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Lot 3 Socio-economic dimensions in EU fisheries

Shetland: Whalsay case study report

Pelagic vessel in Symbister Harbour, Whalsay (Photo courtesy of Poseidon)

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# Whalsay case study report

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Abbreviations and acronyms

DCF: data collection framework
FTE: full-time equivalent
GBP: British Pound (€1 is equal to GBP 0.84 in April 2013)
ICES: International Council for the Exploration of the Sea
ITQ: Individual Transferable Quota
MSC: Marine Stewardship Council
MSY: maximum sustainable yield
NAFC: North Atlantic Fisheries College
SFA: Shetland Fishermen’s Association
SFF: Scottish Fishermen’s Federation
SFCT: Shetland Fisheries Training Centre Trust
SFPO: Shetland Fish Producers’ Organisation
SIC: Shetland Islands Council
SPFA: Scottish Pelagic Fishermen’s Association
SSMO: Shetland Shellfish Management Organisation
SSQC: Shetland Seafood Quality Control
1. Methods

1.1 Secondary data sources
A number of data sources have been used to prepare this report, including:

- data on fish landings – from Marine Scotland Science Fisheries statistics;
- population statistics – from Scottish Government neighbourhood statistics;
- employment statistics – provided by the Shetland Island Council Economic Development Unit.

Some data is only available at the Shetland level as it is only collected at county (Shetland) scale.

1.2 Interviews with focus groups
Stakeholder group A comprised community council representatives, representatives from fishing SOS and former community councillor.

Two stakeholder sessions were held for fishers in Whalsay. All fishers in the community were invited to the sessions by letter/ email, posters and radio advertisement. Due to the high level of shareholder ownership within the fleet it was not possible prior to the session to distinguish between owner and non-owner crew. Twenty-three fishers attended (approximately 20 % of all fishers). Given the working rotations of fishers this is thought to represent 70 % of those ashore during the survey period. Of the 31 vessels on Whalsay, nine were represented (31 %). Fishers reported that attendance would have been higher but historic distrust of EU-led projects prevented attendance.

1.3 Questionnaires
All vessels are shareholder-owned by a number of the boats crew (varying from 60 % to 100 % of the crew), making it difficult to distinguish between owners and crew. There is a low level of crew mobility with the fleet, so non-shareholding crew also have a sense of ownership of the vessels. All stakeholder representatives completed crew questionnaires. Skippers also completed the 'owner' questionnaire in addition to the crew questionnaire.
2. Settings

2.1 Description of the Whalsay case study site

The island of Whalsay is one of the 100+ islands in the Shetland Islands archipelago, although it is one of only 16 that are inhabited. Situated approximately 4 km to the east of the Shetland mainland, Whalsay is 8 km by 3 km and has a land area of 19.7 km². Whalsay is connected to the Shetland mainland via a 20-minute Ro-Ro (vehicle carrying) ferry journey, which runs 18 times a day. The ferry terminal is situated 20 km from Lerwick, the main town of Shetland.

The major communities in Whalsay are Symbister, Isbister, Brough and Skaw. Harbour facilities are located in Symbister, owned and operated by the Shetland Islands Council (SIC) port and harbour authority. Symbister harbour accommodates small vessels (recreational and small shellfish boats), and the marina has two piers for larger vessels, such as whitefish and pelagic vessels and visiting boats. There is currently not enough harbour space to accommodate all the Whalsay fishing fleet, so some boats are berthed in Lerwick (15km to the south). Shellfish is landed in Symbister but whitefish is rarely landed to Symbister, as it is not a recognised port. Pelagic fish are landed in Lerwick. Whitefish boats land to Lerwick, Cullivoe and Scalloway.

Figure 1: Location of Whalsay in the Shetland Islands
Fishing has traditionally been Shetland's largest employer, however, while it remains one of Shetland's largest industries, reduction in fleet size and increases in fleet efficiency has seen a decrease in the number of people directly employed in the industry. Within Whalsay a similar trend has been observed, although fishing remains Whalsay's largest employer. Other traditional activities such as crofting have not been significant employers on Whalsay due to poor farming land. Fish processing was also an important activity, employing up to 100 people in a single factory in the mid 1980s (at its peak). The factory employed both men (freezing, refrigeration, buyers, sellers and engineers) and women (packing, gutting, filleting, office, canteen and cleaning). The fish factory shut in 2012 with the loss of over 20 jobs.

Whalsay is home to approximately 25 % of the Shetland whitefish fleet. The Shetland fleet landed 10,222 tonnes of fish across Shetland, valued at GBP 18.7 million (EUR 22.25 million), 10 % of the total Scottish catch. It is estimated that Whalsay whitefish vessels landed approximately 2.5 % of the Scottish catch.

Pelagic fishing, in particular for mackerel, has also become an increasingly large fishery with the capital value of the Shetland pelagic industry valued at GBP 750 million (EUR 892.5 million) in 2011. Only one of the eight Shetland pelagic vessels is not under Whalsay ownership. The Whalsay pelagic fleet represents 30 % of the Scottish fleet.

Shellfish landings are spread across Shetland. Shellfish landings in 2010 were valued to GBP 5.8 million (EUR 6.9 million), slightly less than 1 % of all Scottish vessels landings. Landings into Whalsay represented less than 2 % by weight and volume of all Shetland landings.

### 2.2 Demographics

Population estimate for Whalsay is 1,035 people, or 5 % of the Shetland population. The Whalsay population has been stable in recent years, although detailed population trend analysis for Whalsay is not possible as population statistics are grouped with other nearby islands.

A breakdown of age structure for the Whalsay population is not available but is likely to be similar to that of the whole of Shetland (see national level report). Shetland has a very small proportion of non-UK population. This is also true of Whalsay with the proportion of non-EU residents estimated at less than 1 % of the total population. Across Shetland the country of origin of community members is 98.1 % from the UK. This is higher than the Scottish average of 91 %. A breakdown of residents whose origins are non-UK or EU is not available at a Shetland level.

The number of individuals entering and leaving Whalsay is not available. The number of people entering Shetland has been relatively stable from 2002 to 2011, varying between 700 to 800 individuals a year, or approximately 3 % of the population. In contrast, the number of people leaving Shetland has shown a slow decline, resulting in net immigration, contributing to population growth. A similar trend in immigration/emigration has also been seen nationally.
The average life expectancy at birth is not available at the Whalsay level, and due to the population size could not be accurately estimated.

2.3 Employment opportunities/sector overview
In 2009, 80 businesses were listed in Whalsay and 13 non-private organisations. Of these businesses approximately 30% are fishing vessels. Other local employment in Whalsay includes marine engineering, construction, aquaculture, retail, education, ferries, leisure centre and social care. The Whalsay fish factory had been a large local employer but closed in 2012. Lerwick and Sullom Voe are within commuting distance of Whalsay, although both require approximately an hour's travel in each direction. The cost of travel to and from Whalsay can be a barrier to people working outside Whalsay. A number of young people from Whalsay have entered the merchant navy in recent years with training available both in Shetland and on the Scottish mainland.

