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MARKETING FARM SALMON

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(Erik HEMPEL)

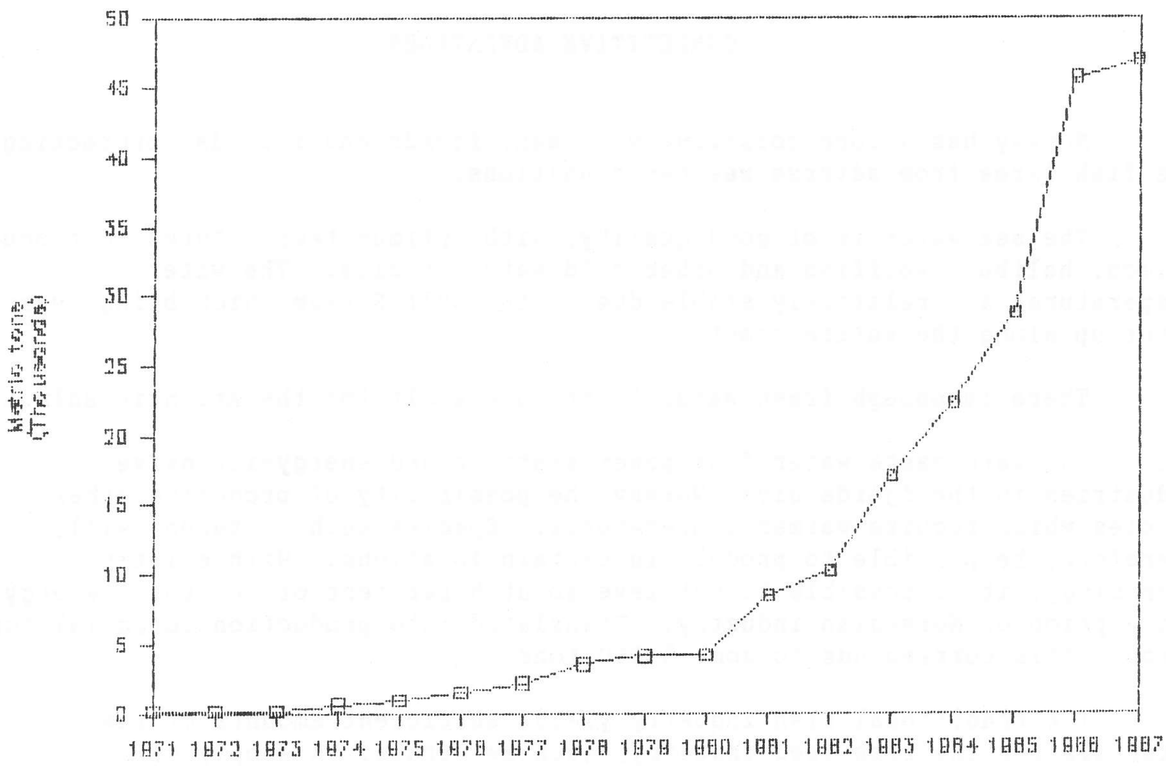
THE DEVELOPMENT OF SALMON FARMING IN NORWAY

1. When the early pioneers started their first experiments with salmon farming in Norway, even the most optimistic among them did not envisage the fantastic development which would take place. In the beginning, they were viewed with scepticism, particularly by financial institutions; they had to fight to overcome such obstacles as rising costs, bankruptcies and technical and biological problems, before they succeeded.

2. The sure signs of success did not really appear until the 1980s. Production in 1979 was only about 4 000 tons (see Figure 1). Eight years later, in 1987, it was 12 times that amount.

Figure 1

NORWEGIAN SALMON PRODUCTION, 1971-1987



3. As can be seen from Figure 1, it was particularly in 1985-86 that the production exploded.

4. Norwegian salmon and trout farming is, today, an important growth industry, with specific political aspects on the regional political scene and with very valuable contributions with regard to employment and regional settlement. The export value of farmed salmon and trout amounts to more than NKr 2 billion, or approximately US$350 million. The industry employs about 4-5 000 people directly, and an equal number in related industries.

