort to continue operation if the owners are presented with the opportunity to sell the assets for a good price. This also explains why there is little new entry into the sector. It should however be kept in mind that for some of the owners, particularly the older fishermen, the fishery is a way of life and running a boat is a part of having a secure job. Hermansen *et al* (2013) concluded in a study of the profitability of the <11 m vessel group that "today's coastal fishers in a limited extent can be regarded as professional investors, focused on return on investments. The majority are though rather emphasising that the business should not be unprofitable, whilst it gives a reasonable salary to the fishermen employed." The study also showed a rather big portion in the distribution of income as well as profitability for this vessel group, and that about 20% of the vessels have acceptable profitability. It might also be reasonable to assume that vessels larger than 11 meters, especially vessels that under the SQS-scheme that have invested in additional quotas, are perceived as "more normal" investments objects.

Looking at average revenues, costs and profits for each Norwegian fleet type in 2012 it can be seen that the operational environment for the demersal coastal vessels is very difficult, but it is more likely to return acceptable profits on the pelagic coastal vessels. The big profit numbers are however in the larger fleet types, such as purse seiners and cod trawlers, as can be seen in Table 25 (The Norwegian directorate of fisheries, 2013).

Table 25: Average revenues, costs and profits in the different Norwegian fleets in 2012

Fleet type	Revenues	Costs	Operational results	Profits before taxes
Demersal coastal vessels <11 m	148.783	142.931	5.852	395
Demersal coastal vessels 11-14,9 m	382.007	344.379	37.628	24.700
Demersal coastal vessels 15-20,9 m	829.797	769.539	60.259	-16.262
Conventional "coastal vessels" >21 m	1.991.141	1.885.552	105.589	-71.064
Conventional deep-sea vessels	4.989.127	4.743.206	245.921	-58.980
Cod trawlers	9.781.106	8.638.229	1.142.877	682.226
Shrimp trawlers	425.568	397.942	27.625	7.430
Pelagic coastal vessels < 11m	188.697	165.086	23.611	24.972
Pelagic coastal vessels 11-21,35	830.845	696.692	134.153	83.162
Pelagic coastal vessels >21,36 m	2.973.082	2.524.407	448.675	182.124
Purse seiners	6.628.989	5.016.888	1.612.101	1.264.469
Pelagic trawlers	2.711.267	2.301.471	409.795	145.394

It should though be kept in mind that these are average numbers, meaning that there are many vessel owners that are running successful businesses in the Norwegian coastal sector, but there are also a lot of vessels that are run at loss. It is therefore likely that the coastal fleet will develop in such a manner that smaller operators will drop out and those capable of investing in quotas, vessels and gear will get a larger share of the fishery.

6.5 Newfoundland & Labrador

Coastal fishermen in NL were approximately 9.500 in 2013 and had then decreased by more than 40% since 1998 (Decker & Manuel, 2014). The average age of fishermen has dramatically increased in the coastal fleet and there is little to no recruitment in the sector. The number of vessels has also decreased significantly. The positive part of this development is though that average annual income has more than doubled, suggesting that the low income vessels that were struggling to make ends meet have dropped out and the more competitive part of the fleet has survived. The mainstay of the income and profits within the sector has been in the crab and shellfish fisheries, which is where most of the revenues and investments have been. The hope is though now that the cod stock will return to levels prior to the 1992 moratorium, giving a boost to the groundfish sector that has been struggling for a long time. The cod fishery has the potentials to be highly profitable if expectations of bigger cod stocks come true, but investments in vessels, processing and infrastructure will though be needed.

7 Conclusions and discussions

This report clearly shows that the N-Atlantic coastal sector is highly fragmented, not only between countries but also within individual countries. This is to be expected when having in mind that the coastal sector as a whole in the countries subjected to the report includes around 17 thousand vessels and 18 thousand fishermen having coastal fisheries as their primary source of income. In addition there are a considerable number of fishermen that have coastal fisheries as secondary source of income or as a hobby. The vessels range from being very modest old-style dinghies that fish few hundred kilos a year to industrialised state-of-the-art fishing vessels that catch up to two thousand tonnes of fish a year, which can be valued at over 4 million EUR. A relatively small part of the vessels account for majority of the catches and this is the part of the fleet that has been growing and investing in new vessels, gear and technology, whilst the smaller operators have been dropping out. This is a development that has been going on in each of the respective countries and it is likely that this trend will continue.