The fishing industry provides direct employment within Whalsay but also to related sectors such as marine engineering and to the Whalsay shop providing provisions to the boats. The Whalsay fishing industry also helps to support many jobs across Shetland. The fishing industry in Whalsay is therefore not only a significant local employer but also provides employment across Shetland. While fishing is still an important industry to Whalsay (and Shetland) decommissioning has reduced the number of whitefish vessels within Shetland, reducing the number of people employed within fishing but also affecting dependent businesses. The Shetland economy has become increasingly dependent upon public sector employment, however the SIC is currently making a number of expenditure cuts and this is expected to result in a reduction of public authority jobs available.

In 2009 the average yearly wage in Whalsay was GBP 32,910 (EUR 38,176), higher than the Shetland average income of GBP 30,180 (EUR 35,008). In Whalsay in 2007 it was estimated that there were 339 full-time equivalent (FTE) jobs; of these 228 were full-time (FT) roles taken by men and 52 FT roles taken by women. There were 31 part-time (PT) roles taken by men and 147 PT roles taken by women. Of the FT male jobs the fishing vessels within Whalsay have the potential to provide approximately 100 FT jobs, or 50% of all FT male jobs and nearly a third of all FTE jobs. This makes the Whalsay economy very vulnerable to changes in the levels of employment within the fishing fleet, although it should be noted that the Whalsay boats employ fishers from other areas of Shetland. The fishing vessels within Whalsay also represent approximately 50% of direct FT fishing jobs within Shetland.

Across Shetland the number in of FTE employed in fish catching and fish processing has decreased from 1997-2011, falling by 25% and 27% respectively. Since 2003 the decline in these sectors has been less rapid, declining by 10% and 3%. This trend is likely to be similar in Whalsay, with decommissioning reducing the number of whitefish boats by five in 2002-04, this would have represented an approximate loss of 30 jobs or 10% of all FTE jobs in Whalsay.

Tourism is not a large employer with Whalsay, although there are 6 accommodation providers in Whalsay. This is in contrast to the rest of Shetland where accommodation and catering has shown large growth from 1997-11, with the number of FTE in this sector increasing by 72%.

Within Whalsay, fish farming employs approximately three FTE or 1% of local employment. This study did not reveal if there are individuals who live in Whalsay commuting to the Shetland mainland to work
within the aquaculture industry. Employment in aquaculture is likely to be below the Shetland average. In Shetland the aquaculture industry has grown from 1997-2011, with the number FTE in this sector increasing by 59 %.

2.4 Fisheries

In Whalsay employment in the fish-catching industry is higher than the Shetland average, with the potential to offer up to 30 % of FTE jobs. The fishing vessels within Whalsay also represent approximately 50 % of FTE fish catching within Shetland. Fishing remains a significant and well-regarded industry within Whalsay. The Whalsay fishing fleet has remained in Shetland ownership and there are no non-UK crew. The Whalsay pelagic fleet is of regional (Shetland) and national (Scottish) importance. Crew own all the Whalsay vessels (from 30 % to 100 % of the crew as shareholders).

While there are positive trends in terms of the value of the landings, the fishing sector faces significant challenges. Whalsay community representatives and fisheries owners expressed concern that rising fuel prices, quota costs, quota restrictions and reduction in days at sea have reduced the profitability of the sector, particularly in the white fish fleet. This makes it more difficult to attract investment to upgrade vessels, making the industry less attractive to young people.

Not only is fishing of high economic importance to the Whalsay community, fishing is also of high social importance. Considerable concern exists among the local community regarding declines in fishing opportunity and employment will lead to a depopulation of Whalsay, where there are fewer other employment opportunities compared to the Shetland mainland.

Infrastructure

The Ports and Harbours department of the Shetland Islands Council manage Symbister harbour. Whalsay harbour offers basic facilities such as fuel, water and berthing. A marine engineering firm is based in Whalsay and stores can be purchased from the nearby shop. Whalsay harbour facilities are currently not sufficient to house all the Whalsay fleet.

Landing opportunity at the harbour is limited to the shellfish fleet. There are no landings in Whalsay from the pelagic fleet: all landings are made to Lerwick or overseas, e.g. in Norway. Whitefish landings into Whalsay are not common as it is not a recognised landings port. Local boats dominate shellfish landing into Whalsay. Landed shellfish is then transported to Lerwick or to the crab factory in Yell.

All other facilities such as processing, fish sales, larger scale marine engineering is located in Lerwick or Scalloway. While most boats can use the dry dock in Lerwick, larger whitefish boats and the pelagic fleet must dry dock outside Shetland.
**Seasonality**

Whitefish fishing is non-seasonal and occurs year round. Due to the reduction in days at sea some boats may choose fishing trips based on weather and market prices. Pelagic fishing is highly seasonal, with mackerel fishing taking place from January to March and herring and mackerel from August to October.

Shellfish fishing takes place year round, although creel fishing levels can be higher in the summer when the weather is better, reducing the risk of losing gear.

**Fleet**

In Whalsay the fleet can be broken down into three main fisheries; inshore shellfish (creel and scallop dredge) (64 %), whitefish (demersal) (13 %) and pelagic (23 %), Table 1. This differs to the rest of Shetland, where the largest fleet segment is shellfish (82 %), with demersal (13 %) and pelagic (5 %) fisheries comprising smaller segments of the fleet. Nationally, the Scottish fleet can be broken down into inshore shellfish (88 %), demersal (11 %) and pelagic (1 %).

The Whalsay demersal fleet has reduced in recent years due to decommissioning; however, it still represents 25 % of the Shetland fleet and 2.5 % of the Scottish fleet. The Whalsay pelagic fleet represents 79 % of the Shetland fleet, and 30 % of the total Scottish pelagic fleet. All the pelagic fleet in Shetland is classed as pelagic trawl. Across Scotland, 83 % are pelagic trawl and 17 % are purse-seine vessels.

In Whalsay the shellfish boat comprises creel and scallop dredgers. The Shetland shellfish fleet represents 10 % of the total Scottish shellfish fleet. In Shetland the shellfish fleet comprises nearly all vessels 10-24 m in length, with only one shellfish vessel over 24 m. The shellfish fleet can be broken down into creel (76 %), scallop dredge (19 %) and nephrops trawl (4 %). In comparison, the Scottish fleet comprises 76 % creel, 10 % scallop and 13 % nephrops.

