

**CHANGE AND STABILITY:
The Role of Women in Norwegian Fish Farming**

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Abstract Fish farming is one of the fastest growing industries in Norway. During the last two decades it has developed from an industry composed of small, locally-based family businesses to a modern, capital intensive, globalised industry dominated by large corporations. The successful history of Norwegian fish farming has been strongly male dominated. Although there have been women in the industry, their contribution has not been very visible. Moreover, the share of women employees in the industry declined from 18.8 percent in 1994 to 12.4 percent in 2005. This article analyses the position of women in Norwegian fish farming and discusses possible explanations for the increasing male dominance in the industry during this period. Explanations related to changes in the industry, changes in the labour market, and those linked to the gendered image of fish farming as an industry are explored. Implications for practitioners and policy makers of this increasing male dominance are discussed.

Introduction

Norwegian fish farming is a strongly male-dominated industry. Although Norway, like the other Scandinavian countries, is generally seen as one of the pioneers when it comes to creating equal opportunities for men and women, a gendered division of labour is still a dominant characteristic of the Norwegian labour market. During the last few decades Norwegian women have increasingly become part of the working population, and currently constitute half of the Norwegian labour force (Teigen 2006). However, women and men still tend to be channelled into different training programs and professions. This has been identified as the Norwegian paradox (Kvande 1999). Low women's participation in the fish farming industry illustrates this on-going situation.

Fish farming is one of the most rapidly expanding industries in Norway. It is fast growing, globally-oriented and undergoing rapid technological and organisational changes. In 2003, Norway was the eighth-largest fish farming nation in the world, producing mainly salmon and trout (Statistics Norway 2003). Norway constitutes the largest supplier of farmed salmon in the European market. The building of the industry from scratch into a big, successful and economically important industry over the past three decades is one of the success stories of the Norwegian business sector. In addition, fish farming is expected to help create a robust Norwegian economy in the future when the oil-industry will be of less importance. In particular, this industry has been seen as important to securing jobs in rural areas along the coast.

Globally, images of fishing and fish farming industries tend to be male (Frangouides and Pacual-Fernández 2004; Nadel-Klein and Davis 1988; Neis *et al.* 2005; Sloan 2004). This is also the case in Norway (Alsos and Pettersen 2001; Gerrard 1983, 2005). There have always been more men than women working in Norwegian fish farming. The pioneers in the industry were mainly men, and men usually owned, managed and worked on the fish farms (Røst 1986; Sandberg 1983). Many of the employees in fish farming were recruited from traditional fisheries which have always been male dominated. Most commonly, women worked in slaughtering and processing, and more seldom within primary production (Røst 1986). That said, there have always been some women who have worked on the farms, including women who have been managers or entrepreneurs (Strand 1999; Alsos and Pettersen 2001). In small family firms especially, women have been employed part-time in the business. Further, women probably have had a more important role in fish farming than implied by the statistics. Several studies document the importance of the unpaid work of women in family enterprises in coastal communities (Fyhn 1991; Gerrard 1983, 1995; Larsen 1980; Ljunggren *et al.* 2000; Pettersen 1997).

The share of women's employment in fish farming has probably never been as low as it is today. There has been a marked decrease in the proportion of women in the industry during the last decade (Alsos and Pettersen 2001). Today, very few women take part in the fish farming industry, either as employees, managers, board members or owners. Women benefit from the jobs, experience and economic outcomes of this expansive industry to only a small extent.

This article analyses the development of women's employment in Norwegian fish farming from 1994 to 2005 and explores the situation for women in the industry today. Possible explanations for the increasing male dominance in the industry are discussed. Moreover, the gendered constructions of fish farming as an industry are highlighted. The article

draws on multiple data sources, including official statistics, a postal survey among firms within the industry, as well as qualitative interviews with women and men in the industry at two points in time. The study is limited to the production of salmon and trout, the main products of Norwegian fish farming. Further, we will limit our empirical investigations to primary production, which is production of juvenile fish and grow-out production. Juvenile fish production is the process from hatching until the fish is ready to enter the sea. This production takes place on shore in fresh water. Grow-out production relates to production of adult fish to be consumed. This takes place in farms at sea, which must be reached by boat. Activities related to slaughtering, processing, marketing, and sales are not included in the analysis. Women have traditionally had a larger role in these parts of the value chain than in the very male dominated primary production. As these activities are subject of quite different processes related to recruitment, status, qualifications demanded, and gender constructions, we do not consider them here.

The remainder of this article is divided into five sections and a conclusion. The following section gives a brief description of the development of the Norwegian fish farming industry and its present characteristics. The history of the industry sets the context for our analysis of women's participation in the industry, to which we turn after a brief overview of our methods and data analysis. In section three, women's position in the industry today, as well as changes during 1994–2005, are described. Further, we explore alternative explanations for the low proportion of women in fish farming and for increasing male dominance. The fourth section explores the gendered division of labour within the industry, linking it to gendered constructions of the industry. The fifth section discusses main findings as well as implications for policy makers and practitioners. In the final section, conclusions from the study are drawn.

The Norwegian Fish Farming Industry

The Aquaculture Act of 1973 regulated the establishment of Norwegian fish farming. One intention of the Act was to provide the legal basis for an explicit strategy of using fish farming to generate jobs in areas with poor employment opportunities, and to contribute to the maintenance of the population distribution. Fish farming was supposed to contribute to regional economic development through the development of locally controlled and operated businesses. Until 1973 anyone could establish a fish farm. However, after 1973, a license was required and access to salmon and trout farming licenses became strictly restricted.

According to the Aquaculture Act of 1981, fish farms should have local majority ownership and individuals were not permitted to have a majority owner interest in more than one farm. In 1985, legislation concerning juvenile production was relaxed, and in 1988 the maximum production volume for grow-out facilities was increased from 8,000 to 12,000 m³. In 1991, the Aquaculture Act was further liberalised. The rules requiring local ownership and majority owner interest in only one farm were revoked. This indicated a political and ideological shift. Previously, focus was placed on local control, regional development and small-scale production. After 1991, commercial business development, profitability and market adjustment were emphasised (Spjelkavik 1996).