5. At the end of 1987, there was a total of 660 smolt production plants, with a total capacity of about 207 million smolt per year and 728 grow-out farms, with a total production area of over 5 million cubic metres. At the present time, only 380 of these farms are in operation. It is rather difficult to estimate the total production capacity, since this depends on the stocking density, but experts indicate a figure in the region of some 100 000 tons per year. In 1987, the authorities announced that they were considering to allow a 50 per cent increase in the maximum size of each farm, from 8 000 cubic metres to 12 000 cubic metres. This would indicate a 50 per cent increase in production capacity in principle, but not in practice. However, even if this general increase in the size of each farm should not be adopted by the authorities, they have announced that another round of granting new permits would be undertaken in 1989. Thus, an increase in the total production capacity will take place by 1989.

6. Before we look specifically at markets and marketing strategies, let us examine some of the elements of the success of the Norwegian salmon farming industry.

COMPETITIVE ADVANTAGES

7. Norway has a long coastline with many fjords and islands, protecting the fish farms from adverse weather conditions.

8. The sea water is of good quality, with optimum temperatures to produce salmon, halibut, wolffish and other cold water species. The water temperatures are relatively stable due to the Gulf Stream which brings warm water up along the entire coast.

9. There is enough fresh water to produce smolt for the Atlantic salmon.

10. The warm waste water from power stations and energy-intensive industries in the fjords gives Norway the possibility of producing other species which require warmer temperatures. Species such as turbot will, therefore, be possible to produce in certain locations. With existing technology, it is possible to retrieve about 5 per cent of the total energy consumption of Norwegian industry. Translated into production potential for turbot, this corresponds to some 5 000 tons.

11. The traditional fish industry yields sufficient amounts of raw materials for the fish feed industry, such as offals. A supply of raw material of marine origin is necessary to produce a well-balanced diet.

12. The infrastructure along the coast is very good.

13. Norway has a long experience in research, production and trade of Atlantic salmon. This is yielding benefits in the production and trade of other species. Norwegian expertise in research has focused on three areas: genetics, fish-feed and diseases.

TRANSPORTATION: A KEY ELEMENT

14. A key element in the development of markets for fresh farmed salmon was the development of a transportation system which allows rapid freight of fresh fish practically world-wide. While it has been possible to transport frozen fish for decades, fresh fish has been limited to markets within a few days from the landing site.

15. Norwegian aquaculturists developed a complete system for handling, packaging and transporting fresh salmon in cooperation with the national airline, Scandinavian Airlines System (SAS). Without this system, markets such as the United States would have been outside the reach of Norway. With this system, there is, in fact, no country which is beyond Norway's reach. It is possible to transport fresh salmon from Norway to places as far away as Hawaii, Australia or New Zealand, guaranteeing the same high quality as in Oslo or Bergen.

16. The Norwegian distribution system does not only focus on the actual transportation, but on the whole concept of handling fresh fish. SAS and the fish farmers have together developed standards for handling the fish, packaging materials and instructional material to educate the individual farmers. They are constantly working to improve this system to ensure the highest possible quality of the product when it reaches the consumer.

17. One main aspect of the transportation system is that it utilises existing routes and routines employed by freight-handling airlines. In a way, they have "plugged into" an existing system, and made changes necessary only to their own product, without changing the international routines for air freight.

18. The transport/distribution system must be viewed as part of the total product concept. This concept has, as its objective, to deliver the highest quality possible as rapidly as possible to consumers anywhere in the world.

THE PRODUCT

19. This leads to a few comments about the product itself. If we look at total salmon production of the world, which amounts to some 800 000 tons per year, the 47 000 tons produced on Norwegian farms, last year, seem an insignificant amount. Yet, in some markets, Norwegian salmon is completely dominant. In the world market, Norwegian farmed salmon accounts for around 55 per cent of all fresh salmon sales.