Fishers reported that restrictions on the number of scallop dredges mean that it is not economical to operate large shellfish dredging boats, so smaller boats dominate the Shetland shellfish fleet. Changes of gear type (e.g. trawl to seine net) within the whitefish fleet or changes to fishing areas are hampered by the quota restrictions. Targeting of new species requires the acquisition of new quota.
Table 1: Fleet segments in Whalsay fleet

<table>
<thead>
<tr>
<th>Segment (length class)</th>
<th>Whalsay vessels</th>
<th>Shetland total fleet</th>
<th>Main gears used</th>
<th>Number of crew (average)</th>
<th>Main species fished (list at least 3 and up to 5 for all fleet types)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>15</td>
<td>109 (14 %)</td>
<td>creel</td>
<td>1</td>
<td>lobster, brown crab, green crab, velvet crab</td>
</tr>
<tr>
<td>0-10</td>
<td>2</td>
<td>20 (10 %)</td>
<td>scallop dredge</td>
<td>1</td>
<td>king and queen scallop</td>
</tr>
<tr>
<td>10-15</td>
<td>2</td>
<td>6 (33 %)</td>
<td>scallop dredge</td>
<td>1</td>
<td>king and queen scallop</td>
</tr>
<tr>
<td>15-40</td>
<td>4</td>
<td>24 (17 %)</td>
<td>trawl - TR1</td>
<td>6</td>
<td>cod, whiting, haddock, anglerfish</td>
</tr>
<tr>
<td>40+</td>
<td>7</td>
<td>8 (88 %)</td>
<td>pelagic trawl</td>
<td>10</td>
<td>mackerel, herring</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>175 (17 %)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Scottish Government.

2.4.1 Whitefish fleet (demersal)

Fleet segment as a whole

The Whalsay whitefish fleet has historically been locally owned by a number of shareholders who also work on the boat. All boats are still locally owned (rather than owned by external companies). While shareholders and crew are related in some instances this is not true of all shareholders or all boats. Historically, groups of fishermen would coordinate to buy a new boat; however, this has become increasingly difficult due to availability and cost of quota.

Working patterns have changed due to the reduction in days at sea, which now means that some boats can only fish for 120 days per year. Working patterns differ between vessels, most boats work between one and two weeks at sea, followed by one to two weeks at home. Some boats work a rotating crew system, e.g. five on board four on shore.

Wind direction and strength is one driver on the choice of fishing areas. In response to strong winds fishermen traditionally fished closer inshore and on the leeward side of Shetland. However, reductions in permitted days at sea and cod closed areas has restricted the choice of fishing grounds. This has reduced the ability of the fleet to fully exploit available grounds and has meant vessels increasingly have to exploit the same areas, raising fears of local over-exploitation.

Increasing cost of fuel and the reduction in days at sea has meant that fishers are targeting grounds further inshore, targeting shoaling fish such as cod, haddock and saithe, rather than high value but more dispersed species such as monkfish.

Vessels are crewed by four to nine people, with normally four to six onboard at any one time. The crew types are skipper, engineer, mates, cooks and deckhands. Any of these individuals may be shareholders, although normally skippers are always shareholders. There are no managerial or administrative roles associated with the vessels. Crew demographics are shown in Figure 2.
No evidence of spouse or partner involvement (formal or informal) in the whitefish industry was found. Previous involvement of spouses or partners would have been in ancillary industries such as fish processing but would not have been directly employed by the vessels. Of those surveyed 88% had fathers who had also been fishermen. As all crew members were not surveyed it is difficult to quantify broader family involvement, however, of those surveyed only 25% reported that family members also worked on the same vessel. All family involvement was formally paid work as crew members of the boats.

**Economics**

The Scottish and Shetland whitefish fleets have shown record landing values. This is reflective of the increase in price of key stocks. However, operating costs, including quota costs and fuel, have become more significant. Fuel prices have risen sharply and now represent up to 50% of the boat costs. The whitefish fleet is particularly vulnerable to the cost of fuel because of additional fuel required to tow gear over the seabed (compared to pelagic mid-water trawls or creeling). Modern boats are more fuel efficient due to improved hull, engine and gearbox design. Fishers reported that it is difficult to gain loans and funding for investment in new boats or improvements to existing boats and there is concern regarding an aging fleet.

**Landings**

Whitefish landings into Whalsay are uncommon as Symbister is not a registered port. The Whalsay fleet land into Cullivoe, Lerwick and Scalloway. It is estimated that Whalsay boats will land 2% of all whitefish landed in the UK by UK vessels, and 3% of whitefish landings in the UK made by Scottish vessels. Demersal landings value in Shetland in 2011 was EUR 30.6 million.

**Fleet**

The whitefish fleet has been stable in recent years, with four whitefish vessels based in Whalsay. Prior to decommissioning (2002-04) there were an additional five boats based in Whalsay. There has been no change in fleet power or tonnage as there have been no upgrades of vessels. It should be noted that another two boats are classed as ‘Whalsay boats’ but are registered in Lerwick.
Ownership and remuneration

Shetland whitefish boats are owned by a number of shareholding crew. The skipper is normally one of the shareholders. The proportion of non-shareholding to shareholder varies from boat to boat. Grants and interest-free loans have been previously available to help younger crew members become shareholders. These loans are no longer offered, making it more difficult for younger crew members to become shareholders.

All crew members within the Whalsay whitefish fleet are paid on a share basis. This means that wage is dependent on the success of the fishing trip and will vary each trip.

All reported remuneration included any additional income from being a shareholder in the boat. Note within the whitefish fleet the phase shareholder does not always infer the boat is a limited company, rather the fishermen jointly own the boat.

Market

The price for Shetland demersal species has been increasing in recent years. It is estimated that 90% of fish landed into Shetland is sold through Shetland Seafood Auctions in Lerwick, established in 2003. By establishing a local auction, which is independently inspected by Shetland Seafood Quality Control (SSQC) Ltd., Shetland has been able to develop a reputation for high quality seafood. This has increased the price that can be gained for fish landed and the fishing vessels have increased landing frequency (normally twice per trip) to try and ensure fish is landed as fresh as possible.

Although Shetland Seafood Auctions and product quality has helped to increase prices the maximum price obtainable is also dependent upon supply. Vessels are targeting similar fish now that the fleet is fishing closer inshore due to changes in quota and days at sea. This has the potential to reduce the diversity of fish landed and cause an oversupply of some species. In addition fish price is vulnerable to landings elsewhere in Europe and high landings in other areas such as Ireland can reduce the price obtained in Shetland.

Employees within segment

Most crew members have accident and sickness insurance, regardless of their role within the vessel. This does not extend to their spouses or partners. Many respondents chose not to reveal their wage brackets but those who did respond reported wages from GBP 30,000 to GBP 50,000 (EUR 36,600 to EUR 61,000). Insufficient people responded to determine average wages per crew type. This is a higher average wage than the UK and Shetland average.