In the beginning, fish farming in Norway consisted of several small farms. These were often family businesses with local ownership (Holm *et al.* 1990). Fish farming was mostly a traditional rural industry similar to farming and inshore fishing where work organisation was embedded in the household, the wider family and the community. The central unit of production was the household and the family. The family owned the business, a member of the family was manager and the employees were usually family members, relatives or neighbours. Fish farming was not only an occupation or a source of income, but also a way of life. The owners were usually involved in all kinds of work, from feeding the fish to accounting and sales (Spjelkavik 1992).

At the beginning of the 1990s, the Norwegian aquaculture industry was marked by a crisis. Fish diseases increased considerably at the end of 1980s, causing economic problems for many fish farmers. Moreover, the liberalisation in juvenile production led to overproduction and the prices of juvenile fish fell dramatically. Together with an increase in the maximum permitted production volume in grow-out farms, this led to a strong increase in production of salmon and trout. As a result, market prices fell. The Fish Farmers' Sales Organisation (FOS)¹ tried to avoid a collapse in the market by reducing the amount of fish offered in the market and storing the fish in freezing plants. This solution was not very successful and FOS went bankrupt in 1991. Consequently, many firms within the industry also experienced bankruptcy (Johnsen and Lindal 2006). Concurrently, there was a liberalisation in licence regulations. Furthermore, capital requirements increased. In total, this led to a comprehensive restructuring process in the industry during the 1990s. Licences became concentrated among fewer and larger companies. This also implied a dislocation of decision control from the local level to remote actors (Aarset 1997).

At the start, concentration of licences was regionally based. The horizontal integration in the industry was spread among many companies. This led to a more diverse industry, with both small and large companies

(Berge and Bjarnar 1998). By the end of the 1990s the horizontal and vertical integration of the industry had increased extensively. A large and increasing proportion of Norwegian licences are now controlled by a relatively small number of owners, often multi-national corporations. In 2001, sixty-five percent of the licences were controlled by companies owning five licences or more. The ten largest companies owned forty-one percent of the licences for farming of fish for food (Alsos *et al.* 2003). In 2005, the industry's concentration was even greater. Still, the industry continues to include several small and medium sized fish farming companies.

The fish farming industry has also been modernised and professionalized. From being a new industry based on experience, local informal knowledge, experiments, and simple technology, it became an established, capital-intensive industry, based on modern technology and scientific knowledge. There are an increasing number of wage earners relative to self-employed individuals. Most employees are engaged in full-time jobs while part-time and seasonal employment has been reduced. Working conditions have been improved with regular working hours, regulated shifts, and overtime payment becoming more common. Modern technology has made fish farming more efficient, and this has led to a reduction in the number of employees in the industry. In grow-out production the number of employees was reduced by close to one-third from 1994 to 1998, although thereafter there has been only a minor decrease in employment. In juvenile production the number of employees was stable until 2002, after which it declined somewhat (Alsos and Pettersen 2001; Pettersen, Lien and Alsos 2007). While farming, slaughtering, and processing were closely integrated during the early years of the industry, they are now more separated. Today, processing is concentrated in fewer and bigger processing plants in fewer communities and processing has become less labour intensive (Berge and Bjarnar 1998).

The Norwegian fish farming industry has experienced several fluctuations between golden eras and crises. The period from 1997 to 2000 was a good period, with high market prices for salmon and increased profits. In 2001, prices for salmon fell dramatically, resulting in lower profits and many bankruptcies. As a result, the degree of concentration and integration increased. Further, the focus on efficiency and cost reduction became even stronger. During 2005, prices of salmon increased again resulting in increased profitability.

These comprehensive changes in the fish farming industry related to technological intensity, industry structure, and market situation, have had an impact on the number and types of jobs offered as well as the qualifications demanded by the industry. The analyses of women's position in

the industry today and changes over the past decade need to be considered in relation to these broader changes.

Methods and Data Analysis

This article draws on multiple data sources, including qualitative as well as quantitative data. Official statistics on Norwegian fish farming (Directorate of Fisheries 2006) were used to analyse changes in women's share of employment from 1994 to 2005. Data was available regarding the number of women and men employed in the industry as well as the number of hours worked by women and men. Percentages were calculated by the research team. The register of licence owners (Directorate of Fisheries 2000) was used to analyse the gender distribution of licence owners. The register provided information on the ownership structure of firms holding fish farming licences.

A postal survey among fish farming firms was conducted in 2000. A three-page questionnaire was sent to a sample of 462 firms. Thirty were removed because on receipt of the completed questionnaire, it became apparent that they were no longer conducting fish farming production. At total of 173 completed questionnaires were returned, resulting in a response rate of forty percent. Data from the survey was used to calculate the share of women in management and board positions.

Two rounds of qualitative data collection were undertaken. In 2000, thirty in-depth interviews were carried out. The informants included women in various positions in the industry, male managers in the industry, and women who had left the industry. In 2006, ten follow-up in-depth interviews were conducted with women in various positions, and with male managers in the industry. The interviews provided data on processes and structural changes related to the development of women's share in fish farming as well as the situation for women currently employed in the industry. Detailed information on the data and methods are provided in Alsos and Pettersen (2001), and Pettersen, Lien and Alsos (2007).

Women's Position in Fish Farming – Changes over the Last Decade

In 2005, 12.4 percent of the employees in the fish farming industry were women. In addition to being a small minority of employees in the sector, women also had a greater propensity to be part-time or seasonally employed than men. In total, women were responsible for only 8.4 percent of the employment hours in the industry. The corresponding percentages for 1994 in terms of total employment and employment hours were 18.8