20. The reasons for the attention which is being paid to the Norwegian salmon industry is the fact that farmed salmon represents a product different from wild-caught salmon. Farmed salmon is first and foremost sold as high quality fresh fish. Wild-caught salmon is generally not handled with the care required to make it a competitor to the farmed product. Most of the wild-caught salmon goes for freezing or canning, and enters the market in product forms more in competition with canned tuna than with fresh salmon.

DEVELOPMENT IN OTHER COUNTRIES

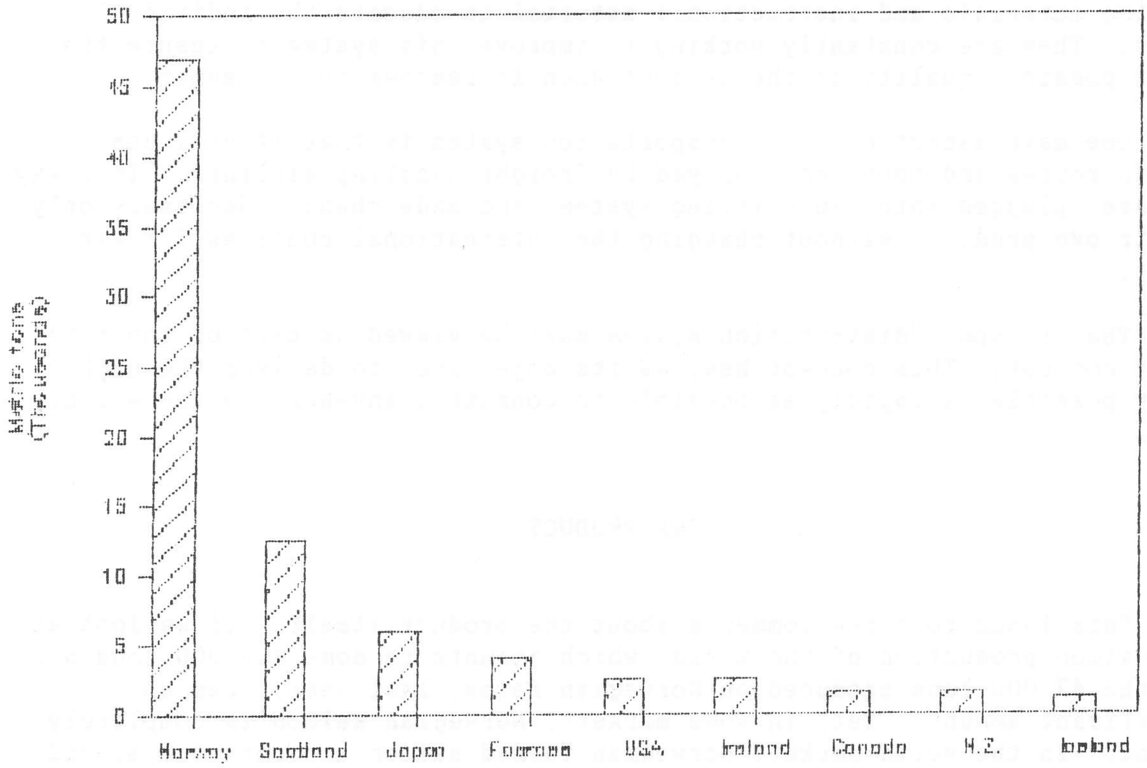
21. In the past few years, a number of other countries have joined Norway in becoming major salmon producers. Among them are Scotland, Ireland, Iceland, the Faroes, Chile, Japan, Canada, the United States and Australia.

22. We now see massive investments in salmon farming in a number of these countries, and others are sure to follow. As a curious example, mentioned might be made of a joint venture being set up in East Asia between a Norwegian company and the Soviet Union, in the Soviet Union.

