EXPLORING THE NETWORKED REGION

Competitive paper

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Abstract

This paper explores the connectedness of a region by examining its links to three important geographic levels: the regional (internal); the national, and the global. Drawing on the notion of connectedness and of a case of the region of Møre & Romsdal in Norway, we contend that a region is networked which means that viewing the regional place as one geographic aspect of a network, we can identify other equally important geographical places but of quite different kinds. The regional network is connected to a national network as well as to a global network, and it is how these connections play out that determines the character, function and development of the regional network just as much as the internal resources of the region itself.

Key words: *Connectedness, Interaction, Networks, Place, Networked region, Regional development, Norway*

A NETWORKED REGION

The Norwegian fish industry is big business. Norway exported seafood amounting to a total export value of 39.1 billion NOK (approximately 4.6 billion EUR) in 2008 (NSEC – Statistical Overview 2008). Salmon and trout, so called “red fish” accounts for about half of the export value, whereas “white fish” such as cod, saithe and haddock accounts for about one-fourth, and “pelagic fish” which lives in the free masses of ocean waters such as mackerel and herring accounts for the remaining one-forth.

One of the most important regions in Norway for the fish industry is the Møre & Romsdal region. This region is dominated by its administrative and commercial centre in Ålesund situated on the western coastline approximately 450 km north-west of Oslo. This region contains around hundred companies related to the fish industry. But it also comprises other important industries such as maritime technologies including the construction and maintenance of sea vessels of various kinds and furniture manufacturing including the production of office and work-place interiors. This has spawned the notion of a “3M-cluster” based on the marine, maritime and furniture (“møbel” in Norwegian) industries.

This paper deals with the fish industry in the Møre & Romsdal region. We shall investigate the character of this industry in relation to the Norwegian fish sector as a whole and in relation to the global fish industry. We contend that the fish sector in Møre & Romsdal can be seen as a “networked” region.

The networked region perhaps sounds like an oxymoron – a contradiction in terms. A region is a region because it is delineated, special, and defined based on some certain characteristic due to its geographical location. A region occupies one place in a space. A network on the other hand stretches out infinitely, with no boundaries, across space, linking different places together (Baraldi, Fors, & Houltz, 2006; Waluszewski, 2004; Prenkert & Hallén, 2006).

The point we make in this paper is that a region is always a region in relation to something else, usually a geographic context – *but it need not be geographic*. It can also be in relation to a network in which interactions take place.

(Baraldi, et al., 2006) shows that the interactive and relational nature of socio-economic processes creates imprints at a certain place. These imprints develop over time, give a place heterogeneity and represent the history of the place and its related trans-local and local interactions. The conclusion from (Baraldi, et al., 2006) is: “All in all, these complex local and trans-local interactions imbue a place with particular and often unique features.” (p. 373-374). Drawing on this research we focus on the local and trans-local interactions that create imprints at a certain economic place.

Thus, we contend that a region could be “networked” meaning that it is defined based on a network of actors sharing some features, making it distinguishable from any other entity, but at the same time connected to other networks, both local and trans-local. A networked region, as do all networks, displays a dual character of being both distinct and self sufficient as well as connected and dependent (Håkansson & Ford, 2002). The issue motivating this paper is to provide an empirical example of a networked region. The purpose is to explore and describe the nature and character of such a phenomenon in a systematic and coherent manner.

THE MØRE & ROMSDAL FISH INDUSTRY – THE CASE OF A NETWORKED REGION

The first impression of the Norwegian fish industry is perhaps that it comprises a relatively non-complex and straight forward focal resource – fish – which is exploited using established technologies that are well-known, by the application of a traditional mode of organization, sold and distributed to the main markets as a commodity product. But this picture soon diminishes once one looks a little closer.

Starting with a look at various species individually, we immediately get a more nuanced picture. For example, looking at the exports of mackerel, Japan, China and Russia accounts for more than 60% of the total value, and looking at fresh salmon, Japan is the only and dominating market, explained by the sushi culture. When it comes to these species, the European market is small, even if it is the largest for the sector as an aggregate. This has to do with the value of the resource itself, and differences in consumption patterns and demography. This illustrates a certain level of complexity of the sector.

Indeed, the Norwegian fish sector is not a homogeneous industry, but comprises a vast number of actors, resources and modes of organization. Many different companies and organizations, together make up a network that provides consumers all over the world with various fish and seafood products. These are actors ranging from companies operating catching vessels, processing facilities and transportation networks, to distribution and marketing functions and retail. There are also a number of supporting functions carried out by companies in quite other sectors such as firms specializing in certain technologies, as well as banking and insurance, etc. Together they make up a rather colorful bunch.

In addition, the very resource in focus – the fish – is in itself quite heterogeneous. There are a range of species that are commercially exploited and they all require different technologies and various organizing of the system to be economically feasible. Some are mainly processed in Norway, some are not. Some require certain types of equipment, special treatment, and modes of transportation. But the largest difference is between the fish that are wild caught and the ones that are farmed. Fish farming, or aquaculture, involves completely different technologies and modes of organization as compared to wild catch, and they share only the fact that the raw material is both organic and lives in water. Also the resource in focus displays great variation.

Variation can also be found in the way various parts of the sector are organized. Some fish is being more processed and used as ingredients in ready-meals, whereas other are less processed and sold for further processing in for example Poland and Denmark. This explains EUs large share of the volumes in the export statistics. This does not mean, however, that Danes consumes massive amounts of fish, rather it is a result of the fact that much of the value-added processing of the fish is done there, and then re-sold as ready meals and other value added fish products.

Hence, we can see considerable levels of heterogeneity and variation in the actors, the raw material and the organizing. We shall investigate this further in the next section by a closer examination of the network of companies that make up the Norwegian fish sector in Møre and Romsdal – the networked region.

"Møre" is a fuzzy notion of a cultural and industrial region in Norway, what we here label Møre & Romsdal in line with the administrative categorization of Norway into counties. Møre & Romsdal is the official name of the county. However, another understanding is that "Møre" is synonymous with "Sunnmøre"; the most densely populated and heavily industrialized region in the North-Western coastal part of Norway. Ålesund lies at the geographical center, and is the uncrowned capital of this chartable region consisting of a number of municipalities. However the borders of what may be considered as “Møre” may also be stretched to encompass the regions of Sunnfjord, Nordfjord, Romsdal and Nordmøre. This region is usually termed “Nord-Vestlandet” (the North-Western land). Sunnmøre is the southern third-part of this county. How people perceived “Møre” in Ålesund expectedly will vary with how people in Oslo, Bergen or Finnmark perceive this region. Also the awareness of “Møre” will expectedly decrease as the distance form Ålesund becomes greater. We therefore use the county of Møre & Romsdal as a point of reference.

“Møre” denotes a specific culture intertwined with its industry in a roughly perceived region. The people inhabiting Møre & Romsdal have in common a pietistic heritage founded on Lutheran revival. This heritage has marked the way people do business. Especially noticeable is its reluctance to wasteful and extravagant behavior. This fashioned a region where its people reinvested economic gains to avoid sinful waste. A revival in the early 20th century coincided with an “industrial revolution”. In a region characterized by harsh climate, long coastline, rich fisheries, challenging agricultural conditions, and a long distance to Oslo, people tended to feel they had to secure their well-being on their own. Møre & Romsdal represents not only a place, but a distinct culture in the eyes of Norwegians. In this setting three different industrial patterns emerged in Møre of which the industrializing seafood producing marine sector was one. The others were the furniture manufacturing sector in the slightly inland fjord region, and the maritime (shipbuilding and shipping) in the coastal part. The maritime and marine industries are accordingly roughly speaking located at the same place. These two industrial sectors also interface each other to some degree most evident through the development and construction of fishing vessels.

Aquaculture-based salmon and trout production and export is the seafood product that is most evenly distributed among the regions in Norway. Due to its total volume and value on a national level, this industry is still an important part of the seafood industry in Møre & Romsdal. In addition some aquaculture facilities supply mainly salmon and trout products for production and export. While some of these facilities are still locally owned and managed, a growing number are integrated parts of nationally and even globally operating firms; some production in Møre & Romsdal is managed by companies operating at the same time facilities in other regions of Norway, Scotland, Ireland and Chile (see, e.g. Huemer, Håkansson & Prenkert 2009).

Finally the marine cluster also consists of a range of companies supporting this core industry of seafood raw- material supply and processing. See **Table 1**.