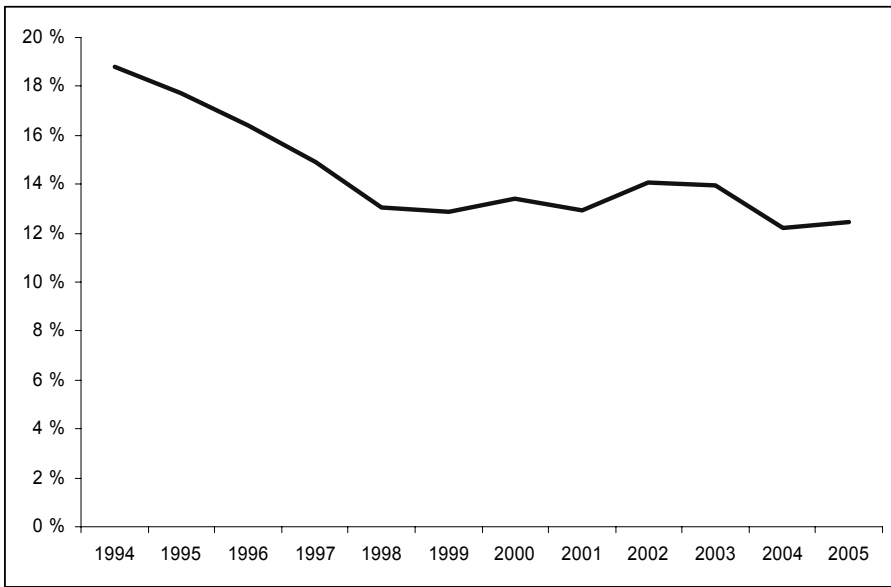


Figure 1. *Proportion of women employed in fish farming in Norway, 1994-2005.*
(Source: Directorate of Fisheries 2006)

and 10.6. There are no official statistics for earlier years, but sample studies indicate that the share of women was even higher during the 1980s (Holm *et al.* 1990; Directorate of Labour and Directorate of Fisheries 1986). Thus, the share of women within the industry has declined markedly over the last decade (See figure 1).

Increased productivity in the industry has also led to an overall reduction in the number of employees during this period. The number of women working in Norwegian fish farming declined by fifty-four percent, from 825 in 1994 to 376 in 2005. Over the same period, the number of men employed in the industry declined by thirty-one percent, from 4393 to 3024. These numbers give a picture of the fish farming industry as heavily male dominated, similar to many other primary and secondary industries in Norway. In Iceland also, fish farming is male dominated. In 2004, 18.5 percent of the employees on Icelandic fish farms were women (Karlsdottir 2004), which is higher than female employment in the sector in Norway at that time.

Characteristics of the Coastal Labour Market

To understand women's roles in fish farming and the changes that have taken place over the last decade, it is necessary to discuss gender segregation in the labour market. Occupational gender segregation is an important feature of all societies, especially in western industrialised nations (Blackburn *et al.* 2002). The Norwegian labour market is among the most

gender divided in Europe (Ellingsæter and Rubery 1997; Teigen 2006). Women and men tend to hold different occupations and work in different industries, firms, and jobs (Vikan 2000). Women typically work in the service sector while secondary and primary production are typically male-dominated areas. Women mostly work in the public sector, while men work in the private sector. Moreover, the labour market is vertically gendered segregated. The share of women in management positions is relatively low in the private sector, particularly when it comes to top management (Teigen 2006). There are also few women board members in private companies (Spilling 2002).

The Norwegian labour market is also regionally differentiated (Seierstad 1991; Vikan 2000). The coastal labour market has been characterised by primary industries and occupations with lower demands for formal qualifications (Brox and Juvkam 1999; Seierstad 1991). Consequently, the labour market in coastal areas of Norway is gender, as well as competence, segregated (Seierstad 1991; Onsager 1987). When analysing the coastal labour market, Onsager (1987) argued that unskilled, male labour traditionally has been flexible and could easily change between jobs in fishing, construction, carpentry, shipping and fish farming. Men's experiences and skills from fishing produced a 'coastal knowledge' that was easily transferred to fish farming, and many employees were recruited from traditional fisheries (Spjelkavik 1996). Unskilled female labour in coastal areas has mainly been employed in public health and care, shops and hotels, and fish processing. Women have not enjoyed the same flexibility as men in changing jobs in or between different sectors because of informal competence demands (Onsager 1987). While women's experience in traditional fish processing was easily transferred to processing of farmed fish, women less frequently possess the 'coastal knowledge' needed to go into primary production in fish farming. Moreover, skilled female as well as male labourers have held jobs requiring formal competence without the same opportunity for changing jobs as unskilled male labour. Men with higher education have found jobs in both the private and public sectors, while women with high education have been working almost entirely in the public sector (Onsager 1987).

However, another important characteristic of the coastal labour market has been the role of self-employment in small household-based businesses. Fish farming became an integral part of this local area of self-employment when it started in the 1970s (Spjelkavik 1996). Traditionally, men have been the central economic actors in this field of self-employment in coastal communities. Also, men were the entrepreneurs in the development of fish farming as a new business opportunity (Røst 1986; Sandberg 1983). However, women typically gained a role in these household-based businesses as a result of their flexible role in the tradi-

tional household adaptation in coastal communities in Norway. A regional study from the 1980s found that in small family firms forty per cent of women were married to a fish farmer, and participated in the work at the fish farm. This included tasks such as feeding the fish, cleaning facilities, repairing equipment, as well as slaughtering and processing fish. However, this was usually a part-time commitment of less than ten hours a week (Røst 1986).

Women have always had an important, albeit often invisible, role in family businesses (Gerrard 1983, 1995; Larsen 1980; Pettersen 1997). They have also crossed the gender division of labour when needed (Bra-trein 1976). Women have been the flexible part in the household, and have combined work in the family business, work as wage earners, and undertaken childcare and domestic work. In fishing, the women's role has been the 'ground crew'. This refers to women performing tasks ashore that make men's work easier and fishing more efficient. Furthermore, through their informal and flexible performance of different tasks, they coordinate business, family life, and community activities (Gerrard 1983, 1995; Thiessen *et al.* 1992). The contribution of spouses in small family businesses has been important, but not always visible, either in fish farming or in other industries such as agriculture, construction, and the commodity trade (Baines *et al.* 2003; Fyhn 1991; Larsen 1980; Ljunggren *et al.* 2000).

Women's traditionally flexible role in the household was a way into fish farming in the early phase of the industry. Also, the traditional gendered labour market provided women with an entrance into fish farming. For instance, some of the women working in slaughtering and processing were recruited to work on the fish farms when extra work force was needed. As farming and processing used to be more closely integrated, shifts between farming and processing were easier to do. Furthermore, lack of labour supply in remote coastal areas gave some women job opportunities in fish farming. Another possible way in was through education. In the 1980s, there were few persons with formal qualifications within aquaculture on the labour market. When the demand for this type of competence rose, women with the education in this area were attractive to employers (Alsos and Pettersen 2001).