23. However, until now, only Scotland, Japan and the United States have achieved any sizeable production of Atlantic salmon.

<u>Figure 2</u>

SALMON PRODUCTION BY COUNTRY, 1987

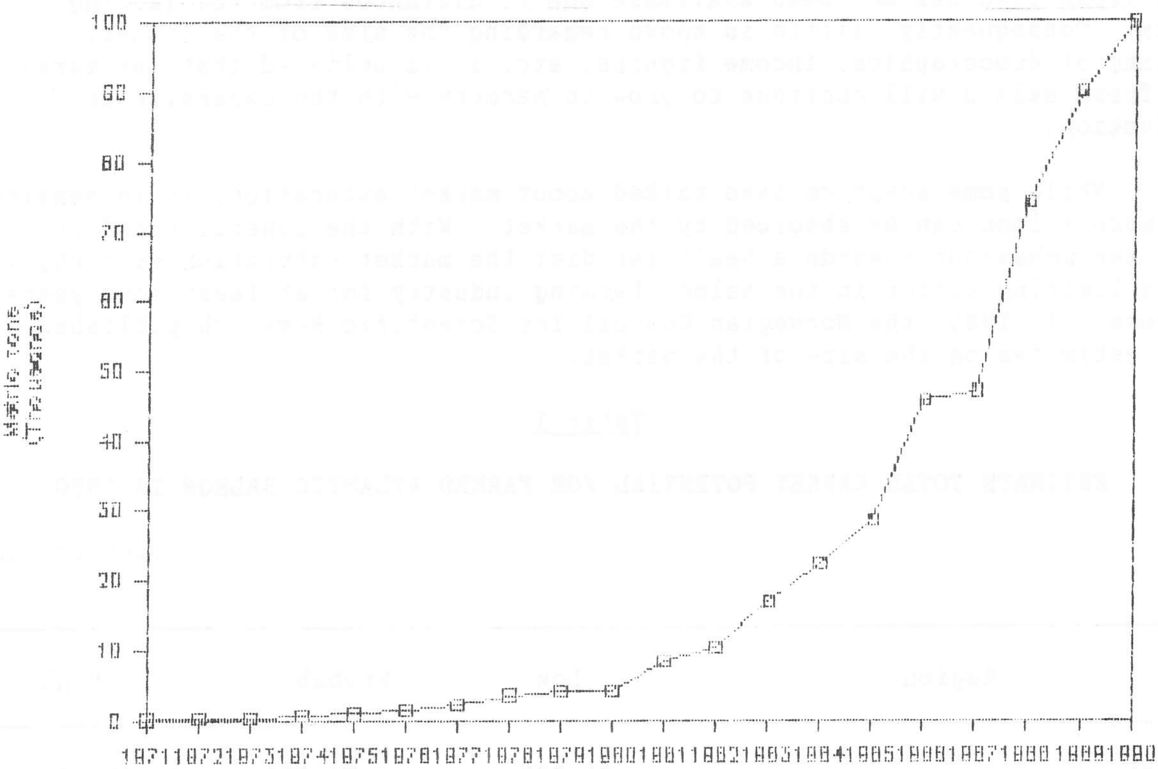


PRODUCTION GROWTH AND FORECASTS

24. As is evident from Figure 1, Norwegian salmon farming has so far enjoyed an almost perfect growth curve, broken only in 1987 by stagnation. However, this break was due to factors which can be explained, and if trout is included in these figures, the stagnation is not so pronounced. Looking at the optimistic forecasts published by the Norwegian Fish Farmers' Association last year, there is no reason to revise this optimism.