The coastal sectors in each of the countries have been reduced significantly in number of vessels and fishermen over the past few decades, but landing values and average wages have been increasing in most of the countries at the same time. There are a number of reasons for this development, but the most obvious reasons are the immense technological advances that have occurred in vessel design and fishing technology in the sector in recent years, changes in fisheries management and quota allocations, development in other sectors that are competing for the same workforce, and more.

Total catches of the coastal fleet in the countries focused on in this report in 2013 amounted to nearly 680 thousand MT, with landing value of 815 million EUR. These are impressive numbers, but it should be kept in mind that relatively few vessels and fishermen are responsible for majority of these landings. There is therefore a big part of the fleet that is struggling to make a living in the sector, whilst some are running profitable businesses and making a comparatively good living.

The importance of individual species caught by the coastal fleets vary significantly between countries, where cod is by far the most important species in Faroe Islands, Iceland and Norway, whilst shellfish & crustaceans, Greenland halibut and pelagic species are more important in Greenland and NL. There is also a difference in seasonality of the fisheries and the fishing gear used, which of course affects the fleets in different ways i.e. size, design, gear, equipment etc.

There are indications that the fleet structure in Greenland and NL might change in the near future if predictions of increasing cod stocks come true. Both of these countries will need to invest considerably in coastal vessels, gear and technology, as well as production facilities if the stocks grow as expected.

At the same time the future of the Faroese coastal sector looks bleak, with the poor situation of the cod- and haddock stocks, and little indications that the situation will improve. If nothing changes the traditional Faroese coastal fisherman, that makes his living from fishing on a small boat, might become extinct in the near future.

The Icelandic coastal fleets have been developing from old-style open one man vessels to more industrialised enterprises over the past few decades, and particularly in the last few years. The

development in Norwegian costal fleet is similar and the structural policy has reduced the number of vessels significantly in all groups and opened opportunities for modernization and rationalization. The numbers of vessels and fishermen have decreased and the larger share of the catch is now caught by the “big players” that can invest in vessels, gear, technology and quotas. This is a development that is likely to continue, as we will see more and more of the old-style coastal fishermen on their small open vessels sell their business or retire.

The data presented in this report suggests that coastal fisheries in the included countries provides livelihood for close to 50 thousand people/families in fishing, processing and service sectors. These are to a large point jobs in rural fishing villages that depend heavily on the marine sector for survival. This is why all of the countries in this report have management systems, rules and regulations that favour the coastal sector. Weather that is enough to maintain a successful regional development remains to be seen, but it is at least certain that many fishing villages in the N-Atlantic would not exist if it was not for the coastal fleet and political favouritism towards the sector.

Judging from the information shown in this report it seems like the coastal sector in the N-Atlantic is progressing in two different ways. Majority of the vessels are poorly equipped, old boats with limited quotas, with fishermen that are growing older by the year. This part of the sector is struggling to return profits, has almost no recruitment and little room for the owners to invest in quotas or equipment. The minority of the fleet on the other hand consists of industrialised vessels that are run as modern companies that invest in the latest technology and quotas that fit the investment. This part of the sector is responsible for the majority of the catches and is gradually buying out the smaller operators. This optimisation leads to a decrease in the number of coastal vessels and fishermen, but as results the sector is run more efficiently and average wages have increased. This development makes the costal vessels more competitive for labour and capital, but reduces the number of employees. This, however, is the same development experienced by all mature economic sectors around the North-Atlantic.

There are potentials for the coastal sector to expand on its operation by looking “outside the box”. In all of the countries discussed in this report there are ongoing initiatives where coastal vessels are marketed as a part of the tourist industry. Sea angling, sightseeing, bird-, whale- and seal watching are examples where coastal fishermen have found opportunities for alternative use of their vessels and expertise. There are even examples where tourists can experience being coastal fishermen and the catch they land is then sourced by a genuine processing plants. Even whole villages are marketed as coastal fishing villages were tourists can be a part of everyday life where the coastal fleet is a central component.