In recent decades, employment in traditional rural industries has declined, while there has been strong growth in public and private services. Amongst other things, this has led to fewer self-employed individuals as well as to greater demands for formal qualifications. These changes have made the coastal labour market more rigid. Flexible changes between types of jobs have become more difficult. Today, the public sector is the most important for women employees in coastal communities as well

as elsewhere in Norway. In rural areas the public sector is even more important due to the lack of other opportunities (Sørli 1998).

Why has Male Dominance Increased?

To explain the gender segregation in the labour market it is normal to distinguish between labour supply and labour demand factors (Anker 1997; Teigen 2006). Labour supply explanations focus on what women and men choose or prefer to do. From this perspective, occupational segregation could be seen as a result of women and men's rational choices (Blackburn *et al.* 2002; Hakim 2000; Petersen 2002). However, some studies highlight the fact that an employee's choice of occupation depends on the employment conditions they are offered (Hansen 1995; Teigen 2006). Explanations related to labour demand focus on employers' preferences and the opportunities offered to men and women when it comes to promotion and career development; for instance, how gender stereotype preferences and expectations produce gender-segregated organisations (Acker 1990).

Accordingly, the increasing male dominance in primary production in fish farming could be explained either by changes in women's preferences and choices, or by changes in employer's preferences and women's opportunities in fish farming firms. It is also necessary to distinguish between why women are leaving fish farming and why few women are going into fish farming. The decrease could be caused by more women leaving the industry, but it could also be related to fewer women going into fish farming. In the following, demand side as well as supply side factors will be discussed.

The reduction in the share of women working in fish farming is related to the major changes in the industry during the 1990s. From consisting of several small, locally owned family businesses, fish farming has become a globalised, modern, and capital intensive industry with fewer and larger companies. Farmed fish production has become more advanced technologically, more efficient and increasingly professionalized. As a consequence, the number of employees has been reduced, particularly in the part-time and seasonal work categories. Changes in technology and conditions of production led to fewer seasonal variations in fish farming and more regular production throughout the year. It also seems to be easier for medium sized and larger fish farms to have operational continuity. The larger the fish farming company, the higher the percentage of full-time employees (Berge and Bjarnar 1998). The increasing number of larger fish farms is therefore important in explaining the increase in full-time employees in fish farming.

Women were more likely to be part-time and seasonal workers than men (Alsos and Pettersen 2001). The reduction in part-time and seasonal

work is therefore one explanation why the share of women working in fish farming has been reduced. Further, the reduction of women in part-time and seasonal jobs has been larger than the reduction of men in similar positions. One reason for this seems to be that work in fish farming is gendered and that different tasks have been disproportionately rationalised. Women have traditionally worked in administration, sales, cleaning and slaughtering. Traditionally, women working on these types of tasks also served as an employment reserve force that could be utilised when needed in primary production. Fewer and larger companies led to a centralisation of administration, sales, services and maintenance-tasks, and slaughtering (Berge and Bjarnar 1988), and therefore these jobs disappeared in branch locations. As a consequence, women have lost their 'traditional tasks' in the industry, and have disappeared as a reserve labour force.

Further, the structural changes resulted in fewer family businesses. Women's traditional role as the flexible workers in household businesses has therefore been markedly reduced. As the number of small family businesses decreased, fewer women held part-time positions in the industry (Alsos and Pettersen 2001). The traditional organisation of economic activities embedded in the household and the wider family also changed during the restructuring and professionalisation process throughout the last decade. Consequently, the particular 'women's jobs' in the industry were reduced and women wanting to work within fish farming had to be recruited on the same basis as men.

When part-time and seasonal jobs were reduced, some of them were replaced by new full-time jobs. Women were recruited to these jobs to a lesser extent than men. This intensified the decrease in female employment. The areas and processes of recruitment to these positions seem to be different from those of seasonal and part-time employees.

Fish farming was a part of the traditional coastal labour market for male employees. This still affects how managers and employers perceive work in fish farming and what they consider to be suitable jobs for men and women. Managers and others tend to perceive certain jobs in fish farming as best suited to men. This is partly rooted in the hard manual tasks and physical work which used to characterise the industry (Alsos and Pettersen 2001). These attitudes still influence recruitment to the industry. Recruitment processes have often been informal. Managers, usually men, have hired people they know in their community, usually men. Practical experience, especially from traditional fishing, has been an important qualification. Due to the traditional division of labour in these communities, very few women possess such experience. Today, traditional fishing has become a less important source of recruitment (Berge and Bjarnar 1998), the demands for formal training have increased, and

new jobs are advertised to a larger degree. This could lead us to expect that it would become easier for women to gain entry to fish farming. But still, relevant practical experience is perceived as very important to secure a job in this industry (Alsos and Pettersen 2001). Even today, when women more so than hitherto have relevant formal education, it seems that men are preferred because of their practical experience:

Men employ men. They employ men from the local community – particularly for positions as workers on the farms. Women from urban areas with higher education are not hired. To be hired you need practical experience from the industry (a woman fish farm worker).

As shown, changes in demand side factors are important in explaining the reduction of the share of women working in fish farming. But supply side factors also play a role. Women's employment in fish farming has also been influenced by their changed preferences and choices regarding careers. It seems that women do not find working in primary production in fish farming attractive to the same degree as previously:

When women were not needed any more, they left the industry. Fish farming was not the first choice of women. It's like agriculture. Women are needed on farms to make a living, but many women wish for something else and get a job outside the farm (a woman who had left fish farming).

Women's adaptations in coastal areas have gradually changed. Women in coastal areas have increased their educational level, and are more interested in seeking permanent employment. Today, women more often have their own careers, independent of their husband's business (Brandth, 2002, Gerrard 1995; Pettersen 1997, 2000; Wiborg 1995). Consequently, they work less in family businesses and act as independent job seekers in the labour market.² To go into fish farming now became a question of choosing an occupation, and not a question of family obligations. Fish farming is not among the obvious choices when women choose an occupation as it is not a part of the 'usual' labour market for women in coastal areas. Consequently, few women are looking for jobs in fish farming.