<u>Figure 3</u>

PRODUCTION, ACTUAL & FORECAST



25. There was a steeper than anticipated growth in output in 1986 due to the fact that about 8 000 tons of smaller-size fish were harvested in order to avoid the Hitra disease. This extra amount of product hit the market earlier than anticipated and brought the growth curve down in 1987. However, the trout production was 8 700 tons in 1987, or about 3 000 tons more than anticipated. To some extent, part of this trout production has been used as a substitute for salmon. But even overlooking this, the growth curve continues as predicted. The basis for this prediction is, of course, the number of smolt set out in the grow-out pens. In 1987, a record number of smolt was set out, i.e about 43 million smolt. This crop will reach harvesting size in late 1988 and early 1989, and should produce some 90 000 tons during a 12-month period beginning in the second half of 1988. This should bring 1988 production to about 74 000 tons and 1989 production to about 90 000 tons,

depending on next year's setting out of smolt. The latest forecasts for 1990 indicate that production will be over 100 000 tons, perhaps even as high as 120 000 tons.

26. Beyond that, one can not dare to guess. The underlying assumptions are too vague to allow accurate predictions, but as an estimated figure for 1995 would be between 130 000-150 000 tons.

MARKET PROSPECTS

27. In many markets, fresh salmon is a "new" product, by virtue of the fact that fresh fish has not been available due to distances from the landing ports. Consequently, little is known regarding the size of the market. Looking at demographics, income figures, etc. it is believed that the market for fresh salmon will continue to grow in harmony with the expansion in production.

28. While some sceptics have talked about market saturation, it is amazing how much salmon can be absorbed by the market. With the general trend in consumer behaviour towards a healthier diet the market saturation as such, is not a limiting factor in the salmon farming industry for at least some years to come. In 1985, the Norwegian Council for Scientific Research published some estimates on the size of the market:

Table 1

ESTIMATE TOTAL MARKET POTENTIAL FOR FARMED ATLANTIC SALMON IN 1990

(metric tons)

Region	Low	Probable	High
France	21 000	28 000	35 000
Germany	16 500	22 000	27 500
United Kingdom	11 250	15 000	18 750
Rest of Europe	11 250	15 000	18 750
United States	22 500	30 000	37 500
Japan	7 500	10 000	12 500
TOTAL	90 000	120 000	150 000

Source: Norwegian Council for Scientific Research (NTNF), 1985.

29. It is believed that even the high estimates given in this table are too low.

30. Over the past year, Norway has experienced a tremendous demand for fresh salmon in Europe as well as in the United States. But at the same time, prices have declined, although suppliers can not deliver enough to the market. It is a curious situation, but not uncommon to the fishing industry.

31. In general, it is believed that the market demand will continue to grow in harmony with the supply. A further decline in prices is expected as the total trade gathers volume. However, neither the market nor the total supply are expected to grow as fast as in the recent past. The salmon farming industry will soon reach a period of maturation, with stagnation in supplies and prices.

32. On Norway's main markets for salmon, i.e. Europe, the United States and Japan, future development is expected to give way to some real challenges.

33. In Europe, continued growth in demand for fresh salmon and also processed products such as smoked and cured salmon is expected. However, Norway is virtually blocked from the processed products market in Europe, due to the fact that the EEC has imposed a 13 per cent import tax on processed products, and Norway is not a member of the EEC. Consequently, Norwegian salmon is sold mostly in fresh form on the European market and a large portion of it is processed in Europe.

34. Increased competition in Europe is expected, both from within the Common Market (Ireland, Scotland) and from Iceland, Chile and others. Rumours of recent developments in Iceland indicate that Iceland delivers better quality salmon than Norway and since many of their salmon farms are land-based, closed systems, they are not vulnerable to disease to the same extent as Norwegian farms.

35. In the United States, Norwegian salmon is still reigning supreme, but within a few years there will be stiff competition from Iceland, Scotland, Canada and Chile, as well as from the United States itself. Here, price is expected to play an important role, with the Americans and Canadians benefiting from closeness to the market and the South Americans producing at lower cost. On the other hand, the United States has a greater potential for growth than Europe, for example in the Mid-West region; therefore it is believed that this market will continue to be of importance to Norway.