Crew entering the fishery have to undertake basic training such as sea survival and fire-fighting, this training can be undertaken at the North Atlantic Fisheries College (NAFC). Further training is required to gain engineering and skippers positions, with skippers and engineers holding Class II tickets. Crew are normally employed on reputation and/or recommendation.
The boat crew showed low mobility, with most crew members having been with the boats for more than 10 years. The exceptions were young crew members who had been with the boats since leaving school but were too young to have been on the boat ten years.

All fishers interviewed had secondary education but had not undertaken high education, most leaving to join the fishing industry at the age of 16.

The skills and qualifications gained in the fishing fleet are transferable to both the aquaculture industry, the merchant navy and to the local ferry service. However, all respondents indicated that they did not wish to change profession and reported that they had a high level of job satisfaction.

Crew are paid as a share of the catch, so any change in profitability of the sector directly affects the income of the crew. Increased costs (such as fuel, quota) and reduction in earning potential (through reduction in days at sea) reduce the potential income of the fleet. Fishers reported that these challenges were reducing the profitability of the sector. In Whalsay no foreign crew have been taken on but outside Whalsay some of the Shetland fleet has tried to adapt to these challenges by employing cheaper non-EU labour. Skippers reported that they were reluctant to take on new young crew members to the boat in case they could not afford to keep paying them.

**Representation**

Fishers reported that they felt the socio-economic importance of fishing was recognised locally but reported, at a Scottish level and EU level, little understanding or consideration was given to the impact that changing regulations has on fishing dependent communities. Concern was also raised about the number of Shetland Island Council councillors who have a fishing background, which as declined, as this may reduce understanding of the fishing industry locally.

Fisheries representatives reported that despite repeatedly raising concerns of the socio-economic impacts of changing fishing regulation, including petitioning in Brussels, their views had not been given consideration.

Fishers and community representatives voiced distrust as to whether their views or opinions are considered by the EU. In addition, concern was expressed that participation in EU studies may result in information being used to the disadvantage of community and fleets.

Concern was also raised that celebrity-led publicity campaigns had the potential to give misleading information regarding the fishing industry, and that these campaigns were being given greater weight than the views of the fishers.

**Spouse Involvement**

The fishing vessels are crewed by men and there is no spouse involvement within the fishery.

10
Summary
The whitefish fleet has adapted to external pressures by trying to improve the quality of the fish they have landed to increase the price obtained for the fish. Fishing patterns have also been changed, increasing the frequency of landings, fishing at closer grounds and increasingly targeting shoaling fish. Fishers report that fish abundance is the highest in living memory; however, they felt that fisheries science was not recognising these changes in stock levels.

2.4.2 Pelagic fleet

Fleet segment as a whole
Shareholding crew operates the pelagic vessels. The number of shareholders varied from 30 % to 100 %. The level of family involvement within the fleet was higher than for the whitefish fleet, with all fishers reporting that they were related to other crew. Increased family involvement, particularly of sons joining the vessels, may in part be reflective of the higher pay associated with the sector, making it more attractive for family members to join. Family involvement included fathers/sons, cousins, brother in-laws, uncles and nephews. There is no spouse involvement in the fisheries. All family involvement is formal and family members are employed as crew.

Due to the efficiency of the fishing method and quota restrictions the fishing season is very short, with mackerel fishing taking place from January to March and herring fishing taking place from August to October.

Crew catagorises include skipper, mate, engineer, deckhand and cook. All skippers interviewed were also shareholders, however, of the other crew types the role on the vessel, age or length of time of employment did not appear to affect the likelihood of whether they were a shareholder or not.

All crew members were from Shetland with no non-EU crew members. All fishers surveyed were educated to secondary level.

The pelagic fishing fleet has a higher proportion of older crew, which may reflect that the pelagic fishery is highly mechanised and is less physically demanding than other fishing sectors.

Figure 3: Age, gender and place of origin for crew types in Whalsay
Economics
The pelagic fleet has the highest value of landings of all the fleet segments. The cost of the vessels and quota are high, estimated at GBP 150 million (EUR 183 million) per vessel. The high cost of building a boat and purchasing quota make it unlikely that any new, locally owned vessels will join this segment.

While no landings were made into Whalsay, the total landings into Lerwick was 55,768 tonnes in 2011, accounting for 41 % of landings by UK vessels into the UK and 51 % of all Scottish landings into the UK.

Pelagic landing volumes have decreased from a peak in 2007. Most of this decline can in part be attributed to the decline in landings of ‘industrial’ species (Napier, 2013). Mackerel landings peaked in 2005 and after a rapid fall in 2006, landing volumes have increased, although landings in 2011 were lower than in 2010. Herring landings peaked in 2006 and declined until 2009. Herring landings increased in 2010 and 2011.

Pelagic landings value in Shetland in 2011 was EUR 72.4 million, accounting for 51 % of landings value by UK vessels into the UK and 57 % of the value of Scottish landings into the UK. Pelagic landings value has increased since 2006 and is now at its highest level. Landings value of mackerel has shown a continuous increase from 2006. Herring landing value has increased since 2009.

The number of pelagic boats in Whalsay has been stable since 2004 at seven boats. Fisheries report that boat number is not likely to change. While the boat size and tonnage has increased it has been stable since 2004 and is not likely to increase in the near future.

Although fuel prices will have reduced the economics of the fleet as the nets are towed through mid-water, rather than across the bottom, fuel is not as high a percentage cost compared to the whitefish fleet. The pelagic fleet comprises modern boats (all built after 2000).

The current challenge facing the pelagic fleet has been the granting of new quota to Icelandic and Faeroe Islands fishers by their governments. The quota granted has been against advice from the International Council for the Exploration of the Sea (ICES) and may result in over-fishing. It has also resulted in the loss of the fisheries’ Marine Stewardship Council (MSC) certification.

Employees within segment
All crew members are paid on a share basis. In addition, shareholders are paid a dividend. Most fishers reported that they had sickness and accident insurance with the vessel. This did not cover spouses. (There is no spouse involvement in the fleet.)

Due to the size of the pelagic vessels, higher qualifications are required for the roles of engineer or skipper. Fishers reported that skippers and engineers held Class I tickets. These qualifications are transferable to the merchant navy and the aquaculture industries. However, all fishers reported they wished to stay in the fishery.
Skippers reported a low level of crew mobility, with some boats reporting that there had been no crew change in over ten years.

Ownership and remuneration
The pelagic fleet is the best paid of the fleet segments, however, higher qualifications are needed to work on the vessels. Not all fishers chose to disclose their earnings but those who did reported earning from GBP 50,000 (EUR 61,000) to GBP 60,000+ (EUR 73,200+).