Table 1. Support Firms to the Seafood Industry in Møre

Technical Support Firms	**Logistics Firms**	**Banking and Finance**
Ship designers and repair yards	Logistics services	Transaction handling
Seafood processing equipment suppliers	Transports	Export guarantees
Technical services	Cold storage	Long-term financing
Packaging industry	Courier and express postal services	
Information system suppliers		

THREE NETWORKS IN THE MØRE & ROMSDAL REGION

In this empirical section of the paper three different narratives are created which describes the supplying, producing and selling of bacalao, fresh salmon, and frozen herring and mackerel (the pelagic sector), respectively.

A bacalao network

Bacalao is a "white fish"-based preserved product. Preservation involves salting and drying fish species such as cod or saithe. The production of bacalao takes a minimum of 4-6 weeks. Historically, bacalao was produced outdoors; on the rocks along the coast giving the Norwegian name of bacalao: "klippfisk"; the word "klippe" meaning rock[1].

In Norway, the three largest bacalao producers are Jaangard, Fjordlaks and Møre Codfish. **Figure 1** depicts the network around Fjordlaks.

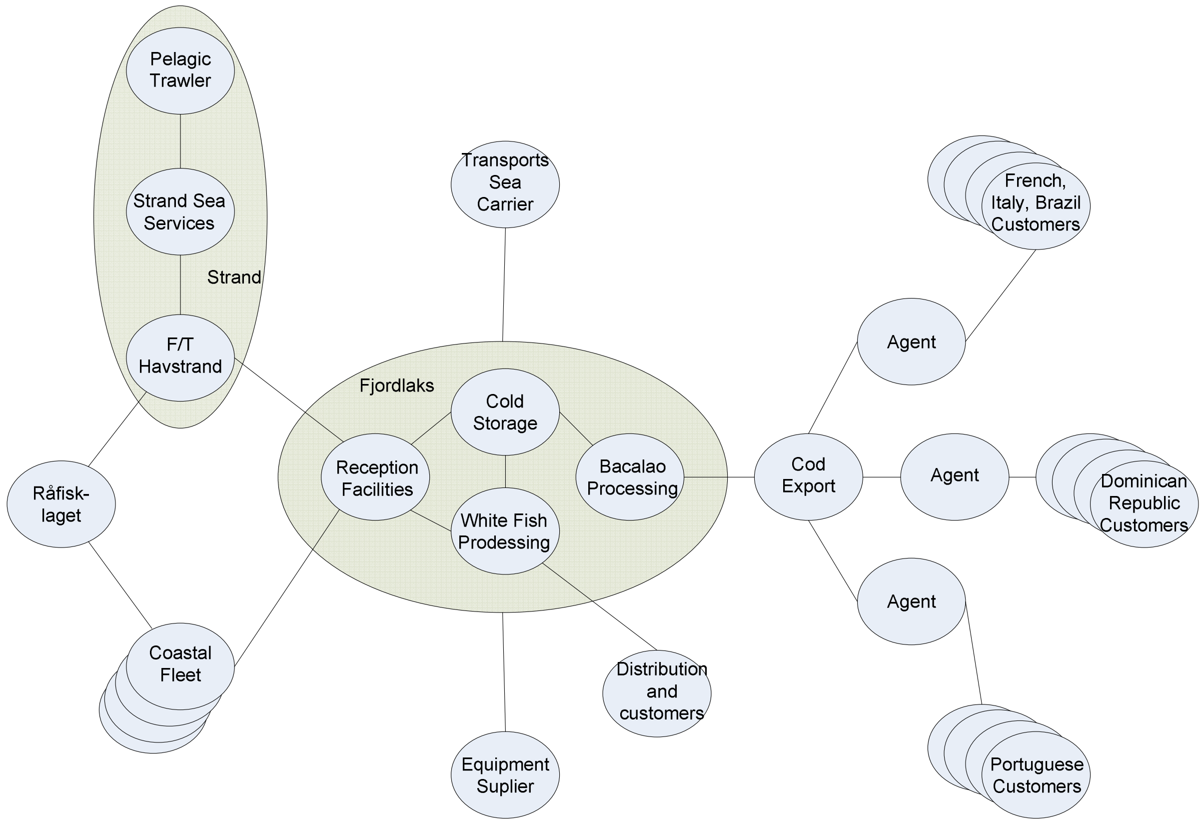

Figure 1. The Fjordlaks bacalao network

[1] The etymological affinity to the English word 'cliff' can be discerned.

Fjordlaks employs a speculation-based business model including buying the wild caught fish when the price is low and selling it, after some processing as bacalao when the price is higher. This essentially means that the company utilizes freezing technology to exploit the price differences over time. Fjordlaks continuously buys fresh raw material complemented with frozen material when the supply of fresh fish decreases and prices go up. Thus, the average price per kilo raw material becomes good and it makes the company less vulnerable to price and supply variations. In this way Fjordlaks can fend off some of the major variations and maintain a cost effective and stable production operation.

Fjordlaks sources its raw material from both contracted trawlers and the coastal fleet. It has a contract with Strand Sea Services which owns an industrial size trawler catching white fish, "M/T Havstrand". The coastal fleet consists of a number of smaller vessels using line fishing gear. This type of equipment is preferred as it yields a higher quality raw material. The use of nets tends to slay the fish before hauling it onboard making it unsuitable for bacalao, while trawls easily lead to bruising and crushing of catches, decreasing the quality of the final bacalao-product.

The supply of white fish is channeled through "Råfisklaget" (SUROFI in Møre & Romsdal) and the other regional sales organizations (co-ops) which are geographically spread along the Norwegian coast. White fish raw material is traded using a legislated government regulated auction system. In general white fish represent a more expensive raw material supply than both salmon and pelagic species. Raw-material costs accordingly represent the greatest proportion of the total cost of bacalao. Fish are purchased at daily auctions where the difference between supply and demand determines the price. Prices of raw material usually fluctuate from season to season and also on a day-to-day basis within the season. Fishing of white species is quota-regulated and has suffered from previous over-fishing. At a daily basis weather has the greatest impact, especially on the small coastal fishing vessels ability to go out to sea.

Figure 2 provides a generalized overview of the organization of the flow of activities in the network, from catch to consumption.

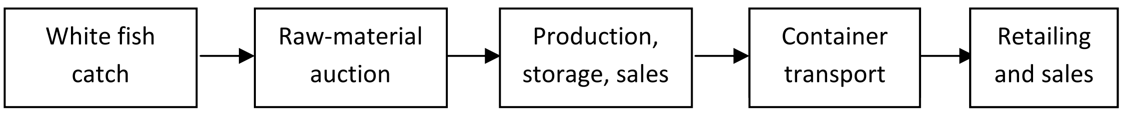

Figure 2. The general organization of the flow of activities in the network

Fresh raw material is transported by sea by contracted carriers to Fjordlaks' reception facilities in Ålesund where it is mixed with frozen material from its own storage. These facilities include a deep sea quay at which larger vessels can be unloaded and it is sometimes used by other producers, as well. From there it goes to the white fish processing facilities in which the company produces many types of white fish-based products. But the ones becoming bacalao is forwarded to the bacalao-production unit to go through the characteristic steps of bacalao-production including the drying and salting of the fish. The production of bacalao is relatively unchanged, following basically traditional technology using modern facilities. Fjordlaks uses an industrialized facility from 1997, employing 140-150 people to produce its bacalao. The drying is a critical step in the production process as it is directly connected to the quality of the finished product. According to regulation, bacalao can contain only a specified level of water and it needs to be dry enough to be of superior quality. Special equipment such as large computerized dryers is used to ensure quality in this step.

Finished products are packed in standardized distribution packaging and then stored in Reefer (cold storage) facilities. Fjordlaks' inventory of bacalao normally consists of 3-4 months production. Products are transported by ship from Norway in Reefer (refrigerated) containers.

Bacalao export is handled by a large number of relatively small exporters. These exporters of bacalao are mainly located in the Møre & Romsdal region. These actors know each other and have frequent informal contacts. Bacalao is not a common type of food on the domestic market and therefore only a miniscule portion of bacalao production is channeled through the domestic market. Competition among Møre & Romsdal bacalao exporters is perceived as strong. Sales and marketing of bacalao is handled differently.

The market for bacalao is quite distinct forming two main sub-markets: The Dominican Republic in the south pacific and Portugal in the southern Europe, along with countries such as France, Brazil and Italy. The distinction lies in the type of bacalao that is demanded. Consumers in the Dominican Republic demand only the lower priced saithe-based bacalao, while Portuguese consumers demand the more expensive cod-based bacalao.