36. Japan is the most difficult market, both in terms of quality and because the Japanese are in the process of becoming major producers of quality farmed salmon. It is believed that most of the growth to be seen in this market will be picked up by Japanese producers, leaving just smaller niches for Norway and other producers. Norway is also facing competition from Australia and New Zealand, both of which have shown their ability to satisfy the very high quality standards set by the Japanese.

MARKET SEGMENTS

37. From the point of view of the salmon exporter, the various market segments in all major markets seem to be the following:

i) restaurants (and chains)

ii) delicatessens

iii) supermarkets/retail fish outlets;

iv) institutional markets (hospitals, army, etc.)

38. The relative importance of these market segments vary from country to country. In the United States, for example, the restaurant market is extremely important, with about 80 per cent of all fish and seafood sales channeled through this segment. So far, Norwegian salmon exporters have concentrated on the first two segments, since the product has been positioned as a high quality, high priced (and high profit) one.

39. Until now, the expansion in product availability has been absorbed through these two market segments. But it is conceivable that the other two segments will begin to take part of the production as the volume increases substantially. However, it is assumed that a certain amount of product development will have to be undertaken to achieve any volume sales through these market segments.

PRICE DEVELOPMENTS

40. Price development over the past year has been favourable. The average price obtained for Norwegian farmed salmon increased from NKr 42.54 per kg. in 1986 to NKr 50.35 in 1987 (+18.35 per cent), and although seasonal fluctuations do occur, there is no sign that the price will be drastically reduced in the near future.

41. However, over a period of some years, one will have to expect a reduction in the real price of salmon.

PRODUCT DEVELOPMENT: WHERE DO WE GO FROM HERE?

42. There has been a lot of talk about the need for product development. By that, most people mean adding value to the fish before it leaves the country. Various treatments such as smoking, curing ("gravlax") etc. are being used, but these products encounter tariff barriers in many countries.

43. It is felt necessary to point out that a major product development has been introduced by Norwegian exporters in the development of the Norwegian System for Handling, Packing and Transporting Fresh Fish. Fresh fish fetches high prices in most markets, and getting the fish to the market in the freshest possible form is, therefore, adding value to the product.

44. But, there are also other forms of product development which should be considered. Salmon mousse and various forms of ready-to-eat products may be introduced by major marketing companies. In fact, one major Norwegian producer of ready-to-eat foods has already launched four different salmon dishes on the French market under the label "Cuisine Royale".

MARKETING STRATEGIES

45. As pointed out earlier, marketing of fresh salmon has focused on distribution strategies and development of distribution technology.

46. During the pioneer phase of Norwegian salmon farming, the focus has been very much on production rather than markets. This has been quite natural, since the most important challenges and problems have been within production technology, and especially as there has been no problem finding buyers for the product. However, at the moment Norway is facing competition, and must pay attention, to other important aspects in marketing its products.

47. If one looks at the production and marketing of farmed salmon as a "value chain", one may identify at least seven "links", i.e. stages where value is added to the product:

i) smolt production;

ii) grow-out farms;

iii) wholesale buyers/exporters;

iv) importers;

v) wholesalers;

vi) retailers;

vii) consumers.

48. With this "value chain" in mind, different marketing strategies can be looked at from the point of view of how many of those "links" they cover. What is called the conventional strategy covers only the first few, while cooperative marketing strategies cover more, and integrated strategies may cover all the "links".