8 Acknowledgements

This report is a part of a larger project on coastal fisheries in the N-Atlantic. The project has brought together a large group of different stakeholders from all across the N-Atlantic, which have had the opportunity to exchange knowledge and ideas on coastal fisheries. Publications, news items, interesting stories, proceedings from workshops and conferences, as well as reports and links to relevant materials are available at the project's web-page www.coastalfisheries.net. All of this would not have been possible without the support from the funding bodies that decided to invest in this project. The authors would therefore like to thank NORA, the Nordic council (AG-fisk) and the Canadian Centre for Fisheries innovation for their support.

References

- 109/2013. (2013, August 16th). Law on commercial Fishing. Torshavn, Faroe Islands.
- 116/2006. (2014, July 1st). *Atvinnuvegaraduneyti*. Retrieved from Stjórn fiskveiða 2014/2015 - Lög og reglugerðir: <http://vefbirting.oddi.is/Raduneyti/Stjornfiskv/files/assets/common/downloads/publication.pdf>
- 549/2009. (2009, June 25th). *Reglugerð um leyfisskyldar frístundaveiðar*. Retrieved from Ministry of fisheries and agriculture: <http://www.reglugerd.is/interpro/dkm/WebGuard.nsf/key2/549-2009>
- 651/2014. (2014, July 4th). *Ministry of fisheries and agriculture*. Retrieved from Reglugerð um úthlutun byggðakvóta til byggðarlaga á fiskveiðíárinu 2014/15: <http://www.reglugerd.is/interpro/dkm/WebGuard.nsf/aa0d47377abc977400256a090053ff91/aaf820d02209751700257d1600371bcc?OpenDocument&Highlight=0,651%2F2014>
- 653/2014. (2014, July 4th). *Ministry of fisheries and agriculture*. Retrieved from Reglugerð um veiðar í atvinnuskyni fiskveiðíárið 2014/15: <http://www.reglugerd.is/interpro/dkm/WebGuard.nsf/aa0d47377abc977400256a090053ff91/401b830771d62dc600257d16003c6a77?OpenDocument&Highlight=0,bygg%C3%B0akv%C3%B3ti>
- 72/2014. (2014, January 27th). *Reglugerð um hrognkelsaveiðar 2014*. Retrieved from Ministry of fisheries and agriculture: <http://www.stjornartidindi.is/Advert.aspx?ID=a97350dd-9440-44e4-b2e0-0a9a2ea5d325>
- Berthelsen, T. (2014, 02). *Coastal fisheries in Greenland*. Nuuk: KNAPK.
- Brown, T. (2013). *Coastal Fishing In Newfoundland & Labrador*. St. John's: Marine Institute of Memorial University.
- CIA. (2014, October 28t). The World factbook. Washington, D.C., USA.
- Danish Maritime Authority. (2012). Excel doc. København.
- Decker, D., & Manuel, H. (2014, September 27th). *Conference on coastal fisheries and coastla communities: Newfoundland and Labrador*. Retrieved from Coastalfisheries: <http://www.coastalfisheries.net/wp-content/uploads/2014/06/Newfoundland.pdf>
- Department of Fisheries and Aquaculture. (2014). *Seafood industry year in review 2013*. St. John's, NL, Canada: Department of Fisheries and Aquaculture.
- DFO. (2013, December 31st). *Licences, permits and vessels in Atlantic region*. Retrieved from Fisheries and oceans Canada: <http://www.dfo-mpo.gc.ca/stats/commercial/licences-permis/licences-permis-atl-eng.htm>
- DFO. (2014, December 16th). *Fish Landings and landed values*. Retrieved from Fisheries and Oceans Canada: <http://www.nfl.dfo-mpo.gc.ca/NL/Landings-Values>
- Djurhuus, D. (2014). *Mapping of the coastal fisheries in Faroe Islands 2013*. Göta: Syntesa.
- Fiskveiðieftirlitið. (2013, January 10th). *Hagtøl, Fiskidagar*. Retrieved from Vørn: www.vorn.fo
- Fiskveiðieftirlitið. (2014, December 12th). *Veiða sambært avreiðingarseðli*. Retrieved from Vorn: <http://www.fve.fo/Index.asp?pID={72587944-A4C8-4ABA-B1C3-1086708776E1}&Stat=Statlant|21A%202013|Vei%C3%B0a%20samb%C3%A6rt%20avrei%C3%B0ingarse%C3%BO>

li|Vei%C3%B0a%20samb%C3%A6rt%20vektarse%C3%B0li|Vei%C3%B0a%20samb%C3%A6rt%20avrei%C3%B0in
garse%C3%B0li&URL=

Government of Greenland. (2014, May 21st). Order No. 6 on fishing for lumpfish. *Executive Order No. xx.* Nuuk, Greenland.