What women prefer to do depends on what they are offered. The unemployment rate was high in Norway at the end of the 1980s. In coastal areas, employment opportunities for women were particularly few. The unemployment rate was between ten and fifteen percent in certain coastal areas in the north in the 1980s, and there was also a considerable unreported unemployment among women (Onsager 1987). Young women especially, and women working in fish processing or in the private service

sector, experienced a high risk of unemployment. Some of the women who used to work in primary production may have been what Seierstad (1991) refers to as 'unwillingly employed' in the local field of self-employment. These people preferred other types of jobs, but they had no alternatives locally. When other alternatives emerged, they chose these. Women experienced improved opportunities in the labour market in coastal areas during the 1990s when employment was increasing nationally. While the public sector showed a low growth rate in rural areas during the 1980s, it expanded considerably in the 1990s. This created job opportunities for women, especially within health care and social services (Statistics Norway 1998). Women who had been 'unwillingly employed' were given an opportunity to leave fish farming.

In addition, the public sector usually offered better working conditions as well as a secure and stable income. Women were enticed out of marginal jobs in the fish farming industry. Seasonal and part-time work in fish farming often meant insecure income and inferior working conditions. The choice seems to be between a secure job in the public sector, or an insecure job in the fish farming industry (Alsos and Pettersen 2001). The fish farming industry was not based on regular working hours and relied on significant overtime work. It may be harder for women than men to combine work in fish farming and childcare, since women still have the main responsibility for children and housework.

Nevertheless, the restructuring and professionalisation of the industry has led to better working conditions, more regulated work-hours, regulated shifts, and payment for overtime. The increase of large and 'professional' companies resulted in more jobs in administration. Women have traditionally conducted administrative tasks in male-dominated industries. Moreover, technological development has resulted in physically less strenuous work in fish farming. Today there are a variety of jobs and tasks that do not demand physical strength (Alsos and Pettersen 2001). However, the increase in administrative jobs, better working conditions and less strenuous physical work has not prevented the general decline in the percentage of women employees in the industry.

An important explanation of male dominance is that primary production in fish farming was not, and is still not, a part of the labour market as women perceive it, whether for skilled nor unskilled female labour. Neither changes in the labour market the last decade nor policies for equal opportunity for men and women seem to have changed this. Preferences, individual choices, and decisions in the labour market are influenced by cultural and social values. In the coastal labour market, occupations are gendered. As we have described, some occupations are constructed as 'male' and some as 'female'. These constructions influence what people, both employees and employers, perceive as suitable jobs for

women and men. Both traditionally and today, fish harvesting has been perceived as a male activity:

Fish is a man's world. Women can process dead fish on shore, but they cannot work with live fish. Anyhow, this is how it is on this island. It is not a tradition for women to go onboard boats and participate in fishing, and to operate a boat is a requirement for working in primary production within fish farming (a woman fish farm worker).

Gendered understandings of industries, tasks, and activities in coastal communities are important to understanding increased male dominance in fish farming. However, these gendered understandings are not uniform within the industry. On the contrary, there are significant differences among sectors of the industry. These differences have consequences for the gendered division of labour within fish farming, as we discuss in the next section.

The Gendered Division of Labour within Fish Farming

Not only are there few women in fish farming, a gendered division of labour is also evident within the industry. First, there is a vertical gender division indicated by the fact that management positions, in particular those in top management, are mainly filled by men. In 1999, 2.2 percent of top managers in the industry were women, while 3.6 percent of the boards of directors were chaired by a woman (See Figure 2). This is markedly lower than the situation for private firms in Norway in general, where twelve percent of top management positions in limited companies and ten percent of chairman positions were held by women (Spilling 2002). Second, Figure 2 also shows that there is a horizontal gender division, indicated by the relatively higher share of women within juvenile fish production compared to grow-out production. While the latter is characterised by few women (7.8 %), the former had 24.3 percent women employees in 2005. This is a higher proportion than in many other manufacturing industries.

Ownership and the Vertical Gender Division of Labour

One important reason for the relatively low number of women in management and board positions is ownership. Traditionally, most fish farming firms were family businesses. Board and management positions were assigned usually on the basis of ownership or family membership. As the entrepreneurs of the fish farming industry were mostly men, the top

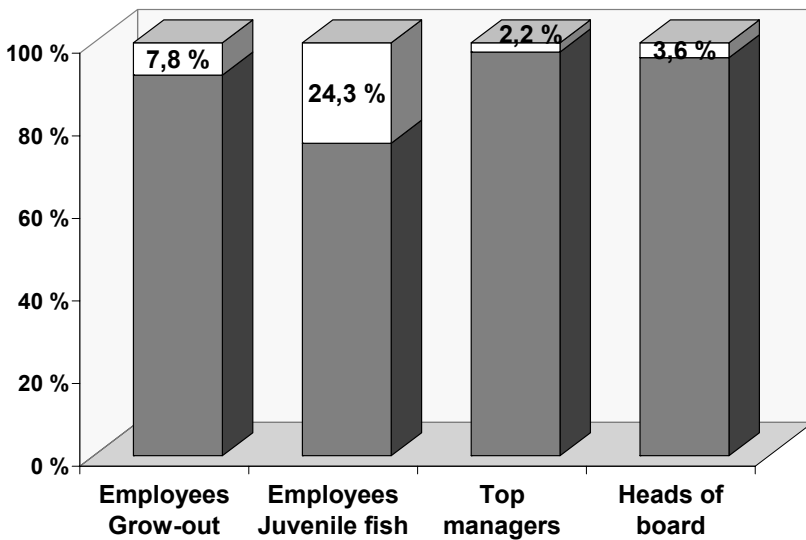


Figure 2. *Percentage of women in different employment positions in Norwegian fish farming. (Dark part refers to men, white part refers to women). Data on employees from 2005 (Directorate of Fisheries 2006). Data on top managers and heads of board from 1999 (survey data).*

management positions were also filled by men. However, family membership has given some women access to management and board positions through inheritance or marriage. In 1999, thirty percent of boards in the industry included at least one woman board member, while seventy percent included only men. However, if there were women on the board, there was quite likely to be more than one. In 14 percent of the boards at least half of the board members were women. Women board members are typically found in small firms with fewer than five licenses. In the larger firms, and firms that cannot be characterised as family firms, the share of women in top management and board positions is even lower (Alsos and Pettersen 2001).