CONVENTIONAL MARKETING STRATEGIES

49. All first-hand sales of farmed salmon, trout, other finfish and shellfish are, by law, monopolised by the Fish Farmers Sales Organisation (Fiskeoppdretternes Salgslag A/L). This dates back to the law of 1951 governing all first-hand sales of fish in Norway. It is generally forbidden to farm, produce, or sell any kinds of fish or shellfish without prior agreement with the Sales Organisation. However, it does not mean the Organisation itself does all the actual selling or exporting. The Organisation "approves" specific first-hand buyers. In order to export, one has to be able to buy, and consequently this arrangement limits the potential number of exporters. By the end of 1986, 78 buyers had been approved by the Sales Organisation. Needless to say, with the phenomenal success of salmon exports, the interest and competition to obtain such approval is intense in Norway.

50. The underlying logic of this particular marketing structure is that a large number of small exporters would enter into fierce competition among themselves, and lower overall prices would result. It is also an expression of the Government policy of local ownership and participation in all aspects of production and marketing of farmed fish.

51. The distribution channels used for farmed salmon have thus been characterised by "convention" activities. The relationship between producer and buyer/exporter has been one of stable, non-binding arrangements, based more on tacit agreement and convention than intricate written contracts. Prices have been set according to fluctuations in the market.

52. This informal nature of the relationship has, to some extent, spilled over onto the international participants in the system.

53. One important aspect of this "old" conventional system is that it has been somewhat short-sighted, and it has not brought Norwegian farmers or exporters very far into the market. Their participation has usually stopped at the border, i.e. with the foreign importer. This, in turn, has had the effect that Norwegian producers and exporters have had no control over the produce once it is exported. As a marketing strategy (if indeed it merits such a term), this is extremely vulnerable, particularly when other nations enter the market.

THE COOPERATIVE APPROACH

54. Over the last few years, however, the trend has been for farmers and/or approved exporters, to join forces in larger, voluntary sales companies. This type of organisation has been quite successful in satisfying one of the Government's main objectives in relation to the fishing farming business: many small, geographically dispersed units are able to continue operation on a small-scale, locally-owned basis, while at the same time the marketing organisation achieves the advantages of a large-scale operation. The skill of the individual sales organisation also ensures a good flow of market information back to the farmer and enables the small-scale farmer to direct his production to meet market demand and market opportunities.

55. From the point of view of the exporter, such arrangements have secured a more stable supply of product over time. Erratic supplies have been a limiting factor in expanding trade with farmed salmon, as it indeed has been for the great majority of captured fish products. For the farmer, the arrangement has meant that he can focus on production, and let the exporter take care of marketing. In fact, the producer has to be approved as a first-hand buyer to be able to export his own fish. However, the present arrangement allows the producer to improve his planning with regard to maximising his profit, and at the same time he obtains a guaranteed sale of his production.

56. The real strength of this approach, and the most important aspect from a marketing point of view, is that one has been able to serve the customer in a better way.

57. Such arrangements do not require that the Norwegian exporter goes more deeply into the "value chain", but it certainly opens up that possibility, since the voluntary cooperative arrangements allow for greater sales volume handled by the marketing organisation, and consequently better possibilities for spending time and money on participating further into the distribution chain.

58. One point needs to be made here: the fact that one has the opportunity to go deeper into the "value chain" does not automatically mean that the profit will be greater to the participants. It only means that the possibility for greater profit is there.

INTEGRATED APPROACHES

59. One marketing strategy which has so far not been used in farmed salmon marketing, is the integrated company approach, where one company, or corporation is involved in the ownership and operation of farming, processing, marketing and sales. In other parts of Norwegian fisheries industry, this approach is sometimes referred to as the Nestlé-Findus approach. However, it is conceivable that this approach will be used in the future. It all depends how the industry and the market develop.

60. Integrated strategies offer obvious advantages, such as economies of scale, secure supplies for the various market segments, control over production, as well as distribution, and access to the end market. But such integration also creates problems of coordination, inter-organisation pricing, economic control of the various operations, etc.

61. The main reason why the integrated marketing strategy has not been applied in Norway is the fact that each farm has been limited to 8 000 cubic metres. It should be added that there are salmon farms which are considerably larger than this limit; but these were established before the law governing fish farming (i.e. in 1985) or even before the regulations which were adopted in 1973. These early operations have been allowed to continue at the same level they reached at the time the new law was enacted.