All reported remuneration are unlikely to include additional income from being a shareholder in the boat, which may be paid as a dividend, it should be noted that a dividend may not be paid every year.

Representation
Most fishers believed that the pelagic fleet were not being well represented nationally and at EU level, particularly in relation to the recent granting of additional quota to the Faroe Islands and Icelandic fleets by their governments, which went against advice from the International Council for the Exploration of the Sea (ICES).

Summary
The Whalsay pelagic fleet is a modern efficient fishery that has retained local ownership. Current challenges facing the fleet are from potential over exploitation by Faroe Islands and Icelandic fleets.

The cost of vessels may make it difficult for new crew members to become shareholders and for the fleet to expand.

A recent paper by Cardwell and Gear (2013) focusing on Whalsay’s pelagic fishing fleet demonstrated the unusual nature of vessel ownership, based on equality and the absence of onshore investors and tied together by a high level of kinship(1). This model, where each of the seven vessels is owned by a separate Whalsay unit, has led to:

- a very low turn-over in crew;
- an increased sense of stewardship and care of vessel by vessel owners/operators;
- the crew sticking together even in lean times;
- retention of the older crew.

The paper goes on to highlight the threat to such models from the introduction of individual transferable quotas (ITQs), which means quota costs make up a significant share of the capital necessary to enter the fishery, and only fishers with substantial personal wealth, or direct kinship to an existing owner who is willing to offer a reduced price or gift them a share for free, can now buy into a vessel. This means many share-paid fishermen cannot afford to buy into a share of a vessel. In 2006, when members of a Shetland pelagic boat fellowship decided to sell their shares, the vessel, licence and quota were worth around GBP 14 million (EUR 16.3 million). To buy an eighth share, a local fisher would need to raise

GBP 1.75 million (EUR 2 million). Instead, a large fishing company based in the south of England bought the shares of the departing fishermen, and now holds a majority stake in the vessel.
2.4.3 Shellfish fleet

**Fleet segment as a whole**

Due to the small size of the shellfish fleet (<10m) vessels are normally operated single-handedly by the owners. To operate a shellfish boat a Shetland Shellfish Management Organisation (SSMO) licence is required. Some fishers reported that sons may choose to work on the vessels in an unpaid capacity as they enjoyed helping on the boats; this would be on a casual informal basis. One fisher reported that he jointly owned the shellfish boat with his son who worked in the merchant navy but had an interest in fishing.

Of those surveyed all worked part-time shell fishing, although there are full-time fishers in the fleet. Shellfish fishing is more weather dependent due to the small boat size and the risk of losing static gear, although fishing takes place all year. All fishers interviewed lived in Whalsay and all had been or are additionally employed in one of the other fish-catching sectors. All fishers had gained the qualifications to skipper the shellfish boats while working in other fish catching fleets. All fishers surveyed were over 43 to 66 years old.

![Figure 4: Age, gender and place of origin for crew types in Whalsay](image)

**Economics**

All those surveyed fished part-time and paid themselves on the operating surplus. Of those who disclosed earnings reported a boat surplus of less than GBP 15,000 (EUR 18,300). Several fishers reported that paying off the loan for the vessel represented their largest cost.

Shellfish landings into Whalsay in 2011 were 33 tonnes, which represents 2% of the total Shetland landings. The shellfish landings volume in Shetland in 2011 was 1,565 tonnes, accounting for 1% of landings by UK vessels into the UK vessels and 3% of all Scottish landings into the UK.

Records of crab and lobster landings have begun since 2006, which may reflect that landings from Whalsay were not recorded until the development of a new fishery. Scallop landings have decreased since 2003. This may be because landings are now made to another port, rather than reflecting a fall in the productivity of the fishery.
The value of shellfish landings into Whalsay in 2011 was GBP 0.07 million (EUR 0.08 million). The value of shellfish landings across Shetland in 2011 was GBP 3.1 million (EUR 3.6 million), accounting for 2% of the value of landings by UK vessels into the UK and 3% of all Scottish landings into the UK. Scallops represent the highest landing value.

Like all fleet segments increasing fuel costs have reduced the profitability of the fleet. Fishers reported that the cost of entering the fleet (boat purchase cost) and the difficulty of obtaining a local licence restricted new entrants into the fleet.

The fleet has recently gained MSC certification for king and queen scallops, brown and velvet crabs. The dredge fishery was certified after the fleet agreed voluntary closed areas. These areas were developed in consultation with the fishers.

**Employees within segment**

None of the fishers interviewed had accident or life insurance associated with this vessel, with insurance covered through other boats. A number of the fishers interviewed all worked in other fleet segments and shellfish fishing was undertaken as secondary employment. It should be noted that there are full-time fishers within this fleet segment but they did not participate in this study.

All fishers interviewed had more qualifications than required to skipper their vessels and were all qualified to skipper or crew larger vessels.

The fleet is represented through the Shetland Fishermen’s Association (SFA). As the fleet is not quota-led, representation at an EU level is less relevant to the fleet. The fishers did report that they felt that poorly represented in recent UK media reports.

**Summary**

The fishing fleet comprises small vessels, which are predominantly part-time. Shellfish fishing is managed by the SSMO. The fleet has recently gained MSC accreditation, which may increase the prices the fleet can command.
2.5 Summary of settings

Fishing remains a key industry within Whalsay. Entry into all fishery segments has become more difficult with the high cost of entry and difficulties of obtaining licences and quota due to increased legislation. It has become increasingly difficult for young people to join the fishing sector.

Fishers report a high level of job satisfaction but also report that legislation has made it difficult for the fisheries to operate effectively.

Table 2: Summary of fishing fleets

<table>
<thead>
<tr>
<th></th>
<th>Demersal fleet (whitefish)</th>
<th>Pelagic fleet</th>
<th>Shellfish fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target species status</strong></td>
<td>85% MSY.</td>
<td>MSY being exceeded due to pressure from non-EU countries.</td>
<td>Stocks stable.</td>
</tr>
<tr>
<td><strong>Business type</strong></td>
<td>Shareholding crew.</td>
<td>Shareholding crew or ltd. company owned by crew.</td>
<td>Owner crewed.</td>
</tr>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average annual income</strong></td>
<td>GBP 30,000-GBP 50,000</td>
<td>GBP 50,000-GBP 60,000</td>
<td>GBP 10,000-GBP 15,000</td>
</tr>
<tr>
<td><strong>Main education level</strong></td>
<td>School education until 16. Fishing qualifications up to class 2.</td>
<td>School education until 16. Fishing qualifications up to class 1.</td>
<td>School education until 16. Fishing qualifications up to class 2.</td>
</tr>
<tr>
<td><strong>Highlights</strong></td>
<td>85% of Scottish stocks considered to be at MSY. Many stocks increasing. Fishermen reporting large numbers of fish.</td>
<td>Highly efficient.</td>
<td>Locally managed. Recently gained MSC certification for key species.</td>
</tr>
<tr>
<td></td>
<td>Shetland catch considered to be of a high quality. Shetland Seafood Auctions has helped to increase landing price.</td>
<td>Previous MSC accreditation.</td>
<td></td>
</tr>
<tr>
<td><strong>Key points</strong></td>
<td>Management measures (days at sea/quota) creating difficulties for the fleet.</td>
<td>Difficult for fleet to grow due to high cost of vessels.</td>
<td>Difficult to gain new license. Vessels normally single-handedly.</td>
</tr>
</tbody>
</table>
3. Linkages