Fjordlaks has organized its sales through the specialized fish trading company Cod Export, which handles all its sales. This company is 50% owned by Fjordlaks; the other half is owned by the sales company's manager. Through Cod Export, Fjordlaks serves five large customers in the Dominican Republic accounting for 80% of the volumes, two large ones in Portugal and the remaining number of smaller customers in southern Europe. All customers in the Dominican Republic are wholesalers with their own cold storage facilities. An agent (which happens to have a common history with the manager in Cod Export) helps with the contacts with these customers. In the Dominican Republic fish must be cut to a standard size because Dominican retailers lack facilities to weigh products. Surplus saithe-based bacalao is offered to markets in Spain, France and Brazil; as these consumers buys a mix of bacalao-product qualities. This trade is also carried out through agents. In addition, Fjordlaks have some customers in Japan absorbing all the trout production.

A salmon network

The focal resource in salmon production is the (North) Atlantic salmon (Salmo salar) which is known for its nutritional and commercial value as a human foodstuff. It is an anadromous specie which means that it lives in the sea in salt water but breeds in fresh water However, Atlantic salmon do not require salt water and numerous so called landlocked populations exists. But from an industrial production point of view, the sea provides more space and opportunity for farm sites for salt water stage fish than do fresh water lakes and rivers. This makes the production of salmon is a two-step process. **Figure 3** outlines the main activities of the salmon production network.

Figure 3. The general organization of the flow of activities in the network

The starting point of the salmon production is breeding and roe production. First roe is delivered to land-based facilities that produce fry in a freshwater environment. Roe is supplied twice annually in a refrigerated and well-sealed package by common delivery service. The roe is hatched and fry (less than 15 months old salmon) is produced in freshwater land-based facilities. Fry that is about 15 months old is supplied by well-boat (a specialized ship with a caged area in its centre where the fish are stored alive) to sea-based facilities lying at the fjords. Some smaller fry-producers also supply 9-month old products unfit for saltwater habitat to other similar facilities. The seawater facilities consist of a set of ring-nets. Fish in these nets are given a unique identity to secure product safety and traceability. In the past years pancreas disease has reduced production up to 20% impacting on the cost of production. Time may to a limited degree be manipulated through feeding or by sorting; larger fish being taken out earlier, and smaller fish staying longer.

A generation of supplied fish usually takes about 4 months with several collections at each seawater facility by well-boat for transport to the regional slaughtering facility. Delivery to slaughter must be planned since the salmon must be starved one week before delivery to ensure its quality.

One of the main producers of fresh salmon in Norway is Pan Fish. Pan Fish originated as an owner of aquaculture facilities, but has expanded to control one supply chain of salmon from breeding to producing consumer packed goods in some predominately EU markets. Pan Fish is an international corporation with farming operations in Norway, Scotland, Canada and Faroe Islands and sales in the EU, U.S., Asia and Japan. **Figure 4** depicts the network around Pan Fish.

In Norway this actor has a market share of about 25% and the production is divided into separate regional business units, of which *Nordvestlandet* (the North-West) is one with regional corporate headquarters in Ålesund. Each of these organizational regional units carries out a comparable set of activities. Each region has a slaughtering factory with a specified production capacity. It is the overall aim of production planning to provide this facility with an even supply of raw-material. To support this need, the company has a dedicated planning department at the national level.

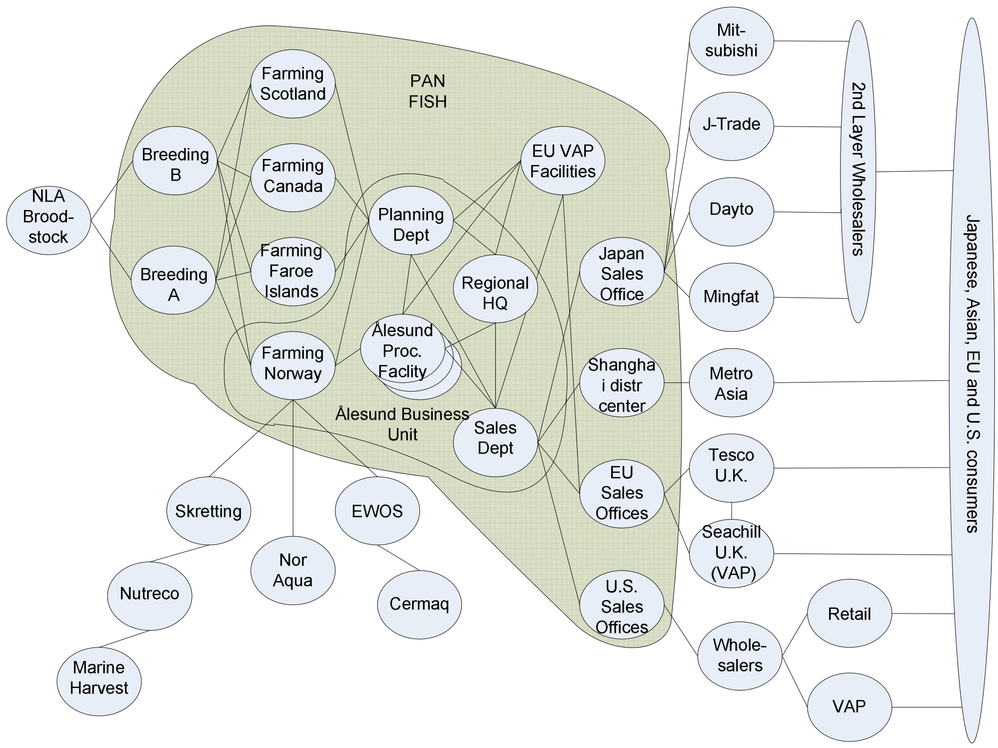

Figure 4. The Pan Fish salmon network

The starting point of the salmon production is breeding. Two Pan Fish facilities carry out this process. Roe is sold to facilities within the corporation as well as to external customers. Pan Fish operates a number of farms dotted along the coastline of Norway. One of them is situated in the Møre & Romsdal region, just outside Ålesund. These farms produce around 40.000 tons of salmon annually (2005) of which 10% go to Japan as fresh salmon.

The facility in Ålesund receives up to 4 boatloads per operational day when the slaughtering factory runs at full capacity with double labor shifts. In the region there are approximately 35-40 deliveries of finished raw-material salmon by well-boat per annual quarter. By regulating temperature and lighting, the exact time to supply fry to aquaculture facilities is manipulated. In addition, the breeding facilities coordinate the production of fry at a set of different fry-producing facilities, to secure the planned supply to the seawater aquaculture facilities. The salmon stays about 18 months at the seawater facility. Altogether the journey from roe to finished salmon product takes more than 2 years.

Linked to the special Japanese sushi-culture, Pan Fish has specialized in supplying fresh salmon to Japan. Fresh salmon is packed in Styrofoam type packages, and air-freighted to Japan two times a week. Fresh salmon is transported by truck to domestic EU destinations, while products destined for Asia and Japan are transported by truck to Oslo where they are air-freighted onwards. While specializing on fresh salmon, some products are frozen mainly to facilitate storage of excess production. The company maintains therefore also business relationships with specific customers who prefer frozen products. Frozen salmon is packed in cardboard packaging and transported in reefer intermodal containers by land and sea.

The sales department coordinates sales at a national level. This office is located in Ålesund. The sales office is updated with the cost of the supplied product. This has risen due to disease impacting primarily on profit margins. The late 2000s has seen a rise in the price of salmon. 60% of the Norwegian production of this firm goes to industrial customers; the rest going to unprocessed consumption through retail or HORECA (hotel-restaurant-catering). About 25% goes to its own facilities in the EU area which produce predominately consumer-packed smoked salmon filets. The company aims to keep business relationships as uncomplicated as possibly by keeping this number as low as possible. It maintains business relationships with its own customers and a set of predominately large industrial customers. About 20 customers take 80% of the value of the sold products. The last 20% consists of about 50 customers.

Pan Fish operates a distribution center in Shanghai which serves as a coordination hub, not only for itself, but also for other producers and distributors. Around the world the company has a set of sales offices handling business relationships such as in EU, U.S. and Japan. In the U.K., customers include retailers such as Tesco and value-added processor (VAP) Seachill. Pan Fish's own VAP operations in Europe also receive some of the fish for further processing in terms of smoking and packaging. In the U.S., customers include large retail and VAP via traditional importer/wholesaler networks.

In Japan, the Pan Fish sales office buys about 25% of the volume and the rest goes to other customers such as J-Trade, Dayto, Mingfat and Mitsubishi. These actors are traditional trade houses or *Keiretsu* importers/wholesalers which in turn supplies a second layer of wholesalers on the traditional Japanese fish markets. On these fish markets, agents purchase fish for further distribution to retail and HORECA. Even if this distribution system is perceived as obsolete, complicated and cumbersome by many, it still manages to get the fresh salmon to end-consumers in Japan in less than 24 hours.