62. Another factor which may limit the utilisation of such integrated approaches by the Norwegian salmon industry, even if larger farms were allowed, is the simple fact that it does require relatively large financial resources and it assumes the existence of a large marketing organisation to back it up. Investors with the required resources and willingness to launch such farms do exist, but it has not been possible for them to launch any such project. Also, the existing farmers have, through their organisation, opposed such a development.

CONCLUSIONS

63. As explained, the growth of the salmon farming industry in Norway has, indeed, been phenomenal. This is the result of painstaking development efforts in biology and in transportation and distribution technology. One main element in the success of the Norwegian salmon adventure has been the development of a distribution system which ensures delivery of a high quality fresh products to virtually anywhere in the world.

64. It is believed that the market is far from fully exploited, since sales so far have centered on very few market areas. Therefore, the very large expansion in production capacity which is expected in the next few years will, in all probability, be absorbed by unexploited market areas. But it is essential that a marketing effort be directed at such new markets, and particularly that the distribution system be put in place in these areas.

65. Of the various marketing models discussed in this paper, it is believed that the most viable one, and the one which will show the greatest proliferation in the near future, is that of voluntary cooperation among producers and exporters. This model is governed by the principles of supply and demand, and thrives on the forces at play in a demanding and competitive market.

66. It is thought that the lessons to be learned from the Norwegian farmed salmon adventure are that fresh fish, of many species, and of high quality, are about to conquer world markets. Aquaculture is an integral part of this "new" product, for only by controlling production, including harvest time, handling and packaging to secure high quality, will these fresh products obtain the high prices dreamed of.

67. Consequently, irrespective of the marketing strategy chosen, the backbone of the Norwegian marketing strategy has been, and will remain, a total system product concept, which includes farming, handling, packaging, transportation and distribution. Therein lies the essence of the Norwegian success -- past, present and future.

Table 2

PRODUCTION OF NORWEGIAN SALMON, 1971-1987

(First-hand value)

Year	Salmon (mt)	Trout (mt)	NKr '000
1971	98	433	na
1972	146	778	na
1973	171	1 001	na
1974	601	1 726	na
1975	862	1 655	na
1976	1 431	2 045	na
1977	2 137	1 795	na
1978	3 540	2 105	na
1979	4 142	2 691	216 714
1980	4 153	3 360	262 782
1981	8 422	4 485	357 428
1982	10 266	4 690	459 881
1983	17 000	5 100	760 000
1984	22 300	3 636	964 700
1985	28 655	5 141	1 421 574
1986	45 675	4 310	1 724 490
1987	47 418	8 787	2 114 000

Source: The Association of Fish Farmers, Trondheim.

Table 3

PRODUCTION FORECAST FOR NORWEGIAN SALMON, 1988-1990

(First-hand value)

Year	Salmon (mt)	Trout (mt)	NKr '000
1988	74 000	5 000	3 500 000
1989	90 000	6 000	3 800 000
1990	100 000	6 000	4 200 000

Source: The Association of Fish Farmers, Trondheim, and the Ministry of Fisheries, Oslo.

Table 4

ESTIMATED PRODUCTION OF FARMED SALMON BY MAJOR PRODUCING COUNTRIES, 1987 & 1990

Country	Production (mt)	
	1987	1990
Norway	47 000	100 000
Scotland	12 600	25 000
Japan	6 000	9 000
The Faroes	4 000	6 000
Ireland	2 500	10 000
United States	2 500	4 000
Chile	1 600	3 500
Canada	1 500	16 000
New Zealand	1 500	3 000
Iceland	1 000	3 000
Australia	0	7 000
TOTAL	80 200	186 500

Source: Ministry of Fisheries, Oslo.
This estimate includes Pacific as well as Atlantic salmon.