3.1 Inter-sectoral linkages

**Geographical**

Within Whalsay fishing is the dominant marine industry, however the fishing fleets have the potential to spatial overlap with other industries. For the inshore fishing fleet cables, pipelines, aquaculture installations, and proposed renewable devices are the primary potential conflicts. For the offshore fleet renewables, cables and pipelines, and oil-related infrastructure (oil rigs etc.) have the potential to compete for space, although in practice they are well marked on charts. In general, the oil industry is well regarded by the fisheries sector, as it is recognised to provide wealth to the Shetland Islands, as well as additional opportunities such as guard duty and supply service contracts.

Natural heritage designations have the potential to reduce fishing opportunities in the future, through management measures such as restrictions imposed on gear types.

**Labour**

Competition for labour between marine sectors is not perceived as high. However, due to difficulties faced by young people in entering the fleets, some have chosen to join the merchant navy as they still wished to pursue a marine career. The skills gained in the merchant navy would allow them to enter the fishing fleet at a later date.

Starting incomes into the fishing industry is relatively low until qualified. In addition, trainees will have to pay their own training costs and support themselves while in college. In contrast, the employer pays for merchant navy training. Within Shetland financial support is available to young fishers through the Hunter and Morrison Trust and the Shetland Fisheries Training Centre Trust (SFCT). A new apprenticeship scheme has also been launched this year, with one Whalsay whitefish vessel intending to take on an apprentice.

**Economic**

The Shetland fishing fleet uses over 300 local and national suppliers. Within Whalsay there is a marine engineering firm, which is dependent on the fishing fleet; the fishing fleet also supports the local shop.

The Whalsay fishing vessels will also directly support onshore jobs across Shetland in transportation, processing, sales, engineering and supply. A survey of companies conducted as part of this study indicated that at least 225 onshore jobs in sectors such as fish processing, transportation, and engineering are directly dependent on fishing across Shetland. Some of these business will be solely dependent on fishing (such as fish processing companies), while for others fishing activities represent a portion of their income. Many of these businesses have already had to adapt to the reduction in the number of fishing vessels in Shetland and have increased reliance on other marine industries such as aquaculture and oil. Although many of these companies would be able to continue to trade if the fishing industry were to close it is likely that any staff whose jobs are directly dependent on fishing would be
made redundant. In addition the income to the fishermen and onshore workers will indirectly help to support jobs across Shetland.

Wild and farmed fish and shellfish is Shetland’s largest export and these industries help to support the Shetland ferry link to the mainland and also the interisland ferry services.

3.2 Intra-sectoral linkages

Institutions
The SFA represents all fleet segments within Shetland and organises meetings for each fleet segment to ensure that they are all represented. The SFA, as a member of the Scottish Fishermen’s Federation (SFF), represents fishermen's interests nationally and internationally. All fishers reported that the SFA were representing their fleets.

The Scottish Pelagic Fishermen’s Association (SFPA) is set up to represent the pelagic feet, with three branches in Scotland, including one in Shetland.

The SFA and SFPA do not provide assistance in times of hardship and the fishermen reported that none was required.

Within Shetland the SSMO manage the inshore shellfishery. The SSMO has representatives from the SFA, SIC and Association of Community Councils as well as having processor representation.

Fishers reported that they were not reliant upon state or voluntary aid, neither of which was as important to them. As fishers work all year around there is not a need for organisations to provide financial aid for times or hardship. The Hunter and Morrison Trust and the SFTC have been able to offer financial assistance to fishermen to help them gain required qualifications. The Fishermen’s Mission is a national charity that assists fishermen and their families in times of hardship and bereavement.

3.2.1 Between fleet segments

Geographical
Fishers reported that there was no major conflict for space within the Shetland fishing sectors. However, the demersal fleet reported that they had increasing conflicts with other nation’s vessels, especially with Spanish gill-netters (targeting monkfish). Gillnets are left in place for a number of days at a time and this prevents a hazard to trawlers. They reported that gill nets were being used in increasingly shallow depths. Fishers felt that foreign vessels were not as tightly controlled and regulated as the Scottish vessels.

Labour
Labour mobility appears to be low in the Shetland fishing fleets, with fishers staying with the same vessels for a number of years. In addition, many fishers are shareholders so there is less incentive to
move boat. As all boats use a share system to pay crew then it is presumed that there is little financial incentive to move boats.

**Economic**

While most fishers operate independently, the shellfish fleet in Whalsay cooperate with each other to transport their catch to the mainland, with each fisher taking a turn to transport the catch to Lerwick. This collaboration is cost effective and means that fishers usually only have to transport the catch every 11 days.

As the pelagic and whitefish fleet all land into main ports they do not need to cooperate on landings and remain economically independent of each other.

Whitefish boats are able to obtain quota from a number of sources: they can purchase or rent quota from other fishing vessels, the SIC, LHD (fish agents) and the Shetland Fish Producers Organisation (SFPO). The SIC rents quota at market prices and makes GBP 800,000 to GBP 1,000,000 (EUR 97,600 to EUR 1,220,000) a year from rental. LHD and SFPO are able to purchase and rent quota to benefit the local fleet, and unlike the SIC they are not affected by State Aid legislation so do not have to offer the quota to vessels outside of their memberships, nor do they have to ensure that the rental rates are at full market value. The shellfish segment is not managed by a quota system.

LHD is the fish agent for 65 vessels across Shetland and Orkney. They provide fish sales and vessel management service and have been operating for over 100 years.

**3.2.2 Between sub-sectors**

**Geographical**

There is limited spatial overlap between subsectors. While shellfish dredging grounds and whitefish trawling grounds may overlap, fishers reported that this did not cause any conflicts between the fleets. Fishers suggested that this was because the fishing grounds were quite large and fishing intensity relatively low.

The location of ancillary industries such as fish processing has contracted in recent years. Fish processing now primarily takes place in Lerwick and Scalloway. Historically there were a number of fish processing factories spread across Shetland, including Whalsay. Many of these factories specialised in frozen fish for the American market.