A pelagic network

The predominant species being exported for human consumption are herring and mackerel. These species may again be subdivided into different groups of fish regarding species, sizes, fat quality and freshness. In addition, different pelagic fish species are used in the meal and oil producing industry. Pelagic fisheries represent a high volume and relatively low value per kilo compared with other commercial fisheries and aquaculture. In addition, the catch of herring and mackerel is seasonal with activities concentrated into a period lasting from September to February, due to spawning and migration patterns of the fish. In addition there is a spring seasonal catch of herring.

Catch of pelagic fish is carried out by a fleet of relatively large fishing vessels using side-mounted nets. Scottish fishermen predominately use trawlers; a mode of fishing that more easily tends to damage the catch. Fish are hauled onboard the vessel and stored in large tanks. Each fishing expedition lasts about 2-3 days. This is a coastal type of fisheries, where the fishing vessel is dependent on supplying its catch as soon as possible to a land-based industrial processing factory. No catch older than 2 days is processed for human consumption.

The catch of pelagic fish is spread along the coast of Norway and processing plants that receive pelagic fish line the entire coast. Pelagic fish assemble in large shoals which makes it possible to pump it out of the tanks of the trawler into the production line using a hose mechanism. Pelagic fish finds two main forms of processing; freezing for human consumption, and into fish oil or meal. In salmon aquaculture pelagic fish is used as the main raw material in feed. The Møre & Romsdal region has a large share of the pelagic fishing fleet as well as a large number of industrial facilities processing pelagic catch.

The supply of pelagic fish is like the supply of white fish organized by a government-regulated monopoly. Norges Sildesalgslag based in Bergen handles a double-blind auction system. The auction is web-based and allows the different relatively large industrial producers associated with the sales monopoly to bid on catch as it is reported by the vessels. Minimum prices are negotiated annually for different pelagic species. The actual price fluctuates through the use of the auction. Since this is a coastal form of fisheries, catch and supply is regional, and a set of fishing vessels supply fish to a limited number of processing plants. The purchasers representing the pelagic industry have learned through experience which vessels tend to supply fish of good quality, and which vessels handle their catch more poorly. The pelagic industry has a large overcapacity, so this does not impact on price. The less reputable vessel tends to have to wait to sell its catch. In addition, the different vessels vary in size and catches may vary. Purchasers therefore try to purchase catch from vessels reporting catch volumes that best fit their production requirements of the day. **Figure 5** shows the general organization of the flow of activities in the network.

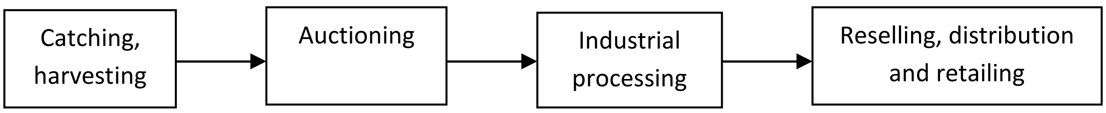

Figure 5. The general organization of the flow of activities in the network

The pelagic industry consists of relatively large and mechanized facilities. Between facilities the degree of mechanization and automation varies considerably. The pelagic industry has a large overcapacity due to previous overfishing and following strict regulation of the catch. One of the major actors in the pelagic sector is Globalfish with two production lines for pelagic fish in Møre & Romsdal. One is located in Ålesund, and the other in Liavåg, both includes landing facilities for fishing vessels and primary processing facilities. These facilities produce either filets or round fish. **Figure 6** depicts the Globalfish pelagic network.

Globalfish sources its fish on the auction system from Strand Sea Service's pelagic trawlers and from some other trawlers when necessary. The pelagic fisheries have been very successful and profitable over the years and Stand has acquired a minority share in Globalfish and has a member on the board of directors.

It is hardly possible to discuss the pelagic industry without taking about the fish meal/fish oil and feed industry in the same breath. Pelagic species if fish is the main raw material in fish meal/oil and feed production. Sometimes as much as 50% of the live fish volume is trimmed away, generating considerable amounts of waste. This waste is used in fish meal/oil production and Globalfish supplies this to Vedde Sildolje and to Måløy Fiskemel in which it has a minority stake via the company Pan Pelagic of which Globalfish owns almost half. Vedde is a wholly owned part of the Koppernæs group and produces fish meal which is used by the large feed producers such as Ewos (owned by Cermaq); Biomar; and Skretting (owned by Nutreco). Also Måløy Fiskemel is a supplier of fish meal to Skretting and Ewos.

That which is not waste eventually becomes pelagic fish products such as herring and mackerel. The fish are cleaned and packed in distribution packaging. Then they are frozen providing prolonged durability for distribution. Distribution packages are grouped into pallets and transported by container to the Far East and by ship on Ro-Ro (roll-on, roll-off) type Reefer ships specializing in seafood product transport to European destinations. Maersk is the one actors supplying most of the transportation to Globalfish. Almost half goes via Maersk, but companies such as Norcargo and

Waagan are also used. Storing is an issue because the boats that collect the fish comes along a certain route and fills up, and once fully loaded they take off to the destination. It can therefore be necessary to be able to store frozen pelagic fish while waiting for transportation. In addition to its own cold storage facilities in Ålesund, Globalfish cooperates with Fjordlaks to store fish at its cold storage, and with and Norcargo which is co-located with Klosterboer's Freezing storage facilities.

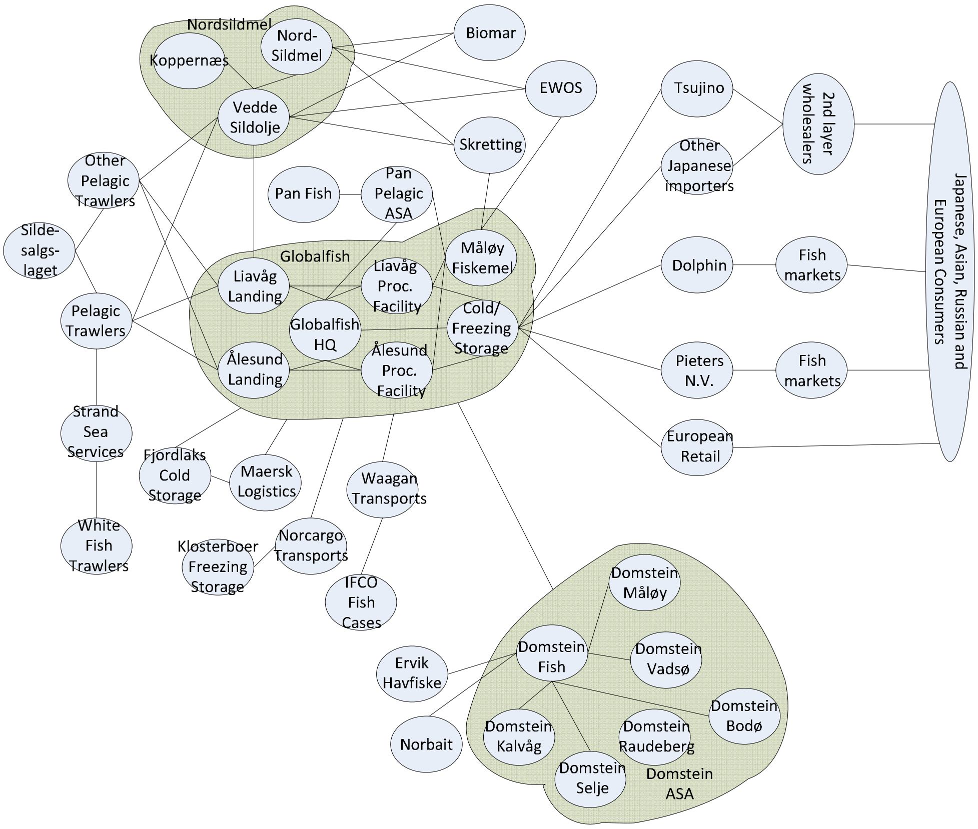

Figure 6. The Globalfish pelagic network

The market for pelagic fish follows the species but can roughly be separated into two categories based on the requirements put on the fish from users: high quality demand markets and low quality demand markets (Følgesvold & Prenkert, 2009). Mackerel is predominately sold to Japan which is a high quality demand market, large and fatty North Sea Herring goes to Russia, Ukraine and the eastern part of the EU countries, which are low quality demand markets. Lately Nigeria has emerged as an important market for this type of fish. The smaller and leaner spring herring is distributed to Northern Europe, predominately The Netherlands and Germany, which are high quality demand markets. This type of herring is also a traditional food in all of Scandinavia. The price of these pelagic products for human consumption is far lower than prices for white fish or salmon. Mackerel is the most expensive of these species. Roughly, Globalfish has divided their customers into three main markets based in geographical location: The North West Europe with Scandinavia; Eastern Europe with all of Russia; and the Far East with Japan and China.