Thus, ownership is the key to management and board positions within fish farming as within many other industries. Figure 3 illustrates how ownership shares within the fish farming industry are distributed: 64.2 percent of the licences are in firms owned by companies, 32.5 percent are in firms owned by men, while 3.2 percent are in firms owned by women. Women's ownership is typically small equity shares. Moreover, female owners are most often found in smaller firms.

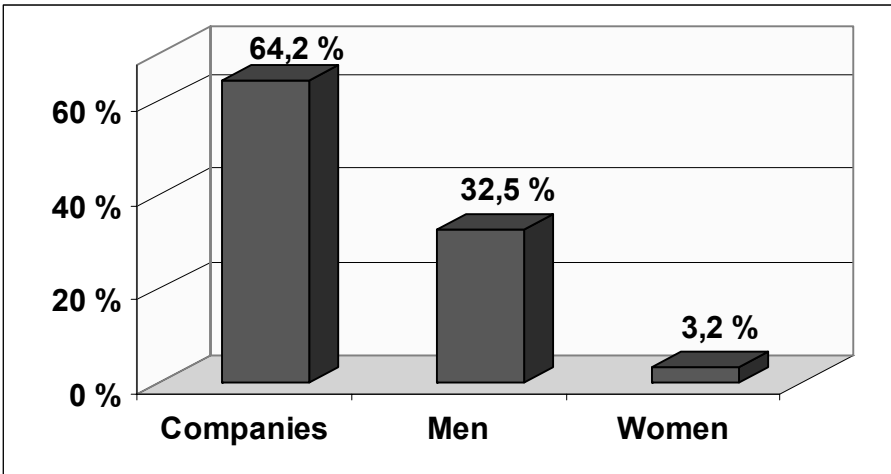


Figure 3. Ownership structure in Norwegian Fish Farming in 1999³

The Horizontal Gender Division of Labour

Similar to traditional fishing, women in fish farming typically work in processing, while men dominate primary production. Traditional ‘women’s tasks’ have been slaughtering, processing, cleaning, and administration. Within primary production, women often work as staff with administrative tasks and less frequently on the production line. As mentioned, the division of labour is particularly evident when we distinguish between juvenile fish production and grow-out production. Moreover, the decrease in the proportion of women employed in the industry has first and foremost occurred within grow-out production (See figure 4). While the percentage of women employees has been quite stable in the production of juvenile fish, at approximately twenty-five percent, it has declined noticeably in grow-out production, from 16.3 percent in 1994 to 7.8 percent in 2005. The reduction was particularly steep until 1999, after which the proportion of women has since stabilised at around eight percent. The relatively large net reduction of jobs in grow-out production has contributed to this difference. The demand side pressures discussed above have been stronger here than in juvenile fish production where the total number of jobs has been relatively stable during this period. However, the marked difference between the two parts of the fish farming industry also illustrates how activities and tasks within the industry are clearly gendered. This is discussed in the next section.

Gendered Understandings of Grow-out and Juvenile Fish Production

Factors explaining the gender divide are several, and seem to be related to types of work and working conditions, as well as the images of work related to the two forms of production. The grow-out work of fish farming

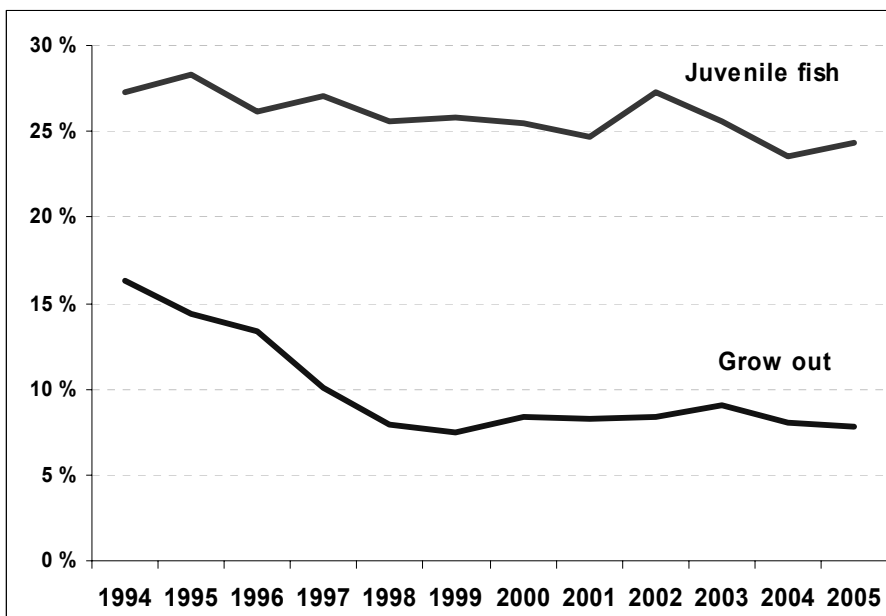


Figure 4. *The percentage of women employment in grow-out and juvenile fish production 1994 2005. (Source: Directorate of Fisheries 2006)*

takes place at sea. Workers need to go out in a boat to feed the fish. One gets wet and cold, and some days the weather conditions may be tough. In the early phase of the industry, grow-out production included several hard manual tasks with little machinery to ease them. However, increased use of technology and automation has reduced the heavy tasks extensively. Nevertheless, physical strength is often perceived as important in grow-out production:

The tasks at the farms are physically heavy. Even now, when the work has become mostly automated, there are still heavy tasks, such as pulling net-pens, and when something unexpected happens. Therefore, we do not want any farms with only women (a male manager, grow-out production).

The conceptions of physically heavy work remain despite the fact that the heavy tasks have been vastly reduced. This is related to the image of the industry, especially primary production. Everything that may be associated with physical strength and mechanical skills is given masculine qualities (Brandth 2001). As a consequence, grow-out production is considered a typically masculine occupation. Even today, when there are few heavy tasks left, the myths about the hard physical work remain. This is work for a ‘real man’. It contributes to masculine associations and seldom

attracts women. 'I never considered fish farming before I started here. I was looking for something quite different than physical work and working outdoors' (a woman fish farm worker).