The centralisation of services has meant that many jobs created by ancillary industries are less geographically spread and are often within different communities than the fishers and boats.

**Labour**

None of the fishers reported that their spouses or partners were involved in the fishing industry. Historically, when fish processing still took place in Whalsay, spouse or partner involvement would have been more likely.

Nearly all of the jobs over 200 jobs supported by the fishing industry are outside of Whalsay, so are less likely to be undertaken by a family member. It is likely that people in separate households hold
these 200 jobs as little evidence was found of more than one household member working in a fishing-dependent industry.

**Economic**
Seafood from Shetland is primarily sold unprocessed to Scottish mainland distributors. Whitefish is sold via Shetland Seafood Auction with buyers bidding on the fish. The pelagic industry land to the Shetland Catch who sell the fish on to mainland distributors.

Shellfish is predominantly sold straight to mainland buyers, however brown crab is processed in Yell and some fishers will sell a proportion of their catch to the factory.

The price fishers receive is dependent on the national availability of fish, with over-supply lowering prices and under-supply raising prices.

The different fleet segments are not competing in the same markets so the landing volume of one sector does not affect the landing price in other sectors. The aquaculture industry in Shetland produces significant volumes of salmon and mussels, but these are not fish that are caught by the wild fishery in Shetland, so there is little market competition.

**3.3 Summary of linkages**
The Whalsay fishing fleets support a large number of onshore jobs across Shetland. These jobs are in marine engineering, transportation, processing and boat supply; there is no evidence that people living in the same households as fishers hold these onshore jobs. The fishing fleet also helps to support key aspects of infrastructure including the ferry service as fish is the dominant export product and the ferry would not run as frequently if it were not for the freight.

No negative interactions were reported between the Shetland fleet segments due to differences in markets and fishing grounds.
4. Role of fishing

4.1 Fisheries as an economic activity

4.1.1 Diversification
All whitefish and pelagic fishers’ income was from fishing, with no other alternative employment reported. Within the pelagic fleet most fishers reported that their income was the main or only source of household income. As reported incomes are higher than average and childcare opportunities are limited within Whalsay, many spouses only work part-time or are housewives.

The whitefish fishers also reported that their income represented a high proportion of household income (normally >50 %). Some whitefish fishers also owned shellfish boats.

All shellfish fishers surveyed reported that shellfish fishing represented <30 % of household income. For the shellfish fishery it should be noted that there are full-time shellfish fishers who will be more dependent on fishing. Other incomes for shellfish fishers included working on the Whalsay-mainland ferry and working in another fleet segment.

All spouse employment was from other employment within Whalsay including the care home, the school and the leisure centre.

Within Whalsay there are no other major alternative industries and the community is very dependent on the fishing industry. This means that any reduction in fishing-related employment would mean that fishers would have to commute out of Whalsay, work offshore or move from Whalsay.

Fishing has provided long-term, well-paid employment for the community. Fishers have reported that they have a high level of job satisfaction.

Although in other areas of Shetland there has been a diversification of the economy into aquaculture and oil-related industries, the Whalsay coastline is too open to support a large aquaculture industry. This limits the potential number of alternative jobs that can be created in Whalsay. Commuting to Lerwick and Sullom Voe is feasible but is expensive and time consuming.

At the Shetland level, 3 % of the workforce depend on fish catching for work, but this statistic ignores additional jobs created in ancillary industries. The direct employment in fish catching, fish processing and aquaculture represents 9 % of the workforce.
All fishers surveyed reported a high level of job satisfaction (although many fishers, particularly in the demersal fleet reported that EU regulation affected this). All fishers reported that they wished to stay working in the sector and did not intend to leave within the next 12 months. No fishers reported that they were or had previously been looking for alternative employment.

There is no other large economic sector in Whalsay to provide alternative work for the fishers. Any reduction in fleet size would require fishers to seek employment on the Shetland mainland or in the offshore industries including the merchant navy.

The Whalsay and Shetland fleets show low mobility and employment levels have been stable in recent years, following a period of fleet reduction, particularly within the whitefish fleet.

The shellfish fleet are operated single-handedly so do not need to recruit crew. The pelagic fleet have a very stable crew structure and fishers reported they had not been recruiting for new crew members, making it difficult for new fishers to join the fleet. The whitefish fleet report that they are reluctant to recruit new young crew in case they cannot afford to keep individuals employed.
4.2 Adaptation

4.2.1. Analysis of adaptive response

Whitefish fleet

Fishers expressed concern that it was hard to adapt to future change as many of the challenges facing the fleet were beyond their control. Many fishers wished to make additional investments in the fleet by upgrading or replacing vessels, but availability of loans and uncertainty created by governance measures reduced investment certainty. Cost of purchasing quota and the cost of purchasing new boats reduces the likelihood that the whitefish fleet in Whalsay will grow.

Fishers reported that fishing regulation (quota and days at sea) reduce fishers ability to adapt to future changes in fish abundances. As the whitefish fishery is quota-controlled it is difficult for fishers to take advantage of changes in stock abundance. Fishers can rent quota or trade their quotas, allowing them to adapt to some changes in abundance or markets. Fishers reported that they were seeing high stock abundances but were not able to take advantage of this stock abundance as the biological data collected did not reflect the changes in stock. Reductions in allowed days at sea have also reduced fishers’ ability to respond to changes in stock abundance and fishers report that it has reduced total landings.

Wider declines in the economy have made it more difficult to access loans, both from banks but also through a reduction in the level of financial support that can be offered at a national level. Historically, decommissioning has reduced the size of the whitefish fleet: in Whalsay this reduced the fleet from 11 to six.

None of the fishers surveyed wished to leave the whitefish fleet and they reported job satisfaction, but regulation was making it increasingly difficult to maintain an economically viable fishery. Some whitefish fishers also had shellfish boats that they used when they were not whitefish fishing. There is no other alternative employment on Whalsay that could employ all the fishing fleet. However, fishers would be qualified to work in the aquaculture industry and in the offshore industries. A number of shellfish fishers had previously worked in the whitefish fleet but had to change fleets during decommissioning.

Several whitefish boats have been working for the oil industry on ‘guard duty’ as new pipes are being laid. This has provided additional income to boats. Of those surveyed boats reported doing two to three guard duty trips per year, when they were not fishing.

Fishers reported that the uncertainty created by fisheries regulation also made them unwilling to take on young fishers in case they could not afford to keep them employed. Community and fishing representatives expressed concern that if opportunities did not exist for employment within the fishing sector it could lead to the depopulation of Whalsay. The NAFC in Scalloway is now offering a modern apprenticeship for young fishers wishing to join the industry.
Economic challenges such as increased fuel prices affect all crew members due to fishers being paid on a share basis. Reduction in profitability has the potential to affect new fishers because skippers will be less willing to take on new crew members.