In Japan mackerel is considered a delicacy. Globalfish supplies mackerel to Tsujino, a Japanese importer *Keiretsu*. This company in turn places it on the fish market where a second tier of wholesalers procure it and in turn supplies retail and the HORECA-sector, much the same as with fresh salmon. Japanese consumers are extremely quality-conscious regarding the food they consume. Therefore a large number of Japanese industrial purchasers are each season stationed in Ålesund to secure the supply of quality goods. The Japanese in general, at all levels, are very conscious regarding which fish they purchase. They will not, as the Eastern Europeans, accept any pallet of fish available in inventory. The exact purchased unit of goods is marked with a unique identification number, and it is precisely that good that must be supplied.

A considerable amount of mackerel is channeled through China for processing before being sold on the Japanese market. Pelagic fish from Norway also competes with pelagic fish from Asian countries and other European countries, especially Scotland and Iceland[2]. In the late 1990s in Japan, the depletion of domestic mackerel resources led to a need to import Norwegian mackerel at a higher price. Norwegian mackerel is larger and fattier than the Japanese mackerel. After several years of eating Norwegian mackerel the Japanese now have become accustomed to Norwegian mackerel and tend to prefer mackerel marked with "Norway" as country-of-origin even when the Japanese mackerel become in increasing numbers available in the Japanese fish markets. The market price of pelagic species remains relatively low, and competition for the raw-material continues in Norway; meaning profit margins easily evaporate. The pelagic industry tends to operate with a thin profit margin or even at a loss – Globalfish is no exception, and the company has struggled with financial difficulties.

Pieters N.V. is a Dutch importer wholesaler which purchase herring from Globalfish for distribution in the EU; predominately the Dutch and German markets. Globalfish also sell to some European retailers for distribution to European end-consumers. Doplhi is an independent trader that comes to Globalfish's facilities in Ålesund every august to purchase pelagic fish for further sale and distribution via fish markets all over the world, covering emerging markets such as Nigeria, and some smaller Asian markets.

A Møre & Romsdal network of actors

The network depicted in **Figure 7** is an amalgamation of the three networks that we have discussed above. It comprises these actors and many more, and it clearly shows the variety and heterogeneity of the fish industry in Møre & Romsdal.

[2] For a comparative analysis of the Norwegian and Icelandic herring industries, turn to Følgesvold and Prenkert (2009).

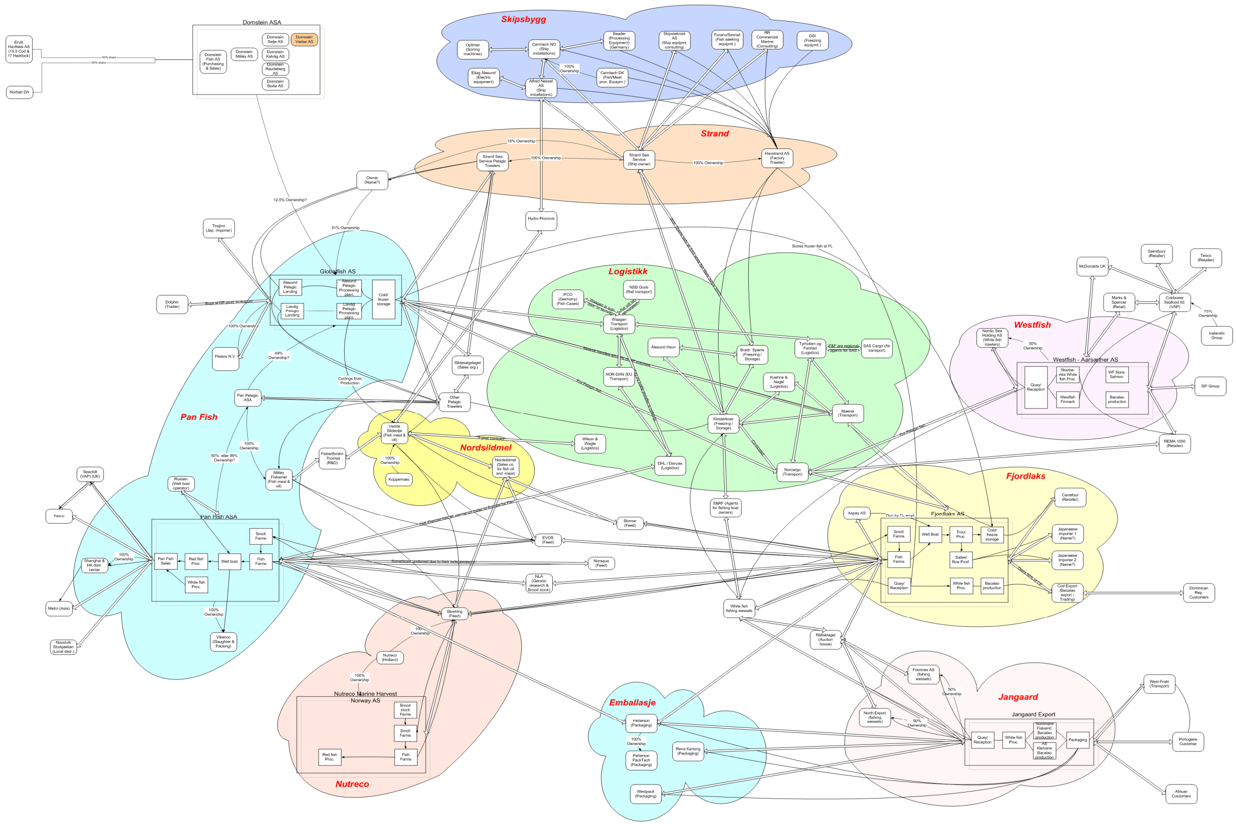

Figure 7. The Møre & Romsdal Fish Network of Actors

We contend that the Møre & Romsdal region is a “networked” region. Another way to express it is to say that the region can be seen as a network with some geographical features, rather than as a region with some connections. This means that it can be seen as a network but not that it is isolated, neither from the rest of Norway nor from the rest of the world. A network is per definition boundary less, it stretches out in all directions (Prenkert & Hallén, 2006). But the network is also delineated in some way. In this study we have described three networks based on the specifics of the focal resource. We have thus delineated the networks by the use of the focal resource as a tool.

We shall now look at the “connectedness” – or the connected nature of the network as it is depicted in **Figure 7** above. First, we shall examine this network in relation to the Norwegian fish industry as a whole. This national analysis illustrates the connectedness of the Møre & Romsdal networked region to other important regions in Norway. Secondly, we shall examine the Møre & Romsdal networked region in relation to the international fish industry and its connections to these global networks.

THE MØRE & ROMSDAL NETWORK IN RELATION TO THE NATIONAL FISH INDUSTRY

We start our discussion of the connections to the national fish industry by starting with the landings and processing in the Møre & Romsdal region in relation to the rest of Norway to highlight the importance of the region to the Norwegian fish industry as a whole. We then move on to discuss the same thing for aquaculture and fresh salmon.

Catch, Landings and Processing in the Networked Region[3]

The traditional supply of raw-material comes from catch of wild fish at sea. Møre & Romsdal has only 11% of the total fishing vessels (2006), but 36% of the large ocean going vessels (see **Table 2**). This vessel category lands approximately two thirds of the total wild catch, meaning Møre & Romsdal vessels as a rough estimate take about a quarter of all Norwegian catch.

Table 2. Fishing vessels, 2006. Source: Statistics Norway

Fishing vessels, 2006	All vessels	< 10 metres	10-14,9	15-20,9	21-27,9	>= 28 metres
Total	7.305	4.316	2.216	299	234	240
Møre & Romsdal	814	446	232	18	31	87
Share	11 %	10 %	10 %	6 %	13 %	36 %

Much of the catch is landed in Møre & Romsdal as well. **Table 3** shows landings (2007) in total and per major fish species. It shows that although figures may vary from year to year, Møre & Romsdal accounts for roughly a quarter of the fish landings, both in terms of volume and value, and both for the pelagic and white fish species.