Henriksen, E. (2014). *Norwegian coastal fisheries.* Tromso: Nofima.

Henriksen, E., & Sovorken, M. (2011). *Fangstregulering av råstoffkvalitet i kystflåten.* Tromso: Nofima.

Hermansen, Ø., Larsen, T. A., & Henriksen, E. (2013). *Lønnsomhet i fartøygruppen under 11 meter lengde.* Tromsø: Nofima.

Holm, P., & Henriksen, E. (2014). *Mot en ny samfunnskontrakt.* Tromsø: UiT.

ICETRA. (2013, June 1st). Excel doc. *Skipaskrá 01.01.2013.* Reykjavik, Iceland: ICETRA (Icelandic Transport Authority).

Johannessen, B. (2014). *Bioeconomy, productivity and sustainability.* Reykjavik: University of Iceland.

Jóhannesson, S., Sigurðsson, S. B., & Árnason, S. (2013). *Hagvöxtur landshluta 2007-2011.* Sauðárkrúkur: Byggðastofnun.

McBean, G. (2004). *Arctic climate impact assessment.* New York: Cambridge University press.

MSC. (2014, December 23rd). *Icelandic Gillnet Lumpfish.* Retrieved from www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/icelandic-gillnet-lumpfish

Newfoundland & Labrador statistics agency. (2014, January 1). *Employment in fishing industry.* Retrieved from [www.stats.gov.nl.ca: http://www.stats.gov.nl.ca/Statistics/Labour/PDF/Employment_Fishing_Industry.pdf](http://www.stats.gov.nl.ca/Statistics/Labour/PDF/Employment_Fishing_Industry.pdf)

Norwegian Ministry of Fisheries. (1992). *Struktur- og reguleringspolitikk overfor fiskeflåten (Strukturmeldingen), St.meld.nr 58 (1991-1992).* Oslo: Norwegian Ministry of Fisheries.

Norwegian Ministry of Fisheries. (2003). *Strukturtiltak i kystfiskeflåten, St. meld. nr. 20 (2002-2003) .* Oslo: Norwegian Ministry of Fisheries;

Norwegian Ministry of Fisheries. (2007). *Strukturpolitikk for fiskeflåten, St.meld. nr. 21 (2006-2007).* Oslo: Norwegian Ministry of Fisheries.

Norwegian Ministry of Fisheries. (2013). *Verdens fremste sjømatnasjon, St.meld.nr 22.* Oslo: Norwegian Ministry of Fisheries.

OECD. (2006). *Using market mechanisms to manage fisheries: smoothing the path.* Paris: OECD publishing.

Statistics Canada. (2014, November 5th). *Gross domestic product, expenditure-based, by province and territory.* Retrieved from Statistics Canada: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ15-eng.htm>

Statistics Greenland. (2013a, June 6). *Fiskeri og Fangst 2012.* Nuuk: Statistics Greenland. Retrieved from www.stat.gl: http://www.stat.gl

Statistics Greenland. (2013b). *Greenland in figures 2012*. Nuuk, Greenland.

Statistics Greenland. (2014, December 18th). *Main employment for permanent residents by time, industry, gender, age, place of residence, place of birth and inventory variable*. Retrieved from Grønlands statistisk: <http://bank.stat.gl/Dialog/Saveshow.asp>

Statistics Greenland. (2014a). *Udenrigshandel 2013*. Nuuk: Statistics Greenland.

Statistics Greenland. (2014b, October 28th). *Total landings of fish and shellfish by time, municipality, species, unit and month*. Retrieved from Statistics Greenland:

<http://bank.stat.gl/Dialog/varval.asp?ma=FIE001&path=../Database/Greenland/Fisheries%20and%20Catch/&lang=1>

Statistics Iceland. (2014b, November 29). Afli eftir kvótaflokkum skipa og fisktegundum 2013. Reykjavík, Iceland.

Statistics Iceland. (2014c, November 10th). Afli eftir fisktegund, kvótaflokki skipa og veiðarfærum 2013. Reykjavík, Iceland.