Juvenile fish production takes place on shore, but outdoors. Employees do not need to know how to operate a boat and do not have to go out to sea in all kinds of weather. This gives an image of being less tough than grow-out production, and therefore more suited to women.

Moreover, grow-out and juvenile fish production demand different types of competences and also value competence differently. In grow-out production informal and practical skills, such as manoeuvring a boat, making fast the net-pen, and operating cranes are considered important. Women rarely have this practical and informal 'coastal knowledge'. In this way the qualifications required in grow-out production are gendered and disadvantage women. Juvenile fish production, on the other hand, is more biologically and technically advanced. Registration, monitoring, and regulation of the terms of production are essential tasks. Hence, more formally acquired skills are desired. This seems to make it easier for women to gain access to the new full-time jobs in juvenile production than in grow-out production. Women can more easily document formal competence. Thus, in recruitment situations, educated women applying for jobs within juvenile fish production are exposed to gendered constructions of competence to a lesser extent when they are evaluated, as their school certificates 'prove' their formal competence. In fact, many women have higher education in aquaculture than men. The share of women in higher education related to aquaculture has been around forty percent (FFK 2000).

However, informal competence is still a part of the basis of evaluation in recruitment processes in juvenile fish production too. An important part of the work is feeding the fish and controlling how the fish behave. This is also important in grow-out production, but in juvenile fish production it is even more critical to get good results; that is, good and healthy smolt. While the skills and competence needed in grow-out production are typically associated with masculine qualities, the skills and competence needed in juvenile fish production are more ambiguously gendered. On the one hand, there are requirements regarding technical competence which have masculine connotations. On the other hand, juvenile fish production is associated with caring, accuracy and patience. These are regarded as typical feminine qualities.

The association of juvenile fish production to feminine qualities is often used to explain the relatively high proportion of women in the sector. In particular, the focus put on caring aspects is highlighted in this respect. Women are viewed as being better than men at taking care of the juvenile fish, the 'babies':

When it comes to juvenile fish, this is understood as caring for the 'baby fish'. Female intuition is an asset. Women are more caring and more accurate when it comes to feeding and cleaning (a male manager in a large fish farming company).

There are no indications that this interpretation of women's role in juvenile production actually is important when it comes to recruitment. Neither is it significant with respect to how different types of competence are appreciated in the industry. Technical competence is still regarded as higher in the competence hierarchy than caring. However, these explanations give women a role in juvenile production, justifying their presence in the industry despite apparent lack of more masculine qualities. The judgements of the formal and informal competence needed in juvenile fish production are not as masculinely constructed as those for grow-out production. Consequently, these competence demands disadvantage women to a lesser extent.

However, the arguments related to caring for the 'baby fish' contribute to sustaining the clearly gendered image of the fish farming industry. In addition to its consequences regarding differences between grow-out and juvenile fish production, it is also associated with gendered division of labour within juvenile fish production. Work tasks are becoming increasingly specialised. This includes the designing of mechanical and technical tasks for particular staff members. These positions often seem to be occupied by men, while women are responsible for feeding and taking care of the juvenile fish. Again, the gendered understandings of tasks and qualifications are reproduced through the allocation of work tasks and fields of responsibility.

Discussion

Today's male dominance in fish farming is a continuation of the traditional gendered division of labour in Norwegian coastal areas. Historically, fishing communities had a clear division of work between women and men. Women combined housework and care of the children and elderly with small-scale farming. Men were away from home working as fishermen most of the year, and participated only in farming during the hay-making season (Larsen 1980). Nevertheless, this division of work was stronger ideologically than in practice. In particular, women regularly crossed the gender division of labour and did men's work when needed (Bratrein 1976). Still, culture and practice contributed to the codification of fishing as a male activity and produced a gendered division of labour in coastal communities. The gendered division of work is deeply rooted in

pre-industrial organisation of labour in Norwegian society in general. Norway has a longer agrarian and peasant tradition than most other European countries. Primary industries played a decisive role, and the household was the dominant unit of production until recently. This organisation of economic activity in the household and family work also implied a strong gender division of work. Solheim (2002) claims that this is an important reason why work is still so gender-based in Norway.

Despite this, some women have worked in fish farming. Women's entry into fish farming in the early phase was closely related to women's important, but invisible, role in family businesses in coastal areas. This role included working in the family business when they were needed. Now, work in fish farming has become a part of the regular labour market and not a part of household work. It has become a question of choosing an occupation rather than a question of family obligations. While previously women were part-time and seasonal workers, they are now engaged as full-time employees. Still, family relations are important for women's chances of achieving central positions as owners, board members, and managers. They achieve these positions more frequently in family businesses than in larger 'professional' companies.

On the other hand, the increasing role of large and 'professional' companies offers new possibilities for women, for instance in administrative positions. Further, better working conditions and more formalised recruitment routines should contribute to more employment opportunities for women in fish farming. However, the increase in administrative jobs has not prevented the general decrease in the percentage of women employees in the industry. In accordance with previous studies (Acker 1990; Kvande 1999), this study indicates that larger organisations also produce gender segregation.

To explain the decrease in the share of women working in the industry during the last two decades, both labour demand and supply factors are important. Structural changes within the industry seem to be most important. The transition from small family businesses to large corporations has changed work arrangements and the family's role in firms in the direction of less flexible work arrangements, more full-time engagement, and more professional management. The family is no longer an obvious choice when new employees are recruited. Traditional work organisation, where economic activities were embedded in the household, the wider family, and the local community, has been changed. Women are no longer as needed in the industry as earlier. Processes of recruitment have changed. Seemingly, this makes it more difficult for women to gain entry into the industry, even though an increasing number of women take higher education in aquaculture. However, women educated in aquaculture science tend to go into positions in public administration, sales, and

marketing, research, education, finance, and consulting connected with the fish farming industry, instead of in the industry itself (Alsos and Pettersen 2001).