[3] Statistics are available primarily at county level, so in the following it is Møre & Romsdal county which is compared to total figures.

Table 3. Landing of fish, 2007. Source: Statistics Norway

Landing of fish, 2007	1000 tons live weight			1st hand value, MNOK			NOK avg. Price
	Total	M&R	Share	Total	M&R	Share	
Wild catch total:	2.385	536	22 %	12.019	2.998	25 %	5,0
Herring	885	191	22 %	2.225	446	20 %	2,5
Blue whiting (”kolmule”)	540	73	14 %	848	115	14 %	1,6
Capelin	41	12	28 %	95	25	26 %	2,3
Mackerel	132	55	41 %	979	412	42 %	7,4
Sum major pelagic:	1.597	330	21 %	4.147	998	24 %	2,6
Cod	218	29	13 %	3.684	535	15 %	16,9
Saithe	225	115	51 %	1.260	733	58 %	5,6
Haddock	73	19	26 %	838	257	31 %	11,5
Sum major white fish:	515	163	32 %	5.781	1.525	26 %	11,2
Sum major species	2.112	493	23 %	9.928	2.523	25 %	4,7
Of total	89 %	92 %		83 %	84 %		

The seafood processing industry in Møre & Romsdal in 2006 consisted of 100 firms classified in relation to their predominant type of product and process in **Table 4**.

Table 4. Fish processing firms by industrial subclass, 2006. Source: Statistics Norway

Fish processing, 2006	Total	M&R	Share	Total	M&R	Share
Industry subclass	No. of firms			Production value, MNOK		
Total	558	100	18 %	30.323	9.152	30 %
Salting, drying, smoking	163	45	28 %	6.753	3.241	48 %
Freezing	108	21	19 %	14.189	5.034	35 %
Canning	9	1	11 %	477	144	3 %
Fish oil / meal, other	278	33	12 %	8.904	863	10 %

Note: *M&R stands for Møre and Romsdal.*

Møre & Romsdal has 18% of the companies, but 30% of the production value. In addition, the region is especially dominating in the conventional sector (included in the subclass salting, drying, smoking), where it has close to 30% of the firms and nearly half the production value. It is no wonder Ålesund has gained reputation as the “Bacalao capitol of the world”.

[4] Not listed, but an estimate based on number of employees.

Based on the NSEC list of seafood exporters, a breakdown on regions and sectors (product group) is shown in **Table 5**[5].

Table 5. Exporters per sector. Source: NSEC list of seafood exporters as of April 2009.

Exporters	**No. of companies**					**Accumulated share**			
Sector (product category)	Ålesund	Around Ålesund	Rest Sunn-møre	Rest NW Norway	Total	Ålesund	Ålesund area	All Sunn-møre	All NW Norway
Klippfish (Bacalao) Wet salted fish Stockfish	22	12	8	10	140	15,7 %	24,3 %	30,0 %	37,1 %
Whitefish	28	5	6	12	177	15,8 %	18,6 %	22,0 %	28,8 %
Salmon & trout	22	4	4	7	167	13,2 %	15,6 %	18,0 %	22,2 %
Pelagic (Herring/Mackerel)	22	4	7	9	116	19,0 %	22,4 %	28,4 %	36,2 %
Shrimp/shellfish	15	2	8	4	107	14,0 %	15,9 %	23,4 %	27,1 %
All exporters	57	19	27	32	467	12,2 %	16,3 %	22,1 %	28,9 %

As shown, more than 16% of the exporters were located in or near Ålesund. If the rest of North-Western Norway[6] was included, close to 30% of the seafood exporters were located there. If only looking at the conventional sector, approximately 25% of the currently listed exporters are located in or around Ålesund, and more than 37% if including all north-western Norway. If only looking at bacalao and salted fish accounting for more than half of the cod based export, the Ålesund area dominance is most likely much higher. UNIDOS based in Ålesund, the former national export monopoly for bacalao and salted fish, now a service and marketing organization, around 2004 had 84 members of which 58 or nearly 70% were located in Møre & Romsdal. In the pelagic sector the numbers are more or less the same as in the conventional sector. The numbers for salmon and trout (mainly farmed products from aquaculture) are considerably lower; approximately 15% of the exporters are located in the Ålesund area and 22% in the North-Western Norway.

Aquaculture in the Møre & Romsdal Networked Region

[5] The listing on the website is voluntary, but almost all exporters (460 as of April 2009) are listed. According to the NSEC however, exporters listed in a certain sector does not necessarily actively sell products in the sector.

[6] Here defined as Møre & Romsdal county plus the northern part of Sogn & Fjordane county (Nordfjord): Companies with address postcodes from 6000 to 6799.

Aquaculture facilities are spread evenly along the entire western and northern coast of Norway as shown in **Figure 8** below:

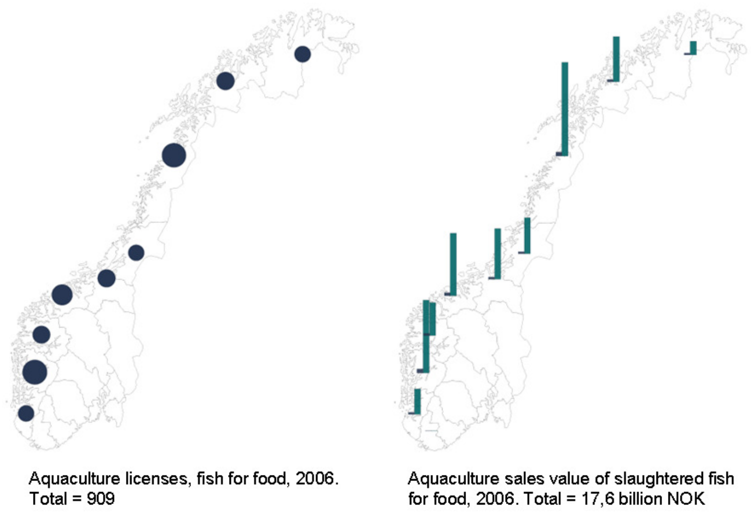

Figure 8. Aquaculture licenses and sales value of slaughtered fish for food, 2006, per county. Source: Norway Statistics

More details are provided in **Tables 6** and **7** as well as a comparison of Møre & Romsdal with the total. All figures are from year 2006.

Table 6. Salmon and rainbow trout aquaculture licenses and labor input by type of production and county, 2006. Source: Norway Statistics

	Fish for food farming licenses	Labor input (1000 man-hrs)	Hatch-eries licenses	Labor input (1000 man-hrs)	Est. man-years7 per farming license	Est. man-years per hatch. license
Total	909	3.599	227	1.244	2,3	3,2
Rogaland	68	236	16	100	2,4	3,7
Hordaland	158	588	56	292	2,4	3,1
Sogn & Fjordane	81	253	22	84	1,9	2,2
Møre & Romsdal	112	413	35	213	2,5	3,6
Sør-Trøndelag	83	434	20	111	3,1	3,3
Nord-Trøndelag	67	252	17	112	2,5	3,9
Nordland	152	801	34	206	3,2	3,6
Troms	85	405	10	76	3,0	4,5
Finnmark	70	168	2	28	1,6	8,2
Møre & Romsdal share	12 %	11 %	15 %	17 %		
Named counties share	96 %	99 %	93 %	98 %		

[7] A man-year is estimated at 1700 hours per year.

Table 7. Aquaculture sales value of slaughtered fish for food by fish species and county, 2006. Source: Norway Statistics

2006, MNOK	Total	Salmon	Rainbow trout	Cod	Halibut	Salmon / trout licenses	Sales per license
Total	17.587	15.576	1.579	261	71	909	18,9
Rogaland	1.016	956	2	37	22	68	14,1
Hordaland	2.933	2.313	603	7	10	158	18,5
Sogn & Fjordane	1.323	1.079	209	35		81	15,9
Møre & Romsdal	2.507	1.881	469	90	20	112	21,0
Sør-Trøndelag	2.034	1.993	38	2		83	24,5
Nord-Trøndelag	1.440	1.434		5		67	21,4
Nordland	3.772	3.443	209	67	19	152	24,0
Troms	1.823	1.788		10		85	21,0
Finnmark	557	528		9		70	7,5
Møre & Romsdal share	14 %	12 %	30 %	34 %	28 %	12 %	
Named counties share	99 %	99 %	97 %	100 %	99 %	96 %	

Møre & Romsdal ranks third after Nordland and Hordaland both in licenses (12%) and sales value (14%). Møre & Romsdal has licenses slightly larger than the national average measured both in estimated man-years per license and sales value per license. Looking at species farmed, Møre & Romsdal has 12% of the total salmon sales value, matching its share of licenses. In the smaller segments however, (trout, cod and halibut), Møre & Romsdal's share of sales value is much higher at around 30%.