Statistics Iceland. (2015, January 2nd). *Rekstraryfirlit fiskveiða 1997-2012*. Retrieved from Hagstofan: <http://hagstofan.is/?PageID=2596&src=https://rannsokn.hagstofa.is/pxis/Dialog/varval.asp?ma=SJA08101%26titl=Rekstraryfirlit+fiskvei%F0a+1997%2D2012+%26path=../Database/sjavarutvegur/afkoma/%26lang=3%26units=Millj%F3nir%20kr%F3na>

Sveinn Agnarsson. (2012). *Útgerð smábáta og línuvílnun*. Reykjavík: Háskóli Íslands.

The Faroese Maritime Authority. (2014). *Føroya Skipaskrásetning 2013*. Torshavn: The Faroese Maritime Authority.

The Greenland Parliament. (1996, October 31st). Fisheries legislation. *Act no. 18*. Nuuk, Greenland.

The Icelandic Directorate of Fisheries. (2013a, January 29th). *SOS*. Retrieved from [www.fiskistofa.is](http://www.fiskistofa.is/media/aflatolur/29012013_Afli_e_skipum_fisktegundum_2012.xls): http://www.fiskistofa.is/media/aflatolur/29012013_Afli_e_skipum_fisktegundum_2012.xls

The Icelandic directorate of fisheries. (2013b, April 11th). *Afli frístundaveiðibáta fiskveiðiárið 2012/13*. Retrieved from Fiskistofa: http://www.fiskistofa.is/media/aflatolur/12042013fristundabatar2012_afli_kaup_ur_potti.xls

The Icelandic directorate of fisheries. (2014a, March 16th). *Strandveiðar*. Retrieved from Fiskistofa: <http://www.fiskistofa.is/fiskveidistjorn/umfiskveidistjornunarkerfid/strandveidar/>

The Icelandic directorate of fisheries. (2014b, October 1st). *Strandveiðiafli*. Retrieved from Fiskistofa: <http://www.fiskistofa.is/veidar/aflastada/strandveidi/strandveidialfli.jsp>

The Icelandic directorate of fisheries. (2014c, October 1st). *Afli í línuvílnun*. Retrieved from Fiskistofa: <http://www.fiskistofa.is/veidar/aflastada/afliliinuivilnun/>

The Icelandic directorate of fisheries. (2014d, November 12th). *Grásleppuréttindi*. Retrieved from Fiskistofa: <http://www.fiskistofa.is/fiskveidistjorn/stjornfiskveida/grasleppa/grasleppuleyfi/>

The Icelandic directorate of fisheries. (2014e, September 1st). *Úthutun aflaheimilda fiskveiðiárið 2014/2015*. Retrieved from Fiskistofa: http://www.fiskistofa.is/media/aflatolur/Yfirlit_uthlutun_201415_vefskjal.xlsx

The Icelandic directorate of fisheries. (2014f, September 1). *Kvótastaða 50 stærstu í krókaafhlutdeild 2014.*

Retrieved from Fiskistofa:

http://www.fiskistofa.is/media/utgefild_efni/Frett_aflasamthjoppun_krokaaflamark_1sep2014.pdf

The Norwegian directorate of fisheries. (2004). *Lønnsomhetsundersøkelse 2002.* Bergen: Fiskeridirektorated.

The Norwegian directorate of fisheries. (2013). *2012 Profitability survey on the Norwegian fishing fleet.* Bergen: Fiskeridirektoratet.

The Norwegian Directorate of Fisheries. (2014a, April 5th). *Norwegian fishing vessels, fishermen and licenses.*

Retrieved from www.fiskeridir.no: <http://www.fiskeridir.no/english/statistics/norwegian-fisheries/norwegian-fishing-vessels-fishermen-and-licenses>

The Norwegian directorate of fisheries. (2014b, December 15th). *Fiskeridirektoratets statistikkbank.* Retrieved from Fiskeridirektoratet: <http://www.fiskeridir.no/fiskeridirektoratets-statistikkbank>

Örn Pálsson. (2014, October 17th). *Skýrsla framkvæmdastjóra LS 2014.* Retrieved from Smabatar:

<http://www.smabatar.is/Sk%C3%BDrsla%20%C3%96rn%20P%C3%A1lsson%20framkv%C3%A6mdastj%C3%B3ri%20-%2030.%20a%C3%80lfundur%20LS%202014.pdf>