**Pelagic**
Fishers reported a high level of job satisfaction and did not indicate that they wished to leave the fishery. The pelagic fishery is a highly efficient, using modern vessels. The development of this modern fleet shows a high level of adaptation and investment.

The cost of building new boats and obtaining quota (~GBP 150 million per boat) presents a challenge to new entrants to the fleet.

Pelagic fishers require a higher level of qualification due to the size of the boats. One challenge crew members are currently facing in attaining qualifications is achieving sufficient days at sea during the limited fishing season. This may create long-term recruitment problems for the fleet as it will be harder for younger crew members to gain required qualifications.

**Shellfish**
The shellfish industry is not controlled by quota so can adapt more easily to increases in stock abundance. Regularly local monitoring of stock abundance means there is greater confidence in stock assessment.

Fishers report that currently it is very difficult for the sector to grow as the SSMO is not issuing new licences to fishers. This makes it harder for new entrants to join the fleet. As only one crew member operates most vessels unless a family member already owns a shellfish boat it may be difficult for a young person to gain shellfish fishing experience.

Wider declines in the economy have made it more difficult to access loans, both from banks and through a reduction in the level of financial support offered at a national level.

Economic challenges, such as increased fuel prices, affect the profitability of the sector. Most fishers are not solely reliant upon an income from shell fishing. Reduction in profitability has the potential to affect new fishers more because skippers will be less willing to take on new crew members. MSC accreditation may help fishers achieve a higher price and maintain profitability.

**4.3 Future development of the community**
Fishers reported that uncertainty created by external regulation makes it difficult for the fleet to prepare for the future by investing in their business and upgrading boats. Work for the oil industry providing guard duty is currently supplementing income for many whitefish boats, although this work is reliant upon the laying of new pipelines.
Across Shetland there has been a general trend of migration from rural locations to Lerwick and the surrounding area. Whalsay has avoided this trend, with a slight population rise. One of the reasons for this difference is the maintenance of a large fishing fleet in Whalsay providing significant local employment.

Community representatives and fishers are concerned that a reduction in local employment will result in the depopulation of Whalsay, as seen in other rural areas.

Most fishers placed a high value on education for young people to enable them to adapt to future changes in the economy.

Fishers and community representatives are also concerned that proposed cuts to the Whalsay ferry service and the potential closure of the secondary school will make it more difficult for families to remain on Whalsay. Increases in ferry fares will make commuting for work or education more expensive.

Although a number of local businesses have been developed, for example, a specialist company washes nets for the aquaculture industry, the scale of these developments are not sufficient to replace the employment offered by the fishing sector.

A new funding scheme has been made available since 2012 for coastal communities through the European Fisheries fund, Axis 4. There have been no grants awarded for the Scalloway area.

5. Summary and conclusions

Whalsay is a remote island community off the west coast of mainland Shetland. It has a population of just over 1,000 people, almost all of Shetland origin. In 2009, 80 businesses were listed in Whalsay and there are 13 non-private organisations in existence. Of these businesses approximately 30% will be fisheries. Other local employment in Whalsay includes marine engineering, construction, aquaculture, retail, education, ferries, a leisure centre and social care. The Whalsay fish factory was a local employer but closed in 2012.

Whalsay is the home of the Shetland pelagic trawl fleet, as well as 4 white fish boats and 19 shellfish boats. Since the closure of the fish factory in 2010, virtually all the landings are made into either Lerwick or further afield, with most pelagic fish landed in Norway. Although fishing is still Whalsay’s largest employer, a reduction in fleet size and increases in fleet efficiency has seen a decrease in the number of people directly employed in the industry.

The fishing fleet in Whalsay is notable for the owner-operator model running the high-capital pelagic fleet which, even though it lands elsewhere, is still based in this small island community. There is a positive trend represented in the value of landings, but the Whalsay fishing sector faces significant challenges. Community representatives and fisheries owners expressed concern that rising fuel prices, quota costs, quota restrictions and reduction in days at sea has reduced the profitability of the sector, particularly the whitefish fleet. This makes it more difficult to attract investment and upgrade vessels, and makes the industry less attractive to young people.
The recent paper on Whalsay’s pelagic fishing fleet by Cardwell and Gear (see earlier) demonstrated the unusually close nature of vessel ownership, which is based on equality and the absence of onshore investors and is tied together by a high level of kinship; this leads to a stable, community-owned asset base. However, this model is now under threat from the introduction of ITQs, and has already led to one vessel being sold to new owners in southern England.

Fishing is of high economic importance to the Whalsay community, but also of notable social value. There is a considerable concern among the local community that declines in fishing opportunity and employment will lead to a depopulation of Whalsay, where there are fewer other forms of employment compared to the Shetland mainland.

Perhaps the largest challenge – and one that is not unique to Whalsay or Shetland – is two-fold:

1. **Attracting young people into the fishing industry.** Although pelagic vessels remain profitable with high wages and adequate quota, the high vessel unit cost (GBP 150 million or EUR 176 million, including quota and licensing) means that investment in new vessels is unlikely over the medium term. In contrast, the whitefish segment is struggling with rising fuel prices, quota costs, quota restrictions and reduction in days at sea, and the fleet is likely to contract further. So there is little capacity for Whalsay to absorb new entrants, and many young people – who traditionally would have worked on local fishing boats – are now seeking alternative employment elsewhere, especially in the merchant navy (which provides paid training and relatively high starting wages). Grants and interest-free loans, previously available to help younger crew members become shareholders, are no longer on offer.

2. **Providing an environment where vessel-owners and operators are prepared to invest in their businesses.** Fishers reported that historically groups of fishermen would group together to invest in new equipment or buy a boat, however, this has becoming increasingly difficult due to availability and the cost of quota.

Data collection for small-island communities like Whalsay are challenging, mainly due to the small population (c. 1,000) and resulting small sample size. In addition most demographic and economic information collection is only conducted at Shetland level, as most of the population and economic units are clustered around the population centres of Lerwick and Scalloway.

At present there are no data collection framework (DCF) variable types associated with social dimensions, apart from some information on employment (FTEs and the number of engaged crew). It is clear that in Whalsay there is a high dependency upon fishing-derived employment and so the community is highly vulnerable to external factors such as changes in quota allocation, fuel costs and market prices. Many of these pressures are captured in the current DCF regime (for example, under expenditure) but the vulnerability element is not currently captured or fully understood by many. Therefore, it is suggested that key indicators are identified and included where possible in a new socio-economic dimension of the DCF. These could include:

- entrance and departure rates of persons involved in fishing;
• ratios of fisheries dependence in the local economy, in terms of both employment and economic contribution;

• relative contribution of Member State/other EU and non-EU employment within the local fisheries sector.