THE MØRE & ROMSDAL NETWORKED REGION IN RELATION TO THE GLOBAL INDUSTRY

The international fish industry is truly global and the Møre & Romsdal network has many connections to it. This section discusses three such important connections. First, we discuss the connection to a global opinion concerning biological issues and the environmental movement. Secondly, the connection to customers in international markets and the demand structures of these markets. Thirdly, the connection to international supply chains in which the use of integrated communication and innovative forms of organizing (Castells, 1998; Reich, 2007) shape the developments.

Global opinion: Biology and natural environment issues

The recent awareness of the threat posed by global warming has evoked an understanding that the natural environment cannot be regarded as a regional phenomenon. Climate changes and the effects of pollution disintegrate the importance of national borders. The UN has emerged as the main global player in countering the effects of natural environmental threats. These threats also pose challenges to seafood production, including the seemingly remote corner of the world as the Møre & Romsdal region may be perceived. In relation to wild seafood catch the depletion of seafood resources has triggered international cooperation to secure continuous fishing in the future. Some seafood resources, such as the once rich Newfoundland cod fisheries are forever gone due to overfishing. In other cases, strict regulation, such as that of Japanese mackerel, has proven to sustain the return of this species. This has provided a competitive threat to Norwegian mackerel export. On the other hand, tuna resources are quickly being reduced, providing a marketing opportunity for salmon as an alternative product in the lucrative sushi product market. In relation to aquaculture, this form of seafood production is dependent on a clean environment since these types of facilities are predominately located in the sea. Alternative modes of production on land or in ponds are possible, but more costly, especially in Norway due to topography and geological conditions in Norway. Salmon demands a relatively cold seawater temperature, and heating of its habitat would render salmon aquaculture impossible in Norway. Already a scenario is being pictured of how aquaculture facilities in the southernmost part of Norway may need to be moved towards the North to adapt to the threat of increasing seawater temperature. In addition, the sea is the environment of bacteria and algae impacting on the vulnerability of the seafood being cultivated in the aquaculture facilities. These threats may be linked to pollution and warming of the ocean temperature.

Global demand: International customers and markets

Consumers retain the use of national languages. However, increasing numbers of consumers, especially professionals now are capable of communicating in English. New industries have emerged that have used global terminology. Thus includes most noticeably the transport and information industry. The seafood industry is, however, a traditional form of industry with deep roots into national culture. However, food consumption is changing as lifestyles in different countries are gradually becoming more impacted by industrial development. In most countries, even the poorest developing countries, it is possible to purchase branded sliced white toast bread in plastic wrapping in a supermarket. The choice of different types of foods is increasing especially in more affluent countries. However, the situation is still far away from a totally homogeneous food consumption pattern for foods in the globe. The possibly most interesting feature of globalizing food consumption is the impact f different food cultures on each other together with a search for authentic and exotic food consumption. Originally American hamburgers or Italian pizzas become adapted to local tastes. At the same time recipes, restaurants or finished foods communicate cultural authenticity; providing consumers with a choice of different “exotic” food experiences.

The Møre & Romsdal fish network is seemingly coincidentally adapted to this feature of global consumption, a global food market that is still relatively heterogeneous. Norwegian seafood products, in practice they represent commodities, are adapted to consumption in the different national environments by the customers of the seafood exporters. This includes how bacalao may be sold at a profit in relatively less affluent Dominican Republic, and on the more developed Portuguese market by using differently priced raw-materials in products to markets with differentiated levels of affluence. A new seafood product on the global marketplace, salmon is currently increasing in volume on the Asian market, in part due to a westernizing of food consumption (Asians eating increasingly western “two vegetables and a meat dish”) and adaptation to existing food consumption patterns (sushi).

Global technology: international supply chains

Since the seafood industry in the Møre & Romsdal region is predominately an export industry, these seafood chains usually can therefore be pictured as drawn from Norway stretching into a global marketplace. This involves cooperating through business relationships with a sequence of actors. The need to cooperate in the supply chain has focused on securing recurring sales through marketing efforts and coordinating logistics activities. This sequential mode of cooperation, where business relationships were predominately one step from a supplier and one step towards a customer, can also be characterized as networks since both sales and purchasing always involves sets relationships with agents, logistics financial actors and potentially other supporting organizations covered in the preceding section.

Food supply involves furthermore crucial specificities regarding safe and quality supply. Food is used as human nourishment and unsafe food has in worst cases a poisoning effect. In addition food quality is in addition to economic aspects of securing retaining sales, also dependent on adaptation to cultural demands. To secure the safety and quality of their seafood products, the seafood exporters need to secure product traceability. Thus involves a cooperative responsibility of all actors in the supply chains since the finished product is dependent on all product transforming activities from raw-material source to finished product. Product traceability is a supply chain capability that may be used for different purposes including securing consumer confidence in the authenticity of product features, avoiding food safety and quality problems, and helping to avoid recurrences when product discrepancies occur for different reasons. The need to supply and inform about product supply accordingly glues the supply chain actors together, bound by a collective responsibility for human welfare.

While foods in the past were predominately produced and consumed locally, preservation methods combined with economic transport and storage has facilitated global distribution patterns for foods. Bacalao is an early and therefore traditional example of how food preservation techniques have provided an international marketplace for a product that in its raw-material form is highly perishable. This early form of logistics has provided also distinct culturally embedded use of white fish, a form of consumption still not common in Norwegian seafood eating. Frozen or chilled storage coupled with different modes of transport provide Seafood form more to the global marketplace in fresh, frozen, dried or other processed forms. The logistics sector is an important facilitator of this development. The increasing efficiency of global logistics operations has even made it profitable to send Norwegian caught frozen white fish filets for processing into consumer packed products in China, that then are redistributed back to the Norwegian or EU market.

To develop efficiency in global product supply different actors in supply chains use business relationships to secure recurring sales and develop efficiency in the logistics of seafood product supply. These actors may come from different countries. At present communication is face-to-face one step at a time. Between these actors, mainly the actors handling international business relationships interactions involve often daily contacts on telephone or internet. In addition, purchasers and sellers regularly visit each other to develop their bonds. A business community handling sales and purchasing across national borders is developed; a professional culture and terminology that supports efficient product transactions and logistics. Global seafood supply chains are integrating their efforts to develop efficiency in their product supply. Different actors involved in product transactions, such as fishermen, the pelagic sales monopoly and industrial producers are working on how to better integrate their activities through the use of the established web-based marketplace. One development I linking fishing vessels with the auction through broadband connections. This secures accuracy in informing about the fish. In addition, accurate identification of catch on the fishing vessel communicates as reputable information to intermediary purchasers and the final end-user of the seafood product. The supply chain is increasingly also becoming a virtual chain where information connectivity is a value not only to secure logistics activities, but also provides information that secures confidence in the exported seafood products.

A final aspect of globalizing supply chains is that in a global environment different supply chains of seafood products meet. Basically different seafood chains may compete for the same customers, be complementary in distribution or use, or have no relationship with each other at all. This paints a picture of complex distribution. A Japanese trader of seafood products regularly purchases Norwegian mackerel or herring. These seafood products need not be channeled to Japan. The goods may be stored in a cold storage facility in e.g. the Netherlands awaiting a new customer which may be found anywhere in the world. In a common cold storage facility in the Netherlands, distribution packed herring from Scottish producers lie in a same facility with products form Norwegian producers. All the producers are in principle competitors. When a Dutch producer of matjes-herring needs raw-material for production of finished goods, this producer sources 90 % of the herring from one preferred Norwegian supplier. However, to meet their production needs this supply needs to be complemented by supply from competing Scottish or Norwegian herring suppliers.

THE NETWORKED REGION

The Imprints on the networked region from other geographical places

First, we can easily ascertain that the Møre & Romsdal region has imprints from the very geographical place at which it is located: the west coast of Norway. The seafood industry is based dependent on nature; both aquaculture with salmon production being dependent of fjords with cold sheltered seawater and wild catch. The geographical location of the cluster is in this regard dependent on natural conditions. However, that does not account for the fact that it is heavily concentrated around the special place that the city of Ålesund represents. Why exactly around Ålesund? Geographically speaking, the Møre& Romsdal region is not so different from the rest of Western and Northern Norway. Why not Tromsø, Trondheim or Haugesund?