Further improved opportunities for women in the labour market in coastal areas contributed to the reduction of women employees in fish farming. Women may have been 'unwillingly employed' in fish farming, and left when other job opportunities appeared. Jobs in the public sector have been especially attractive because they offered better working conditions and a more secure and stable income than seasonal and part-time employment in fish farming. Nevertheless, the decrease in the proportion of women has first and foremost occurred within grow-out production, while the percentage of women employees has been quite stable in the production of juvenile fish. One conceivable reason for this is that the net job reduction has been larger in grow-out production than in the production of juvenile fish. Another reason is that women find juvenile production more attractive than grow-out production, or that managers in juvenile fish production value women's competence higher than managers in grow-out production. The combination of formal and informal competence demands give grow-out production strong masculine connotations. In juvenile production, the combination seems to make the competence demands less masculine, even with feminine aspects related to caring, patience, and accuracy. These differences in competence demands are caused not only by structural factors, but also by culturally gendered understandings of work as different in juvenile and grow-out production.

The processes of gendering within the industry construct different images of the different parts of the industry. Fish farming is mostly associated with grow-out production. As this part of the industry is perceived as strictly masculine, this creates an image of the whole industry as giving employment for the 'real man'. However, this image does not reflect the reality. The fish farming industry has a great variety of jobs which demand different competences and skills. Physical work has become much reduced following the introduction of modern technology. Today, there are very few tasks, if any, that women are not able to manage because of lack of physical strength (Alsos and Pettersen 2001).

Creating opportunities for women in fish farming is a great challenge. One of the challenges is to set the role of women on the agenda and to change attitudes within the industry. Little will be achieved until leaders and board members of the industry and its firms regard female participation as important. In male dominated industries, women often become 'invisible' as competent labour. It is therefore important that leaders, board members, and owners in fish farming become aware of the importance of recruiting women. The supply of skilled and competent labour is a challenge to the industry (Borch *et al.* 1998, FFK 2000). Now

that more women are being educated in aquaculture it is opportune for the industry to recruit more women. The organisations and companies in the industry must themselves take action in placing the role of women on the agenda. The government should also be proactive. It is important to include the role of women in political statements, reports to the parliament, parliamentary propositions, and political programmes and plans.

Another challenge is to change the image of the industry from being masculine to one which is attractive to both genders. It is necessary to put an end to the myth of fish farming as work for 'real men'. This myth contributes to the exclusion of women. It is also important to highlight the variety of job opportunities in fish farming, the types of competence required, and to present a more accurate image of fish farming occupations. Since fish farming is not an obvious choice for women, it is important to make women in the industry more visible. Role models can make more women aware of the job opportunities in fish farming. Moreover, it is important to create meeting places and network opportunities for women to encourage them to stay in the industry. Helping women to improve their competence could also have an effect.

When seeking jobs in fish farming, practical experience is still very important. Women have less relevant experience than men, even if they have the same education. To provide women with relevant experience, one measure could be cooperation between companies and the educational system, for instance in the area of work placements for female students.

Improving working conditions (maternity and sick leave, flexible working hours) to attract workers (men and women) is another feasible strategy. It must be possible to combine family life and the job. A better working environment should attract skilled and competent labour. A majority of the companies in the industry think that the working environment becomes better when there are both men and women in the workplace (Alsos and Pettersen 2001).

A more radical measure could be equal opportunity as one of the criteria used when new licenses are allocated. Companies with female owners, with a female director, or with a majority of female shareholders, board members, or employees could take advantage of this to gain easier access to new licenses.

To increase the number of women in fish farming, it is necessary to adopt different strategies. Some of these must be addressed to the industry and the firms themselves, while others should be addressed to the education system so as to influence the women themselves. Last but not least, it is important to influence the political system to set equal opportunity questions on the political agenda.

Conclusion

As a new industry, fish farming presented fresh opportunities for the ideal of equal opportunities to be implemented. But instead of taking up this challenge, fish farming seems to have inherited the gender division of labour from traditional fisheries and consequently represents stability rather than change in the traditional gendered division of labour in coastal areas. With the exception of juvenile fish production, the number of women in the industry is low and decreasing, and there remains a strong gender division of labour.

Increasing male dominance in Norwegian fish farming is closely related to structural changes in the industry. The transition from small-scale family businesses to large and professional companies has resulted in changes in ownership structure, modernisation and professionalisation. This has led to altered tasks and work arrangements, changes in the family's role in businesses and new processes of recruitment to fish farming firms that have largely benefited male workers. Demand side changes in the industry favouring men have been reinforced by supply side changes in the coastal labour market as well as the general Norwegian labour market. While women have increasingly become part of the working population, and as more and more women attain higher education, they are seeking work in other areas than fish farming. Today, women in coastal areas are also seeking job opportunities outside family firms. Moreover, the increase in public sector employment in Norway has offered many new attractive job opportunities for women.

Male dominance is strengthened by the gendered division of labour within fish farming. While male dominance has been substantial and increasing within grow-out production, the share of women has been larger and more stable within juvenile fish production. This is partly a result of different work tasks and qualifications demanded in the two types of production. Further, net job reduction and changes in work arrangements have been more dominant in grow-out production. Nevertheless, the gendered division of labour within fish farming is also based on how competence is valued and on the gendered image created of these two parts of the industry.

The modernisation of the fish farming industry has taken place within a cultural context where work is strongly gendered. Technological shifts and structural changes in work organisation seem to adapt to the gendered division of labour rather than to change it. The Norwegian ideal of equal opportunities for men and women has not led to changes in these fundamental structures yet. Paradoxically, women have been leaving the industry in a period during which the work has become physically easier, and as larger and more 'professional' companies led to better

working conditions. Despite all the changes, the myth of fish farming as best suited for men still remains.

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Notes

- ¹ From 1978 onwards, by applying the Fresh Fish Act to fish farming, The Fish Farmers' Sales Organisation (FOS) was given a monopoly of the first-hand trade of farmed salmon in Norway. A licence provided by FOS was required to purchase salmon from farms, and the sales organisation also determined minimum prices.
- ² However, women still have an important role as advisers and in giving emotional support in small family firms (Gerrard 1995; Ljunggren *et al.* 2000; Pettersen 1997).
- ³ This figure shows the ownership structure in farming of fish for food. Most licences are owned by firms, most of which are limited companies. The figure shows the ownership in these companies. Most firms have more than one owner. Ownership is calculated according to ownership share, i.e. if a woman owns fifty percent of a firm she is calculated as owning fifty percent of the firm's licenses. However, most of the license-owning firms do have limited companies as major owners. We have not had access to the ownership shares in these companies.

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