It is here tempting to cite the entrepreneurial spirit of the people of the region, or the cultural features of the people as the reasons to why the Møre & Romsdal region has developed to become what it is. And such things can certainly play a role. However, our network diagrams clearly show that the trans-local interactions that some actors have with other actors at other places are more important. This is because it is connected to other places and these places recognize Møre & Romsdal as an important place for the Norwegian seafood industry. Table X summarizes our findings from our case analysis. In Portugal, for example, Ålesund has a much greater ring to it in the ears of bacalao industry people than it has in Norway. While Bacalao is the industry most centralized to Møre & Romsdal, wild fish catch is also highly centralized to the region, whereas pelagic industry and aquaculture industry is more spread out.

The Møre & Romsdal region can be said to be primarily "production oriented", meaning that it is a place where focus is on the production of seafood rather than on marketing, sales and distribution. About 50% of the value of all processing takes place here and 30% of the companies (100 firms) are located in the region. Some amounts of supplying activities also take place, for example landings of pelagic and white fish to coastal facilities in Ålesund, and the farming of salmon. However, salmon farms are also to be found elsewhere in the salmon network of Pan Fish, and a lot of fish is landed outside the Møre & Romsdal region in Northern Norway, as well. Looking downstream, the story is totally different. Here, Møre & Romsdal is not directly present at all, only indirectly. It is represented by the products it supplies, and by the reputation it has as a place for production of goods of certain qualities and characters. Thus, taking the Møre & Romsdal region as a point of departure and recognizing the production focus of the region we can summarize the networked region as in **Table 8**.

Table 8. Summary of the local and trans-local connections in the Møre & Romsdal networked region

Empirical case	Supply	Production	Marketing and sales
Fjordlaks bacalao network	Norway	Møre & Romsdal region	Dominican Republic, Portugal, Brazil, France, Italy, Spain
Pan Fish salmon network	Møre & Romsdal region, Canada, Scotland	Møre & Romsdal region	EU. U.S., Japan
Globalfish pelagic network	Norway	Møre & Romsdal region	Western Europe, Russia, Japan, China

Thus, the Møre & Romsdal fish industry is of course directly represented in the Møre & Romsdal region, but also indirectly to other national and international regions and places via its network connections, being a networked region. These networks cuts across regions, nations and spaces and creates trans-locally connected mega-networks of the kind illustrated earlier in **Figure 7**.

This does not mean that local conditions are unimportant. Indeed, local conditions such as dependencies in the supply chain from raw material to production to sales, provides a tightening function creating networks of heterogeneous industries connecting the region, making the region networked. The same applies for the supporting firms such as banks and technology providers. Suppliers of IT software, production equipment, logistics resources, and banking adapted specifically to seafood production and distribution creates regional/local networks that keep the industry together giving it an internal stability and structure. The explanation to the location of the industry in Møre & Romsdal is a combination of natural conditions as a prerequisite and the trans-local interactions thus shaping it and giving it its form and content. Hence, natural conditions and local entrepreneurial spirit and culture are necessary although not sufficient in explaining the emergence and sustenance of the.

Obviously, other places that shape the Møre & Romsdal fish industry are Portugal and Dominican Republic, with its strong bacalao culture and a specialized industry sector. Not to mention the U.S. with its huge market for salmon products, as well as Japan with the sushi culture, and Europe for pelagic fish and salmon. As our material extensively show, the international destinations of the seafood is to a large extent taking part in the shaping of the Møre & Romsdal fish industry in Norway. Without these “user destinations” of the products originating in the Møre & Romsdal fish industry, it would cease to exist. No matter how much of a local network there is, without the global networks and the trans-local interactions in these, the industry and the region in which it is situated would not survive for long. It is not merely a question of creating or aiming to spawn local or regional networks. It is more a matter of facilitating the organic growth and development of regional networks to make the region networked – connected to other regional and global networks. Survival and success lies in a region being networked rather than being the locus for a regional network.

To envision the Møre & Romsdal fish industry without a global network is as unlikely as to envision it without the regional or national networks. The reason is that these networks are highly intertwined at actor, resource and activity levels. For example, bacalao producer Fjordlaks links the various networks by being represented in both Portugal and Norway, by having offices in both Aveiro and Ålesund, by adapting activities in Ålesund to those of a receiver in Aveiro, or Lisbon. The Norwegian salmon exporter Pan Fish flies fresh salmon to Japan, which requires great adaptation in activities and resources both in Norway and Japan.

The overall picture of the Møre & Romsdal fish industry that we want to paint here is a network that is thick with imprints from many other places, which in combination with its internal structure and its natural conditions creates its special features and unique traits. The Møre & Romsdal fish industry is a successful industry not primarily because it is located in Møre & Romsdal, but because it links to other places regarding Møre & Romsdal as an important place in the world. It is important because other say so. It is important because it is a networked region and not merely a region with a network.

The networked nature of economies

The picture that we have painted here of the Møre & Romsdal fish industry is the picture imprinted by the local and trans-local interactions that are linked to it. These interactions forms the industry and shapes it and gives it a certain characteristic based on both the specific geographical features of the place itself, as well as on the features of other locations much farther away.

The features of other locations shaping the industry “from a distance” is channeled via the trans-local interactions among actors in the network, and draws on the resources and activities that are situated at geographically distant places. As such, economies are relatively independent of geographical space, but by the same token, as has been pointed out elsewhere (e.g., Baraldi, et al., 2006) and as we have seen in this study, few economies are entirely dislocated from a geographical place. Not even the global financial system is entirely dislocated from the geographical places which leave more or less obvious imprints. The recent financial crisis is a case in point. The bad debts stemming from homeowners not being able to pay their dues in the U.S. made such a strong impact on the global financial system so that it started chain reactions which eventually almost overthrow the entire system – because of the imprint from one place in the world on many others. But what is even more interesting is the speed at which this impact was channeled via the trans-local interactions in the computer networks of the financial system. The global financial system based on fast computerized networks that Manuel Castells described a while ago (Castells, 1998) showed one of its more disturbing sides.

This example and the results from this study warrants a careful and scrupulous approach towards economies in general and the impacts that certain places can have on other places of the world as the effects are being channeled from one place to another. In this respect, the trans-local relationships between places functions as conduits channeling effects between them over great distances and at great speeds. They are the mechanisms of spreading in these economic systems. It has made our economies even more connected, not only to our geographically neighboring economies, but to technologically and economically neighboring economies regardless of their geographical location in the world. This is one of the most important effects of the globalization that we have witnessed since the 1970s, and it is one of the most important lessons to learn: Our economies are networked. One place can have strong imprints on other places more or less distant. However, the more distant they seem, the more complexity the economic systems displays, and the less transparent the economies appears, the easier it is to oversee, forget and even ignore the fact that no economy is entirely independent and buffered from imprints from others. Economies are networked.

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Appendix: List of interviews

Company	*Interviewee*	*Position*	*Date*
Cod export	Tor Helge Valderhaug	Owner, Manager	December 11, 2002
Fiskeri og Havbruks-næringens Landsforening	Jan Thorsen	Project leader of ”Pelagisk Forum”	January 4, 2005
Fjordlaks, Ålesund	Svein Floløø	Manager Quality Control	December 11, 2002
Global Fish HQ Ålesund	Jan Roar Hatlem	Logistics Manager	June 28, 2005
Global Fish HQ Ålesund	Geir Robin Hoddevik	Managing Director, sales and purchasing representative	October 28, 2005
Global Fish Liavåg	Rune Hoddevik	Manager	October 12, 2005
Global Fish Liavåg	Geir Tore Hjelle	ICT Consultant for Global Fish	October 12, 2005
H.Koppernæs & Snr. AS / Vedde Sildoljefabrikk	Hans Petter Koppernæs	Chairman of the Board of Directors	March 4, 2003
Norges Sildesalgslag	Kenneth Garvik	Sales Director	January 4, 2005
Norges Sildesalgslag	Svanhild Kambestad	Consultant	January 4, 2005
Olav Strands Fiskeriselskap	Solveig Strand	Director	October 28, 2005
Pan Fish, Ålesund	Dag Nikolai Ryste	Regional Director, Asia	December 11, 2002
Pan Fish, Ålesund,	Jon Hallvard Roaldsnes	Sales Director	May 22, 2006
Pan Fish, Ålesund,	Arnfinn T. Nygård	Sales Manager, KAM Japan	May 22, 2006
Strand Havfiske AS	Janne-Grethe Strand Aasnæs	Managing Director and owner	March 5, 2003
Strand Sea Services	Erik Juelsen	Technical Manager	March 5, 2003
Strand Sea Services	Solveig Strand	Managing Director	March 5, 2003